Beware *Unknown* Unknowns

BY ANDREAS DOMBRET

The Sibylline Books and how to prevent financial crises.

Referring to the sovereign debt crisis in Europe, Poland's Minister of Finance, Jacek Rostowski, said that the negotiations reminded him of the story of the purchase of the Sibylline Books in ancient Rome. Those books contained prophecies which did not exactly forecast 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 the 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 were lost in more recent times. But the questions remain: What advice would the books have had for modern policymakers? What kind of systemic analysis is presented there?

FIRST SIBYLLINE BOOK: REDUCING COMPLEXITY

Modern systemic risk analysis consists of many tools that are applied by central banks and supervisory authorities as well as macroprudential supervisory bodies at the national and international level such as the European Systemic Risk Board and the Financial Supervision Board. Such tools start by collecting and describing a wide set of indicators, most of which give coincident signals with regard to financial stability. In a further step, an attempt is made to isolate those indicators with predictive power, which is fairly difficult, conceptually as well as statistically. Other tools are designed to condense the information into risk dashboards, color-

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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 destabilizing feedback loops and systemic effects.

Clearly, these tools are important and helpful in preventing and managing systemic risks. But the question is whether they are sufficient. This seems doubtful given the high level of complexity in globally integrated financial markets. This complexity leads to non-linear dynamics in the system, which are very difficult to handle both for financial institutions in their risk management and for supervisors.

The complexity is also characterized 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."

Illustrating this theory leads us to the heart of the financial crisis. Prior to the financial crisis, a shadow banking system had emerged which found itself at the center 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 widely ignored or underestimated. International macroprudential bodies such as the ESRB and the FSB are trying to fill this gap with knowledge, but a lack of data means that progress in this area is being made at a snail's pace.

Even if the authorities are eventually successful, they cannot be sure to have identified all relevant risks, because "unknown unknowns," which cannot be observed, could also exist in other areas of the financial system. Therefore, complexity reduction might be an effective instrument for preventing systemic crises. It is conceivable that the lost Sibylline Books could have contained advice such as this.

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Tarquinius Superbus receives the Sibylline Books from a prophetess.

There are also other examples of complexity which complicate supervisory targets. A lot of regulatory target variables 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 risk did not work perfectly and underestimated the true risks stemming from collateralized debt obligations. As a result, financial institutions were undercapitalized when Lehman Brothers became insolvent. If supervisory authorities had also had a robust target, such as a leverage ratio that is not adjusted for risk, financial institutions would have been better prepared on the eve of the Lehman debacle. Moreover, the concept of risk-weighted assets specifies that government bonds have a risk weight of zero. With a risk-robust measure, institutions would also have been better prepared for sovereign debt 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 reducing complexity can help prevent crises is standardizing financial products. In

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the past, OTC contracts were created with unknown and very hard-to-handle, non-normal probability distributions of random variables—which meant creating "known unknowns" via terms of contracts with potentially destabilizing effects on the financial system.

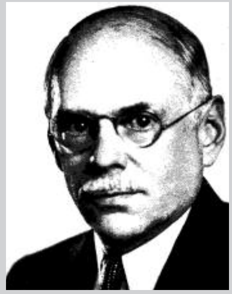
SECOND AND THIRD SIBYLLINE BOOKS: COMMUNICATING RISK ANALYSIS

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 to the third message of the 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 regarding the markets." Moreover, if stress tests identify capital needs, private and public recapitalization measures have to be announced and implemented, thereby preventing market uncertainty. In a systemic crisis, recapitalization has to be part of a comprehensive package including public aid for banks. This aid helps to restore confidence in the wholesale markets, overcome funding problems, and ultimately to mitigate excessive deleveraging pressure.

FOURTH AND FIFTH SIBYLLINE BOOKS: ESTABLISHING 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 competence and expertise in analysis. But monetary policy instruments are not, in the first instance, financial stability instruments. Therefore, the institutional setup is not simply a matter of organization but essentially a matter of the credibility of the institutions involved.

So the fifth Sibylline message might be this: "The credibility of the various bodies' risk analysis needs to be enhanced." 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 lead to complacency among the addressees.



Frank Knight

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—A. Dombret

SIXTH AND SEVENTH SIBYLLINE BOOKS: 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 it is a well-known fact that global imbalances play an important role. The savings glut means high demand for safe and high-yield assets. And global players can help to solve the current crisis in Europe. Sometimes international investors ask policymakers, "Why should we buy bonds from sovereigns in crisis if their European partners are unwilling to do so to a larger extent?" The answer is that the European partners have to be wary of moral hazard implications, because they are players in the European political game—the very game that is reminding the reader of the story of the purchase of the Sibylline 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 affected 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, the seventh and last message is this: "If European sovereigns commit themselves credibly to sound fiscal policy, they deserve confidence." These are seven of the possible messages of the lost or burned Sibylline Books.

The remaining message may be: Beware of "known unknowns" and "unknown unknowns." ◆