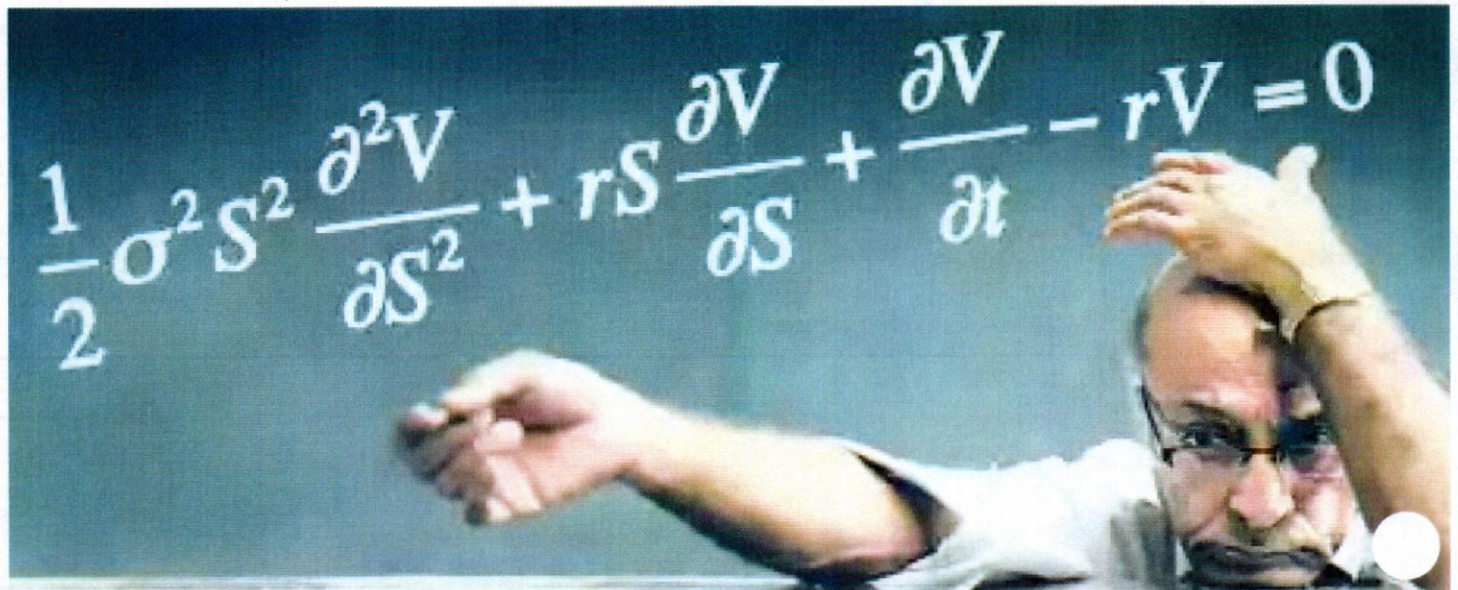


# The Guardian



## The mathematical equation that caused the banks to crash

The Black-Scholes equation was the mathematical justification for the trading that plunged the world's banks into catastrophe

**Ian Stewart**

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**I**t was the holy grail of investors. The Black-Scholes equation, brainchild of economists Fischer Black and Myron Scholes, provided a rational way to price a financial contract when it still had time to run. It was like buying or selling a bet on a horse, halfway through the race. It opened up a new world of ever more complex investments, blossoming into a gigantic global industry. But when the sub-prime mortgage market turned sour, the darling of the financial markets became the Black Hole equation, sucking money out of the universe in an unending stream.

Anyone who has followed the crisis will understand that the real economy of businesses and commodities is being upstaged by complicated financial instruments known as derivatives. These are not money or goods. They are investments in investments, bets about bets. Derivatives created a booming global economy, but they also led to turbulent markets, the credit crunch, the near collapse of the banking system and the economic slump. And it was the Black-Scholes equation that opened up the world of derivatives.

The equation itself wasn't the real problem. It was useful, it was precise, and its limitations were clearly stated. It provided an industry-standard method to assess the likely value of a financial derivative. So derivatives could be traded before they matured. The formula was fine if you used it sensibly and abandoned it when market conditions weren't appropriate. The trouble was its potential for abuse. It allowed derivatives to become commodities that could be