# Preface to the Second Edition

After the first edition of this book was published in early 2005, the world has changed dramatically and at a pace never seen before. The changes that occurred in 2008 and 2009 were completely unthinkable two years before. These changes took place not only in the Finance sector, the origin of the crisis, but also, as a result, in other economic sectors like the automotive sector. Governments now own substantial parts, if not majorities, in banks or other companies which recorded losses of double digit billions of USD in 2008. 2008 saw the collapse of leading stand-alone U.S. investment banks. In many countries interest rates fell close to zero. What has happend?

While the economy showed strong growth in 2004 to 2006, the Subprime or Credit Crisis changed the picture completely. What started in the U.S. housing market in late 2006 became a full-fledged global financial crisis and has affected financial markets around the world. A decline in U.S. house prices and increasing interest rates caused a higher rate of subprime mortgage delinquencies in the U.S. and, due to the wide distribution of securitized assets, had a negative effect on other markets. As a result, markets realized that risks had been underestimated and volatility increased. This development culminated in the bankruptcy of the investment bank Lehman Brothers in mid September 2008. Consequently, credit spreads widened and the depth of the crisis led to the absence of prices and secondary markets for structured credit products. The uncertainty as to where losses were hidden in the financial services sector disrupted money markets and caused funding problems for several institutions. The hesitancy of banks to lend to each other forced a number of central banks to provide large amounts of liquidity to markets and institutions, in order to counteract this development.

What had started to be a controllable event in the Finance industry spilled over to the real world economy in the second half of 2008, pulling the world close to an abyss. The countries to suffer most from this crisis, both in the Finance sector and in the real world sectors, were the U.S. and Great Britain. One reason for this is clearly their dependency on investment banking.

Investment banks like Bear Stearns and Lehman Brothers, giants like Fannie Mae and Freddie Mac or financial institutions like IKB in Germany (almost) went bankrupt. In addition, many hedge funds needed to reduce their leverage ratio in the second half of 2007 due to liquidity problems. This triggered the so called "Quant Crisis" for equity portfolios that are managed by using mathematical models and that invest in developed market stocks. To make things worse, growth staggered at the end of 2007 and big economies like the U.S. or Germany showed signs of a recession. All the negative estimates on growth for 2008 and 2009 were exceeded by even more negative real economic data.

Threats to the economic growth and an increased inflation are alarming signs for central banks, and when growth weakened at the end of 2007, the Federal Reserve in the U.S. reduced the interest rates in rapid steps. Interest rate history has thus repeated itself by completing a full cycle of market movements.

This was reason enough to look at the real options analysis again, 6 years after the first edition of the book had been written. Now, a longer historical time period can be covered, and more studies with historical backtests can be provided. Therefore, the findings of the first edition of this book, which were based on the analysis of data from April 1997 to March 2003, were put to the test again. Do they still hold true, if the research period is extended to March 2009? This is the focal question of this second edition.

The general answer is yes. In order to arrive at this conclusion, many new historical backtests had to be conducted. The backtests now cover a time period which is longer by 6 years and spans from April 1997 until March 2009. The complete analysis and interpretation of these new backtests can be found, as in the first edition, in Chapter 5.8.

I want to close this preface with special thanks to the EUROPEAN BUSINESS SCHOOL - **ebs** in Oestrich-Winkel. At the ebs I completed my research for the first edition of this book and I also completed my research for the second edition. This was possible since I have served the ebs as a guest lecturer for the two courses "Financial Engineering" as well as "Derivatives and Risk Management" since 2005 as part of the *Endowed Chair for Asset Management.*

The research was done besides my work at the institutional asset management company *State Street Global Advisors (SSgA)* where I have worked since mid 2006 as the Senior Product Engineer in Europe for Enhanced and Active Quant Equity Portfolio Management.

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