Real Options Valuation

- Risk Simulator
- Real Options SLS
- Modeling Toolkit
- ESO Valuation
- ROV Modeler
- ROV Optimizer
- ROV Valuator
- ROV Compiler
- ROV Extractor
- ROV Evaluator
- ROV Biz Stats
- ROV Dashboard
- ROV Scheduler
- ROV Charter
- ROV Web Models

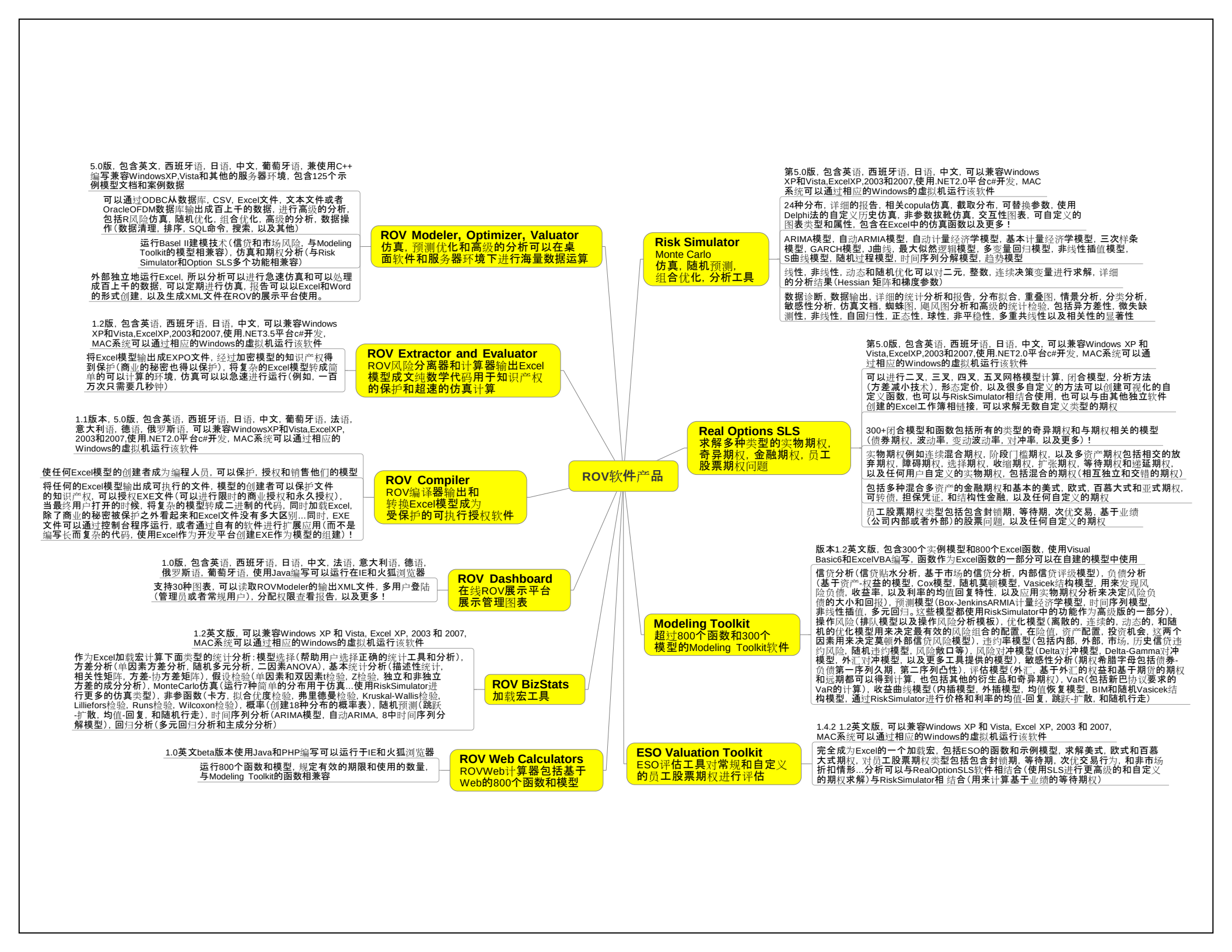
Certified in Risk Management

Senior Credit Risk Management Certification

Real Options Valuation, Inc.

产品和服务手册

内容


ROV软件产品
ROV Modeler, Optimizer, Valuator
仿真，预测优化和高级的分析可以在桌面软件和服务器环境下进行海量数据运算
5.0版，包含英文，西班牙语，日语，中文，葡萄牙语，兼使用C++编写兼容WindowsXP,Vista和其他的服务器环境，包含125个示例模型文档和案例数据
可以通过ODBC从数据库，CSV，Excel文件，文本文件或者OracleOFDM数据库输出成百上千的数据，进行高级的分析，包括R风险仿真，随机优化，组合优化，高级的分析，数据操作（数据清理，排序，SQL命令，搜索，以及其他）
运行Basel II建模技术（信贷和市场风险，与Modeling Toolkit的模型相兼容），仿真和期权分析（与Risk Simulator和Option SLS多个功能相兼容）
外部独立地运行Excel，所以分析可以进行急速仿真和可以处理成百上千的数据，可以定期进行仿真，报告可以以Excel和Word的形式创建，以及生成XML文件在ROV的展示平台使用。
ROV Extractor and Evaluator
ROV风险分离器和计算器输出Excel模型成文纯数学代码用于知识产权的保护和超速的仿真计算
1.2版，包含英语，西班牙语，日语，中文，可以兼容Windows XP和Vista,ExcelXP,2003和2007,使用.NET3.5平台c#开发，MAC系统可以通过相应的Windows的虚拟机运行该软件
将Excel模型输出成EXPO文件，经过加密模型的知识产权得到保护（商业的秘密也得以保护），将复杂的Excel模型转成简单的可以计算的环境，仿真可以以急速进行运行（例如，一百万次只需要几秒钟）
ROV Compiler
ROV编译器输出和转换Excel模型成为受保护的可执行授权软件
1.1版本，5.0版，包含英语，西班牙语，日语，中文，葡萄牙语，法语，意大利语，德语，俄罗斯语，可以兼容WindowsXP和Vista,ExcelXP,2003和2007,使用.NET2.0平台c#开发，MAC系统可以通过相应的Windows的虚拟机运行该软件
使任何Excel模型的创建者成为编程人员，可以保护，授权和销售他们的模型
将任何的Excel模型输出成可执行的文件，模型的创建者可以保护文件的知识产权，可以授权EXE文件（可以进行限时的商业授权和永久授权），当最终用户打开的时候，将复杂的模型转成二进制的代码，同时加载Excel，除了商业的秘密被保护之外看起来和Excel文件没有多大区别...同时，EXE文件可以通过控制台程序运行，或者通过自有的软件进行扩展应用（而不是编写长而复杂的代码，使用Excel作为开发平台创建EXE作为模型的组建）！
ROV Dashboard
在线ROV展示平台
展示管理图表
1.0版，包含英语，西班牙语，日语，中文，法语，意大利语，德语，俄罗斯语，葡萄牙语，使用Java编写可以运行在IE和火狐浏览器
支持30种图表，可以读取ROVModeler的输出XML文件，多用户登陆（管理员或者常规用户），分配权限查看报告，以及更多！
ROV BizStats
加载宏工具
1.2英文版，可以兼容Windows XP 和 Vista, Excel XP, 2003 和 2007, MAC系统可以通过相应的Windows的虚拟机运行该软件
作为Excel加载宏计算下面类型的统计分析：模型选择（帮助用户选择正确的统计工具和分析），方差分析（单因素方差分析，随机多元分析，二因素ANOVA），基本统计分析（描述性统计，相关性矩阵，方差-协方差矩阵），假设检验（单因素和双因素t检验，Z检验，独立和非独立方差的成分分析），MonteCarlo仿真（运行7种简单的分布用于仿真...使用RiskSimulator进行更多的仿真类型），非参函数（卡方，拟合优度检验，弗里德曼检验，Kruskal-Wallis检验，Lilliefors检验，Runs检验，Wilcoxon检验），概率（创建18种分布的概率表），随机预测（跳跃-扩散，均值-回复，和随机行走），时间序列分析（ARIMA模型，自动ARIMA，8中时间序列分解模型），回归分析（多元回归分析和主成分分析）
ROV Web Calculators
ROVWeb计算器包括基于Web的800个函数和模型
1.0英文beta版本使用Java和PHP编写可以运行于IE和火狐浏览器
运行800个函数和模型，规定有效的期限和使用的数量，与Modeling Toolkit的函数相兼容
Risk Simulator
Monte Carlo
仿真，随机预测，组合优化，分析工具
第5.0版，包含英语，西班牙语，日语，中文，可以兼容Windows XP和Vista,ExcelXP,2003和2007,使用.NET2.0平台c#开发，MAC系统可以通过相应的Windows的虚拟机运行该软件
24种分布，详细的报告，相关copula仿真，截取分布，可替换参数，使用Delphi法的自定义历史仿真，非参数拔靴仿真，交互性图表，可自定义的图表类型和属性，包含在Excel中的仿真函数以及更多！
ARIMA模型，自动ARMIA模型，自动计量经济学模型，基本计量经济学模型，三次样条模型，GARCH模型，J曲线，最大似然逻辑模型，多变量回归模型，非线性插值模型，S曲线模型，随机过程模型，时间序列分解模型，趋势模型
线性，非线性，动态和随机优化可以对二元，整数，连续决策变量进行求解，详细的分析结果（Hessian 矩阵和梯度参数）
数据诊断，数据输出，详细的统计分析和报告，分布拟合，重叠图，情景分析，分类分析，敏感性分析，仿真文档，蜘蛛图，飓风图分析和高级的统计检验，包括异方差性，微失缺测性，非线性，自回归性，正态性，球性，非平稳性，多重共线性以及相关性的显著性
Real Options SLS
求解多种类型的实物期权，奇异期权，金融期权，员工股票期权问题
第5.0版，包含英语，西班牙语，日语，中文，可以兼容Windows XP 和 Vista,ExcelXP,2003和2007,使用.NET2.0平台c#开发，MAC系统可以通过相应的Windows的虚拟机运行该软件
可以进行二叉，三叉，四叉，五叉网格模型计算，闭合模型，分析方法（方差减小技术），形态定价，以及很多自定义的方法可以创建可视化的自定义函数，也可以与RiskSimulator相结合使用，也可以与由其他独立软件创建的Excel工作簿相链接，可以求解无数自定义类型的期权
300+闭合模型和函数包括所有的类型的奇异期权和与期权相关的模型（债券期权，波动率，变动波动率，对冲率，以及更多）！
实物期权例如连续混合期权，阶段门槛期权，以及多资产期权包括相交的放弃期权，障碍期权，选择期权，收缩期权，扩张期权，等待期权和递延期权，以及任何用户自定义的实物期权，包括混合的期权（相互独立和交错的期权）
包括多种混合多资产的金融期权和基本的美式，欧式，百慕大式和亚式期权，可转债，担保凭证，和结构性金融，以及任何自定义的期权
员工股票期权类型包括包含封锁期，等待期，次优交易，基于业绩（公司内部或者外部）的股票问题，以及任何自定义的期权
Modeling Toolkit
超过800个函数和300个模型的Modeling Toolkit软件
版本1.2英文版，包含300个实例模型和800个Excel函数，使用Visual Basic6和ExcelVBA编写，函数作为Excel函数的一部分可以在自建的模型中使用
信贷分析（信贷贴水分析，基于市场的信贷分析，内部信贷评级模型），负债分析（基于资产-权益的模型，Cox模型，随机莫顿模型，Vasicek结构模型，用来发现风险负债，收益率，以及利率的均值回复特性，以及应用实物期权分析来决定风险负债的大小和回报），预测模型（Box-JenkinsARMIA计量经济学模型，时间序列模型，非线性插值，多元回归。这些模型都使用RiskSimulator中的功能作为高级版的一部分），操作风险（排队模型以及操作风险分析模板），优化模型（离散的，连续的，动态的，和随机的优化模型用来决定最有效的风险组合的配置，在险值，资产配置，投资机会，这两个因素用来决定莫顿外部信贷风险模型），违约率模型（包括内部，外部，市场，历史信贷违约风险，随机违约模型，风险敞口等），风险对冲模型（Delta对冲模型，Delta-Gamma对冲模型，外汇对冲模型，以及更多工具提供的模型），敏感性分析（期权希腊字母包括债券-负债第一序列久期，第二序列凸性），评估模型（外汇，基于外汇的权益和基于期货的期权和远期都可以得到计算，也包括其他的衍生品和奇异期权），VaR（包括新巴协议要求的VaR的计算），收益曲线模型（内插模型，外插模型，均值恢复模型，BIM和随机Vasicek结构模型，通过RiskSimulator进行价格和利率的均值-回复，跳跃-扩散，和随机行走）
ESO Valuation Toolkit
ESO评估工具对常规和自定义的员工股票期权进行评估
1.4.2 1.2英文版，可以兼容Windows XP 和 Vista, Excel XP, 2003 和 2007, MAC系统可以通过相应的Windows的虚拟机运行该软件
完全成为Excel的一个加载宏，包括ESO的函数和示例模型，求解美式，欧式和百慕大式期权，对员工股票期权类型包括包含封锁期，等待期，次优交易行为，和非市场折扣情形...分析可以与RealOptionSLS软件相结合（使用SLS进行更高级的和自定义的期权求解）与RiskSimulator相 结合（用来计算基于业绩的等待期权）

RISK SIMULATOR

RISK SIMULATOR 5.0

蒙特卡罗仿真

25种界面友好容易使用的概率分布，能够以超快速度运行仿真（数秒内运行几千次），并自动生成全面的统计分析报告，带Copulas的分布相关性设定，截断设定，变化的参数，数据连接功能，多维仿真和Excel中的RISK SIMULATOR函数

分析工具

拔靴法，聚类分割，全面的报告，数据提取，数据输入，数据诊断，分布拟合，分布概率（PDF, CDF, ICDF），假设检验，敏感性分析，情景分析，飓风图和蛛网图

预测

Box-Jenkins ARIMA（自回归移动平均模型），ARIMA自动分析功能，计量经济学基本分析和自动分析功能，三次样条插值法和自定义分布，GARCH（广义自回归条件异方差模型），J曲线，S曲线，马尔可夫链，最大似然估计，多元回归，非线性外推，随机过程，时间序列分解，趋势线

优化

带连续，离散和整数决策变量的静态，动态和随机优化；效率前沿；线性和非线性优化

Real Options Valuation Inc

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438. www.realoptionsvaluation.com

什么是风险分析？

你如何制定关键的商业决策？你是考虑项目和决策的风险，还是更关注其收益？你是否经历过很难理解什么是风险，更不要说对风险进行量化？我们的RISK SIMULATOR软件将帮助你识别，量化，并对项目和决策中的风险进行评估。

RISK SIMULATOR 是一个功能强大嵌于Excel的软件，可用于对现有的Excel电子表格模型进行仿真、预测、统计分析和优化。RISK SIMULATOR非常容易使用。例如，运行风险分析就和数1-2-3这样简单：设置输入变量，设置输出变量然后运行。进行预测分析也非常简单，只需点击鼠标两三次，软件会自动进行计算和分析，然后生成详细的报告，图表和数字结果。

如果我们拥有可以将太空船送上太阳系的技术，为什么我们不可以花费多一点时间对风险进行分析和量化呢？我们已经拥有了这些技术，并将这些高级方法整合到RISK SIMULATOR这个简单易用的工具之中。我们有大量的相关书籍，提供现场培训（CRM注册风险管理师），培训DVD，咨询顾问，在我们的网站还有免费的关于风险分析和建模入门视频。

RISK SIMULATOR 软件还可以和我们其它软件结合使用，包括 Real Options Super Lattice Solver，Employee Stock Options Valuation Toolkit，Modeling Toolkit（超过800个函数和300个模型），ROV Modeler，ROV Optimizer，ROV Valuator，ROV Basel II Modeler，ROV Compiler，ROV Extractor and Evaluator和ROV Dashboard。请登陆我们的网站获取更多详细资料。

模块介绍

蒙特卡罗风险仿真

25种界面友好容易使用的概率分布，能够以超快速度运行仿真（数秒内运行几千次），并自动生成全面的统计分析报告，带Copulas的分布相关性设定，截断设定，变化的参数，数据连接功能，多维仿真和Excel中的 RISK SIMULATOR 函数。

分析工具

拔靴法，聚类分割，全面的报告，数据提取，数据输入，数据诊断，分布拟合，分布概率（PDF, CDF, ICDF），假设检验，动态敏感性分析，情景分析，飓风图和蛛网图和更多！

预测

Box-Jenkins ARIMA（自回归移动平均模型），ARIMA自动分析功能，计量经济学基本分析和自动分析功能，三次样条插值法和自定义分布，GARCH（广义自回归条件异方差模型）波动性，J曲线，S曲线，马尔可夫链，最大似然估计（Logit），多元回归，非线性外推，随机过程，时间序列分解，趋势线和更多！

优化

带连续，离散和整数决策变量的静态，动态和随机优化；效率前沿分析；线性和非线性优化，对高级算法类型和精度水平的完全控制。

辅助资源

- 由软件开发者所写作的五本关于风险分析、仿真、预测、优化，实物期权分析和期权定价的书籍
- 风险分析（仿真、预测、优化、实物期权和应用商业统计）培训DVD
- 风险管理、风险仿真、预测、优化和战略实物期权的现场培训和认证课程
- 详细的用户使用手册、帮助文件，以及丰富全面的示例文件库
- 拥有咨询和行业经验的资深项目顾问

试用版本和学术版本

你可以立刻在我们的网站下载为期10天的RISK SIMULATOR试用版软件。我们希望你在购买我们的软件之前先试用和了解此软件。我们还为讲授风险分析或其它相关课程（需要使用RISK SIMULATOR）的教授（和他/她们的学生）提供学术授权。如果你希望获取更多信息，请发送邮件到admin@realoptionsvaluation.com与我们联系。

培训和咨询

RISK SIMULATOR软件这些高级分析工具使用起来非常简单，但如果使用不当，可能会使分析者陷入困境之中，对理论的理解和实践的经验非常重要，因此培训非常关键。

我们的**风险分析**（***Risk Analysis***）课程是一个为期两天主要针对软件操作和应用的培训课程。主题包括风险和不确定性基础，蒙特卡罗仿真应用（缺陷和仿真应用中的问题和解决方法），和在预测及优化应用中的详细方法。

我们还有**针对分析员的实物期权分析**（***Real Options for Analysts***）课程，这非常适用于希望尽快开始将战略实物期权分析应用到工作中但缺少实物期权和建模经验的分析员。这个为期两天的课程内容包括如何建立实物期权分析模型，实物期权应用，和仿真应用，闭式方程或使用Real Options SLS软件的二叉和多叉网格模型解决实物期权等问题。

注册风险管理师（***CRM，Certified in Risk Management***）是一个为期四天注重实践操作的培训课程。内容包括我们的**风险分析**课程和**针对分析员的实物期权分析**课程，在通过相关学习之后还可以获得由**国际专业教育与研究协会**（**IIPER**，AACSB成员，同时可以获得**美国项目管理协会PMI**认可的300 PDU）颁发的CRM认证。

我们还提供其它的定制课程，包括关于决策分析，价值评估和风险分析等公司内部培训课程（完全根据客户的需要，基于客户的商业案例和模型定制开发的关于仿真，预测，优化和实物期权培训课程）。此外，我们还提供咨询服务，包括风险分析问题框架，仿真，预测，实物期权，风险分析，建模，决策分析，软件OEM和客户定制软件。

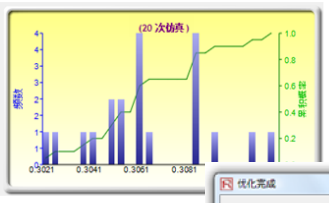
专家

乔纳森·文博士（Dr. Johnathan Mun）是RISK SIMULATOR软件的开发者，他同时教授**风险分析（Risk Analysis）**课程，**针对分析员的实物期权分析（Real Options for Analysts）**课程，**针对管理者的实物期权分析（Real Options for Managers）**课程，**注册风险管理师（CRM）**课程，和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型：从巴塞尔新资本协议到华尔街的800个函数和300个模型》（Wiley 2008）；《银行家信用风险手册：实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和CEO，负责分析软件的开发，咨询和培训服务。他曾是Decisioneering, Inc.（Oracle）公司分析服务部门副总裁和毕马威管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司（Viking, Inc）担任金融计划和分析部门主管。文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School）全职教授，以及法兰克福应用科学大学（University of Applied Sciences，Frankfurt）和瑞士管理学院（Swiss School of Management，Zurich）教授，同时还在世界各地的一些大学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。

决策变量的预测统计量

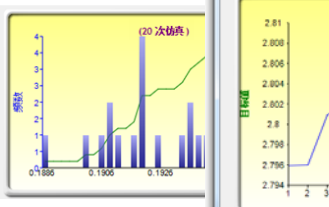
资产1

数据点的数量	20.0000
均值	0.3064
中位数	0.3060
标准差	0.0026
差额	0.0000
平均偏差	0.0021
最大值	0.3118
最小值	0.3018
极差	0.0099
偏度	0.2735
峰度	-0.2816
25分位数	0.3047
75分位数	0.3083
95%置信度下的误差幅度	0.0038



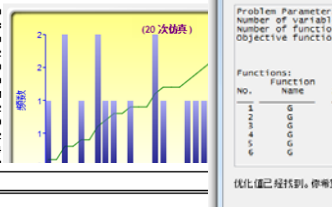
资产2

数据点的数量	20.0000
均值	0.1922
中位数	0.1919
标准差	0.0018
差额	0.0000
平均偏差	0.0015
最大值	0.1952
最小值	0.1884
极差	0.0068
偏度	-0.1725
峰度	-0.4686
25分位数	0.1908
75分位数	0.1936
95%置信度下的误差幅度	0.0041



资产3

数据点的数量	20.0000
均值	0.1908
中位数	0.1910
标准差	0.0022
差额	0.0000
平均偏差	0.0019
最大值	0.1941
最小值	0.1872
极差	0.0069
偏度	-0.0662
峰度	-1.3644



结果

置信值：96.626163863219

引用变量单元格	输出下限	输出上限	有效范围	输入下限		
投资	$276.63	($83.37)	360.00	$1,620.00	$1,980.00	$1,800.00
税率	$213.73	($26.47)	246.20	36.00%	44.00%	40.00%
A 价格	$3.43	$189.83	186.40	$3.00	$11.00	$10.00
B 价格	$16.71	$176.55	159.84	$11.03	$13.48	$12.25
A 数量	$23.18	$170.07	146.90	45.00	55.00	50.00
B 数量	$30.53	$162.72	132.19	31.50	38.50	35.00
C 价格	$40.15	$153.11	112.96	$13.64	$16.67	$15.15
C 数量	$48.05	$145.20	97.16	18.00	22.00	20.00
贴现率	$138.24	$57.03	81.21	13.50%	16.50%	15.00%
价格侵蚀	$116.80	$76.64	40.16	4.50%	5.50%	5.00%
销售额增长	$90.59	$102.63	12.10	1.80%	2.20%	2.00%
折旧	$95.08	$98.17	3.08	$9.00	$11.00	$10.00
利息	$97.09	$96.16	0.93	$1.80	$2.20	$2.00
摊销	$96.16	$97.09	0.93	$2.70	$3.30	
资本支出	$96.63	$96.63	0.00	$0.00	$0.00	
生产成本	$96.63	$96.63	0.00	$0.00	$0.00	

描述性统计

统计分析

几乎所有的分布都可以用4个矩来描述（有的需要一个矩，有的需要两个矩，等等）。描述性统计从最上描述值，期望回报，或者事件发生的平均值。

算术平均数通过加总所有的数据值再除以数据的个数得到发生的平均值。几何平均数就是数据乘积的算术根。例如，使用几何平均数根据变化率计算平均增长率。截尾平均数是截取两边极大值之后的代数平均值。当两个问题。

均值的标准误计算了样本均值的误差大小。样本越大，误差越小。对于无限大的样本总体，误差就越接近于基于样本数据的分析。实际的样本均值落在上下区间之内。

中位数处于数据的中间，有50%的大于它，有50%

极小值和极大值之差

准差，方差，全距，四分位间距。标准差说单位等于原始数据的单位。样本标准差不同各自标准差的平方。

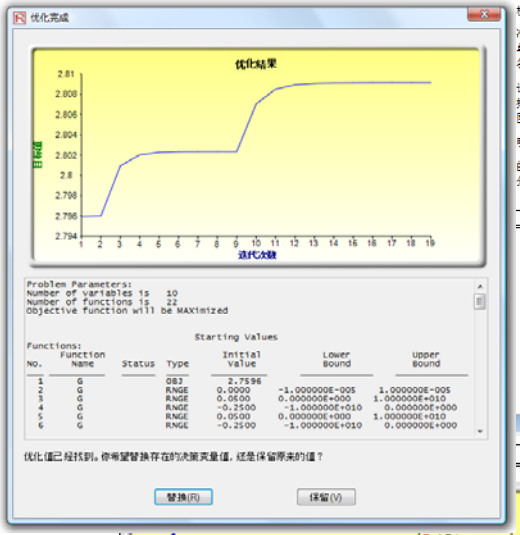
计算结果，可以在多个分布之间比较（可以排列的第二十五百分数。算盒分为数是七十国的宽度。

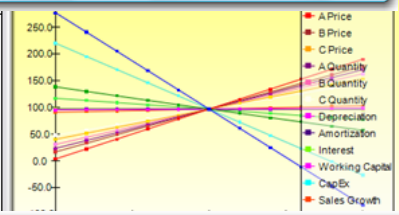
明分布的尾部不对称向正值偏斜。负偏斜说

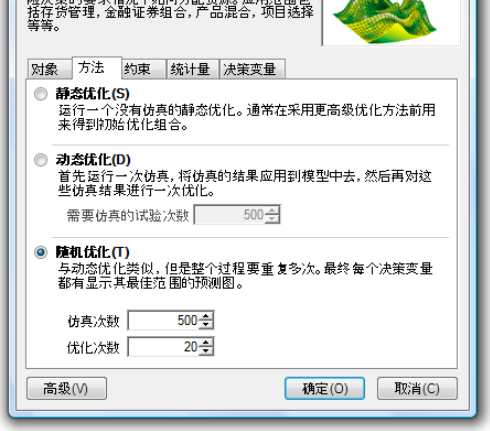
的第四矩。正的峰度说明分布相当的突兀。分布的中心部分较尖，尾部较平坦。说明极

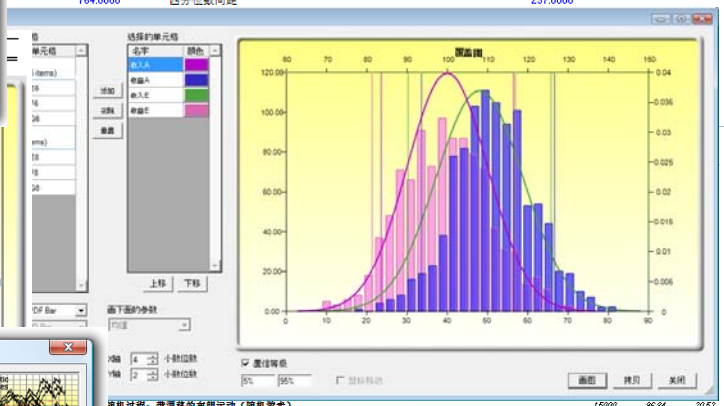
变量 X1

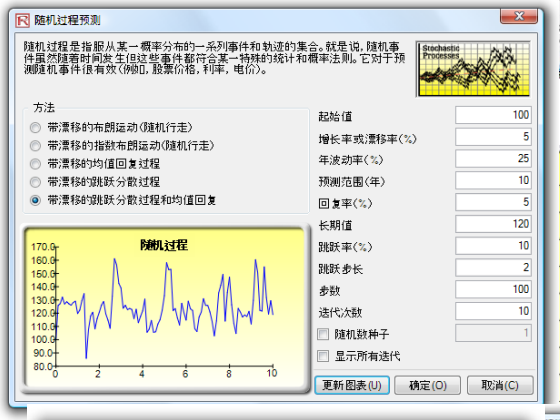
50.0000	标准差（样	
331.9200	标准差（总	
281.3247	标准差的下	
325.1739	标准差的上置信区间	207.7947
24.4537	方差（样本）	29899.2588
283.0125	方差（总体）	29301.2736
380.8275	变异系数	0.5210
307.0000	第一四分位数（Q1）	204.0000
47.0000	第三四分位数（Q3）	441.0000
764.0000	四分位数间距	237.0000

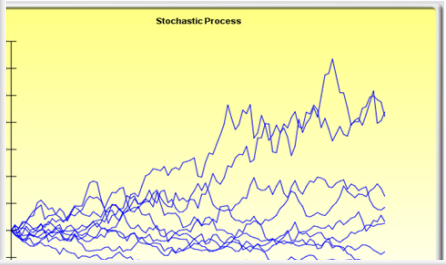


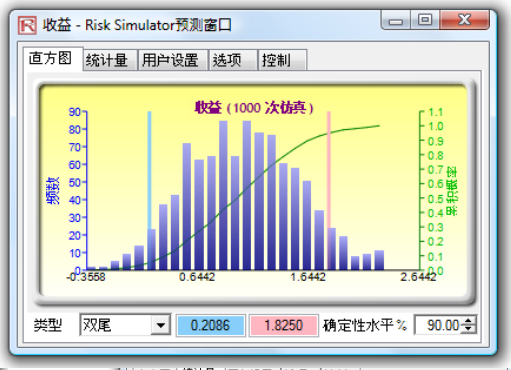


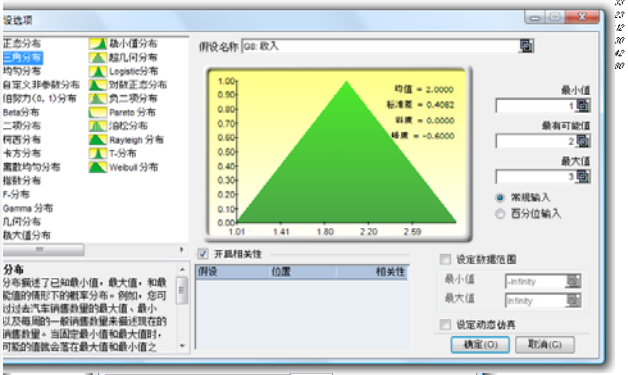


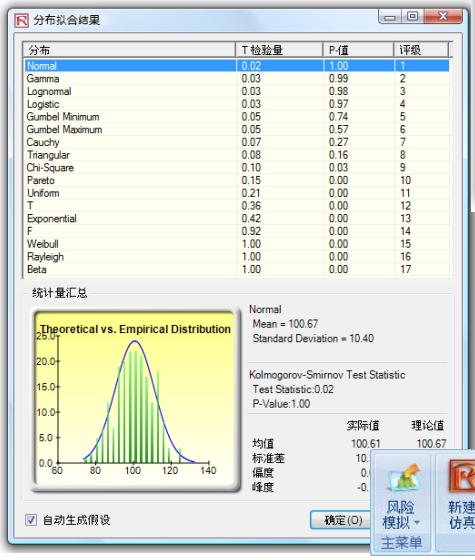


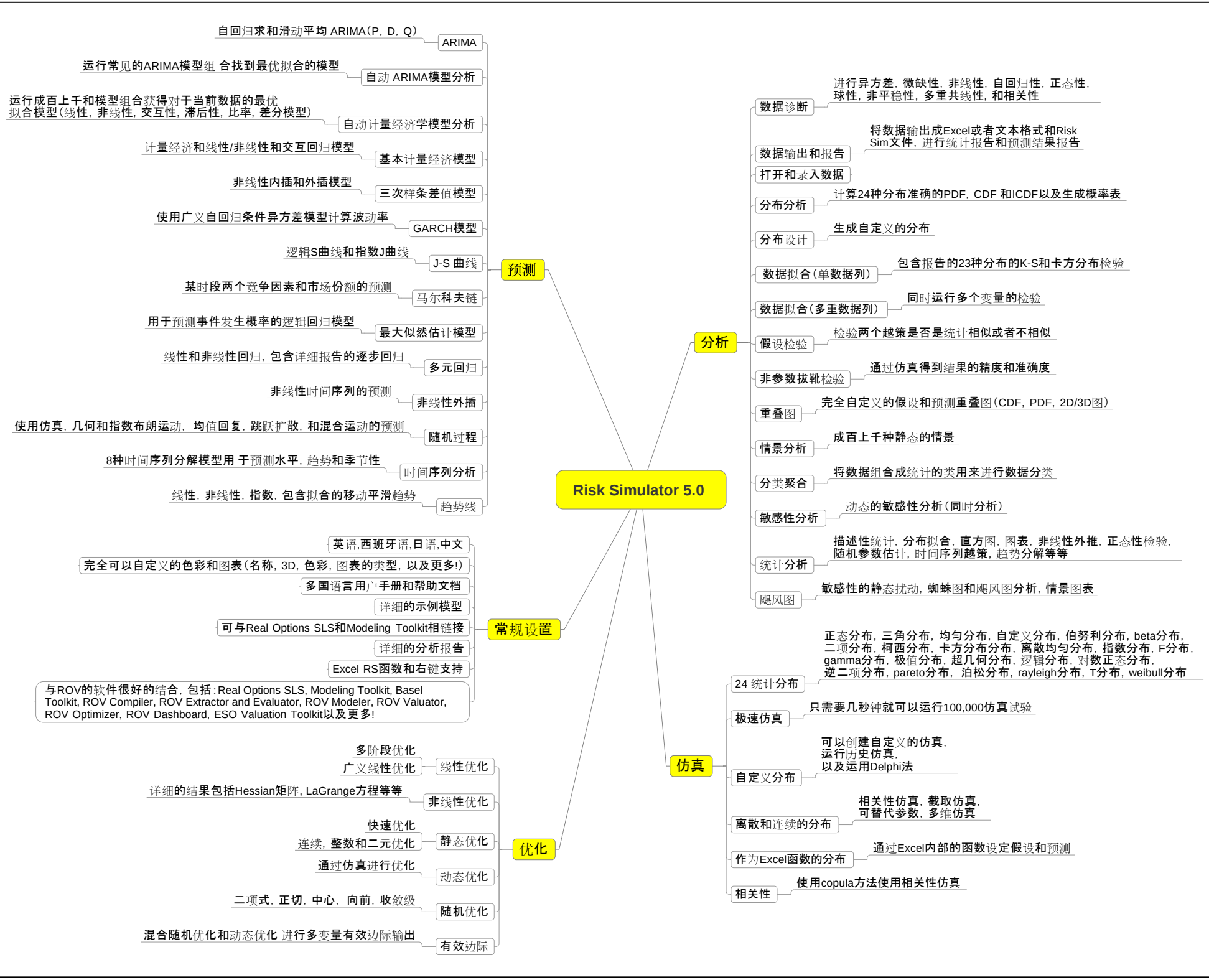











Risk Simulator 5.0
预测
ARIMA
自回归求和滑动平均 ARIMA(P，D，Q)
自动 ARIMA模型分析
运行常见的ARIMA模型组 合找到最优拟合的模型
自动计量经济学模型分析
运行成百上千和模型组合获得对于当前数据的最优拟合模型(线性，非线性，交互性，滞后性，比率，差分模型)
基本计量经济模型
计量经济和线性/非线性和交互回归模型
三次样条差值模型
非线性内插和外插模型
GARCH模型
使用广义自回归条件异方差模型计算波动率
J-S 曲线
逻辑S曲线和指数J曲线
马尔科夫链
某时段两个竞争因素和市场份额的预测
最大似然估计模型
用于预测事件发生概率的逻辑回归模型
多元回归
线性和非线性回归，包含详细报告的逐步回归
非线性外插
非线性时间序列的预测
随机过程
使用仿真，几何和指数布朗运动， 均值回复，跳跃扩散，和混合运动的预测
时间序列分析
8种时间序列分解模型用 于预测水平，趋势和季节性
趋势线
线性，非线性，指数，包含拟合的移动平滑趋势
常规设置
英语,西班牙语,日语,中文
完全可以自定义的色彩和图表(名称，3D，色彩，图表的类型，以及更多!)
多国语言用户手册和帮助文档
详细的示例模型
可与Real Options SLS和Modeling Toolkit相链接
详细的分析报告
Excel RS函数和右键支持
与ROV的软件很好的结合，包括：Real Options SLS, Modeling Toolkit, Basel Toolkit, ROV Compiler, ROV Extractor and Evaluator, ROV Modeler, ROV Valuator, ROV Optimizer, ROV Dashboard, ESO Valuation Toolkit以及更多!
优化
线性优化
多阶段优化
广义线性优化
非线性优化
详细的结果包括Hessian矩阵, LaGrange方程等等
静态优化
快速优化
连续，整数和二元优化
动态优化
通过仿真进行优化
随机优化
二项式，正切，中心，向前，收敛级
有效边际
混合随机优化和动态优化 进行多变量有效边际输出
分析
数据诊断
进行异方差，微缺性，非线性，自回归性，正态性，球性，非平稳性，多重共线性，和相关性
数据输出和报告
将数据输出成Excel或者文本格式和Risk Sim文件，进行统计报告和预测结果报告
打开和录入数据
分布分析
计算24种分布准确的PDF，CDF 和ICDF以及生成概率表
分布设计
生成自定义的分布
数据拟合(单数据列)
包含报告的23种分布的K-S和卡方分布检验
数据拟合(多重数据列)
同时运行多个变量的检验
假设检验
检验两个越策是否是统计相似或者不相似
非参数拔靴检验
通过仿真得到结果的精度和准确度
重叠图
完全自定义的假设和预测重叠图(CDF，PDF，2D/3D图)
情景分析
成百上千种静态的情景
分类聚合
将数据组合成统计的类用来进行数据分类
敏感性分析
动态的敏感性分析(同时分析)
统计分析
描述性统计，分布拟合，直方图，图表，非线性外推，正态性检验，随机参数估计，时间序列越策，趋势分解等等
飓风图
敏感性的静态扰动，蜘蛛图和飓风图分析，情景图表
仿真
24 统计分布
正态分布，三角分布，均匀分布，自定义分布，伯努利分布，beta分布，二项分布，柯西分布，卡方分布分布，离散均匀分布，指数分布，F分布，gamma分布，极值分布，超几何分布，逻辑分布，对数正态分布，逆二项分布，pareto分布， 泊松分布，rayleigh分布，T分布，weibull分布
极速仿真
只需要几秒钟就可以运行100,000仿真试验
自定义分布
可以创建自定义的仿真，运行历史仿真，以及运用Delphi法
离散和连续的分布
相关性仿真，截取仿真，可替代参数，多维仿真
作为Excel函数的分布
通过Excel内部的函数设定假设和预测
相关性
使用copula方法使用相关性仿真

风险模拟 5.0 有哪些新增功能？

最新版的**风险模拟**和之前的版本相比，新增了很多功能，并且对之前版本软件的很多功能也进行很大了改善，详细介绍如下：

- **第五版新增功能：**
  - **超快仿真：**这个新功能可以让你以超快的速度运行仿真。首先通过分析你的 Excel 模型，然后将此模型汇编成纯数学代码然后以非常快的速度运行仿真。对于某些不能进行汇编的模型将以常规的速度运行仿真（例如，带有 VBA 函数或宏的模型，连接到外部数据或文件的模型，软件不支持的或错误的函数，或带有错误的模型）。
  - **修改了在 Excel2007 中的图标：**对于 Excel 2007 的用户来说，你将看到一个全新的更加直观和易于使用的图标工具栏。有四套图标将保证软件与大部分的屏幕分辨率相匹配（1280 x 760 和以上）。
  - **改善了的预测图：**预测图现在有了以下几项改善：
    - **带截断的统计量：**如果你在预测图中进行数据过滤（在选项标签中设置数据滤波段），统计量标签将基于截断的数据显示更新后的统计量。如果你不截断预测数据，所有数据的统计量将不会发生变化。
    - **图表控制器（3D/斜体/移动，颜色，拟合，概率密度函数/累积分布函数）：**这是在预测图上的一个新标签，在这里你可以修改现有预测图，包括对预测数据运行分布拟合分析，创建 PDF/CDF/ICDF 图，更改图表选项（图表类型，3D 旋转，颜色，缩放，小数位，坐标轴上的最小值和最大值，标题名，和很多其它选项，包括可以保存修改设定和以多种格式打印图表）。
  - **计量经济学自动分析功能：**通过测试线性，非线性，滞后数据，先导数据，相关影响，嵌套和其它模型，这个新的预测工具可以通过使用智能优选法来运行上百甚至上千种模型的组合和排列来找到最拟合数据的模型。这个工具和 ROV Risk Modeler 软件的计量经济学自动分析功能相似，计量经济学自动分析功能可以对一个很大的数据集合运行成千上万，甚至上百万种模型。
  - **计量经济学基本功能：**这个现有的预测工具的功能已经被大大地提升，新的功能包括可以创建新的变量和函数，例如 TIME（一个线形时间序列变量），DIFF(对时间序列数据一阶微分)，RESIDUAL（数据来自你指定的一个预测方程的误差项），RATE（时间序列数据的一阶比率），和 FORECAST（数据来自你指定的一个预测方程的误差项）。
  - **趋势线分析：**这个新的工具可以运行大部分常用的趋势线模型包括线形，非线形，指数，幂函数，移动平均，和多项式模型。运行模型后，可以得到一系列图表和每个模型的最优统计量。
  - **覆盖图：**通过将假设变量和/或预测变量以时间序列或截面数据以覆盖图的方式在图上标定出来，这个新的绘图工具可以用于比较多个假设变量和/或预测变量。这样可以使你快速地观看假设量或预测量之间的相似性和差异性，更容易阅读图表。
  - **分割聚类：**通过应用一些智能算法和优选法，这个工具可以对一个大的数据集合进行隔离，聚类或者分成具有不同统计特性的组。

- **创建预测统计量表格：**这个新工具可以对一些关键的预测统计量（例如，均值，中值，众数，标准差，方差，变异系数，斜度，峰度）和置信区间，还有你选定的输出预测变量的概率创建报告。结果是一个比较图表，这个比较图表上列示了你从多个预测变量中选定的统计量。
- **灵活的授权方式：**获取软件授权的方式有了以下的改善：模块
  - 对于进入控制设置为开启或者没有管理登陆限制的 Vista 用户来说，仍然可以无须投入额外的努力就可以成功地安装软件授权，享受**风险模拟**软件的全部功能。如果需要安装一个你收到的新的授权文件，只需要简单地启动 Excel，点击**风险模拟**，授权，安装授权，浏览你的授权文件，将此授权文件导入即可。这样你就可以永久地激活此软件或享有使用此软件的一段时间。
  - **风险模拟**现在可以让你根据你的风险分析经验对某些功能进行开启或关闭。例如，如果你只对**风险模拟**的预测工具感兴趣，你可以获取一个特别的只激活预测工具的授权码，不激活和使用其它的模块，这样你就可以以更低的成本使用本软件。四个可以开启或者关闭的模块分别是仿真模块，预测模块，优化模块和分析工具模块。另外，每个模块中的特定工具和分析方法也可以被开启或关闭，这种定制的服务仅对超过 10 台电脑的定点授权购买适用。

- **高级预测模型：**把 5.0 版本上新的预测工具和技术包含在内，**风险模拟**软件现在共包含以下的预测方法：
  i. **ARIMA (自回归求和滑动平均模型)**
  ii. **自动 ARIMA**
  iii. **计量经济学自动分析功能**
  iv. **计量经济学基本功能**
  v. **三次样条插值法**
  vi. **GARCH (广义自回归条件异方差)**
  vii. **J-曲线**
  viii. **马尔可夫链**
  ix. **最大似然法**
  x. **非线形外推**
  xi. **回归**
  xii. **S-曲线**
  xiii. **随机过程**
  xiv. **时间序列分析**
  xv. **趋势线**

- **风险模拟 第四版或之前版本软件功能的全面改进：**
  - **Excel RS 函数：**你可以在 Excel 电子表格的任何地方通过点击**插入函数**然后卷动选择以“RS”开始的函数进入**风险模拟** 函数。在这里，你可以设置假设变量和获得预测变量的预测统计量。例如，你可以运行 RSAssumptionNormal 函数来为一个单元格设置正态分布假设，或者运行 RSForecastStatistic 来获取一个预测单元格的统计量。在设置假设预测的时候，你可以设置一个占位符或临时值（这个值在运行仿真之前和运行仿真之

后都不变），假设名（变量名），分布参数（例如，均值，标准差），和其它的选项例如百分位数，相关性，最小和最大边界。对于结果，你还可以使用*RSForecastStatistic(A1, "Percentile99.9")*来获取单元格 A1 的 99.90 百分位数，这个单元格有一个预测参数集。可以使用的函数包括"PercentileXXX"，"CertaintyXXX"，"Mean"，"Median"，StandardDeviation"，"Variance"，"Skewness"，和"Kurtosis"。

- **在 Excel 右点击：**现在你可以在 Excel 里通过右点击鼠标来快速进入**风险模拟**进行操作，例如设置假设变量，设置预测变量，和运行防真。
- **百分位数和条件平均数：**在随机优化中，我们现在可以获得额外的统计量信息，包括百分位数和条件平均数，例如只要某个值大于 A 或者小于 A 就能获得平均值，这在计算条件在险价值（VaR）的时候非常关键。
- **变异系数（CV）：**在预测图的统计量中，绝对离差均值已经更改为变异系数（CV），CV 是标准差用均值来除，有时候可以作为波动性的一个近似替代，在比较不同规模的项目的时候，CV 作为一个相对风险的测量指标非常有用，也作为一个风险-回报比率。
- **情景分析：**这个新工具用于计算你的模型中的不同情景，通过同时更改一个或者两个输入变量，对于输入变量一定范围的变化，可以确定对输出结果的影响。
- **强大的飓风图：**额外的检查清单和选项，还有更加稳定和强大的飓风图分析，可以帮助你在多个工作表中运行飓风图分析。你还可以进行全局设定（改变一个变量，例如测试 10%上升和下降，你可以控制单个引用单元改变还是所有的引用单元同时改变），强调或忽略可能的整数值（有时候在一个模型中整数值作为一个标记，这个选项可以帮助你辨析那些在运行飓风图分析的时候你可能希望忽略的某些引用单元），现在在敏感性分析表格中还包括工作表名，这可以帮助用户更容易识别某些变量，还包括很多其它的改善。
- **有效前沿：**这个优化工具可以对变化的约束条件运行多种优化。你可以在优化选项中通过设置约束对话框来进入并使用这个工具。这个技术还可以同时运行静态，动态和随机优化。
- **重新启用风险模拟：**这个工具可以在菜单***开始 | 所有程序 | Real Options Valuation | 风险模拟***中启动。当 Windows 或者 Excel 暂时禁用本软件的时候（当你运行仿真的时候电源中断，你的电脑中有病毒或者木马程序，或者你错误地删除了关键的文件等等），你可以重新启用**风险模拟**。
- **多阶段优化：**此模块现在配备在多阶段优化应用中，在"高级"选项（当你运行优化的时候会出现这个选项）中还有一个局部和全局最优化测试。当一起使用这两个新特性的时候还有一个高级的特性，可以使用户对优化的运行有更好的控制，和增加准确度和结果之间的依存关系。

- **统计分析工具：**选定你希望进行分析的数据，包括标题，然后启动此工具（位于***风险模拟 | 工具 |统计分析***），你将可以获得以下分析结果：
  - **描述性统计**，包括分布的四矩和其它的置信区间测量。
  - **分布拟合，**测试数据是否可以拟合成某种分布。
  - **假设检验，**检验数据是否与某个特定的值在统计上是否显著相似或显著不同。
  - **非线形外推，**测试一个时间序列数据在本质上是否是非线形的。

- **正态性，**测试数据是否在统计上接近一个正态分布。和假设检验一样，这是一个非常重要的统计属性，因为很多建模技术都需要进行正态性假设。
- **随机参数估算，**确定一个随机游走过程，均值回复过程，或者一个跳跃扩散过程的输入参数，和决定被解释变异是否足够来证实使用随机过程进行预测是合理的。
- **自相关性测试，**可以对数据进行测试来确定是否可以使用这些时间序列数据的历史来预测未来。
- **时间序列预测**，测试时间序列数据基准水平的变动，趋势和季节性的影响。
- **趋势分析，**测试数据是否符合线性时间趋势，如果符合，可预测性的程度是多少

- **高级数据诊断工具：**选择你希望进行分析的数据，包括标头，然后启动此诊断工具（位于***风险模拟 | 工具 | 诊断工具***），你将可以获得以下分析：
  - 异方差性
  - 多重共线性
  - 微数缺测性
  - 非线形
  - 异常数据
  - 自相关性
  - 偏自相关性
  - 分布滞后性
  - 正态性和球性
  - 非平稳性
  - 随机特性
  - 线形和非线形相关
  - 方差膨胀因子
  - 可视图表

  在启动任何类型的预测或者数据分析的时候，这些测试都是很重要的。每个测试包括一个易于理解的详细报告，所以不需要找一位高级计量经济学家或者统计学家对结果进行阐述。
- **最大似然模型：**可以从以下路径（***风险模拟 | 预测 | 最大似然估计***）开启这个功能，这里，最大似然估计的迭代和内部优化过程可用于对二元回应变量进行建模（因变量是一个二元值，取 0 或 1）。这是一个重要具有多种用途的判别分析法（例如，给定一些特性如年龄，吸烟数量，血压来判别病人是否患有癌症；或者给定公司的资产，资产波动率，或者个人的年龄，教育水平，工作年限等来确定信用限额或者个人是否会违约）
- **多语言支持：**软件可支持多种语言，包括英语（美国），中文（简体），西班牙文，和日语，即将发布的版本还包括更多的语言支持。用户使用软件的时候，如果需要切换语言，可以通过简单地点击**风险模拟**和**语言菜单**图标，然后重启 Excel 即可。
- **Microsoft .NET Framework 2.0/3.0：**我们已经完全升级我们的源代码来使我们的软件与 Microsoft .NET Framework 2.0/3.0 完美地结合起来，这将使软件可以更快速地运行并且更好地与较新的电脑兼容。

REAL OPTIONS SUPER LATTICE SOLVER

REAL OPTIONS SLS 5.0

- 美式期权，亚式期权，百慕大期权，用户定制期权，欧式期权
- 放弃期权，障碍期权，选择者期权，收缩期权，扩展期权，等待和延迟期权，同时期权，连续复合期权，阶段发展期权，变化波动率期权，多资产和多阶段期权，所有类型的金融期权，奇异期权，基于表现的期权和雇员股票期权（美国金融会计标准局（FASB）使用这个软件）！
- 超过300个奇异期权和高级期权和期权相关模型（闭式，美式近似，状态定价，债券期权，方差缩减分析模型，二叉网格期权，三叉均值回复期权，四叉跳跃扩散期权，五叉双资产彩虹复合期权，惩罚率，次优执行行为，结构金融产品，非可销售性折扣，基于表现的期权，基于仿真的期权，估值模型，以及更多）！
- 对你自己的定制期权创建一个无穷组合
- 数秒内运行数千次网格步数
- 软件支持语言包括英语，中文，西班牙文，日文和葡萄牙文
- 完全独立的软件并带有Excel插件函数功能（仿真和优化运行结果一致）
- 支持资源：5本辅助参考书，培训DVD，现场培训课程，用户手册，帮助文档，丰富的示例文件库，商业案例样本，以及现场项目咨询顾问
- 可视的等式和方程

Real Options Valuation Inc

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438. www.realoptionsvaluation.com

REAL OPTIONS 超级网格软件（SLS）

REAL OPTIONS 超级网格软件(SLS)发布了！超越了学术和理论领域，这是一款可以立刻开始应用实物期权分析的新软件。REAL OPTIONS SLS是一款完全独立的软件并且支持通过Excel电子表格进入使用，可用来分析和计算实物期权，金融期权，奇异期权和雇员股票期权，并能够将他们整合到一个定制电子表格模型中。最新设计的客户自定义期权模块允许你创建符合你自己需要的期权模型，在模型中客户还可以查看所有的数学公式和函数，因此方法和结果都不再神秘，所有这些都变得更容易理解和解释。

软件功能，算法和模型

- 实物期权例如连续复合期权，阶段发展期权，和多资产期权，各种期权组合（放弃，障碍，选择，收缩，扩展，转换，等待和延迟），以及任何用户定制的实物期权，可以混合和匹配使用期权（互斥和嵌套期权）
- 金融期权包括所有类型的混合多资产和基准期权，认股权证，可转换债券，结构金融产品，可以解决美式期权，欧式期权，百幕大期权和亚式期权，以及你自己定制的期权
- 雇员股票期权例如带有等待期，惩罚率，次优执行行为乘数，基于表现的股票（外部市场和内部市场），以及你自己定制的期权。美国金融会计标准局（U.S. FASB）在2004年创建他们的FAS 123R的时候使用此软件作为基准
- 你可以使用预先确定的或你自己的等式来创建你自己的期权模型，在这里你可在数秒内完成一个1000步二叉网格的计算（如果手动计算，计算机需要树百年才能完成此计算），还有闭式模型作为基准参照模型，这些模型包括Black-Scholes-Merton到其它的高级闭式美式模型
- 软件支持英文，西班牙文，日文，中文和葡萄牙文，并且配有多种语言的详细用户手册。手册内容包括案例研究样本，逐步演示的建模技术和方法，以及80个详细的示例模型
- 运行二叉网格，三叉网格（均值回复期权），四叉网格（跳跃扩散期权），五叉网格（彩虹复合期权），以及超过300个闭式高级期权模型（状态定价模型，分析方法，波动率计算，方差缩减，美式近似模型，通过仿真技术的期权定价，所有类型的债券期权和可转换认股权证，波动率变化的期权，其它期权相关的模型，以及更多！）
- SLS在Excel里功能一样强大，你可以在你的期权模型运行蒙特卡罗风险仿真，与其它现存Excel模型进行链接，以及应用其它的高级分析方法例如Risk Simulator的蒙特卡罗仿真，优化，随机过程和VBA宏
- 所产生网格的等式和方程在Excel中是完全可见的，在Excel里带有链接和方程的模型也是完全可见的，在期权建模中这作为一个学习工具真的太棒了！
- 是一个可进行完全客户化定制的建模工具，并可输入你自己的期权等式。
- 在现存的静态NPV分析方法的基础上更进一步！添加包括动态仿真，实物期权分析，和优化这些金融学的方法和技术，你可以使用一个更科学的框架来识别，评估，选择和对项目进行排序，通过这样来获得对战略价值和管理灵活性更多的洞察力，帮助制定更好的决策。
- 你可以正确地评估一个项目战略上的内在价值和和排除低估某个项目战略价值的可能性，你可以识别，框架，和评估未来战略机会，以及随着时间将这些机会整合到新的决策之中。这和净现值（NPV）方法不同，净现值使用单个决策路径，但实物期权方法在项目开始的时候通过分析多个战略决策路径来制定决策。
- SLS软件是一个用户友好功能强大的分析工具，为决策的制定提供一个可靠的，可重复的和一致的过程，能够解决其它软件所不能解决的问题。
- 由软件开发者所写的五本关于风险分析，实物期权和期权定价的书籍；一套实物期权和风险分析（仿真，预测，优化，实物期权，以及应用统计学）的培训DVD。

培训和咨询

RISK SIMULATOR软件这些高级分析工具使用起来非常简单，但如果使用不当，可能会使分析者陷入困境之中，对理论的理解和实践的经验非常重要，因此培训非常关键。

我们的**风险分析**（***Risk Analysis***）课程是一个为期两天主要针对软件操作和应用的培训课程。主题包括风险和不确定性基础，蒙特卡罗仿真应用（缺陷和仿真应用中的问题和解决方法），和在预测及优化应用中的详细方法。

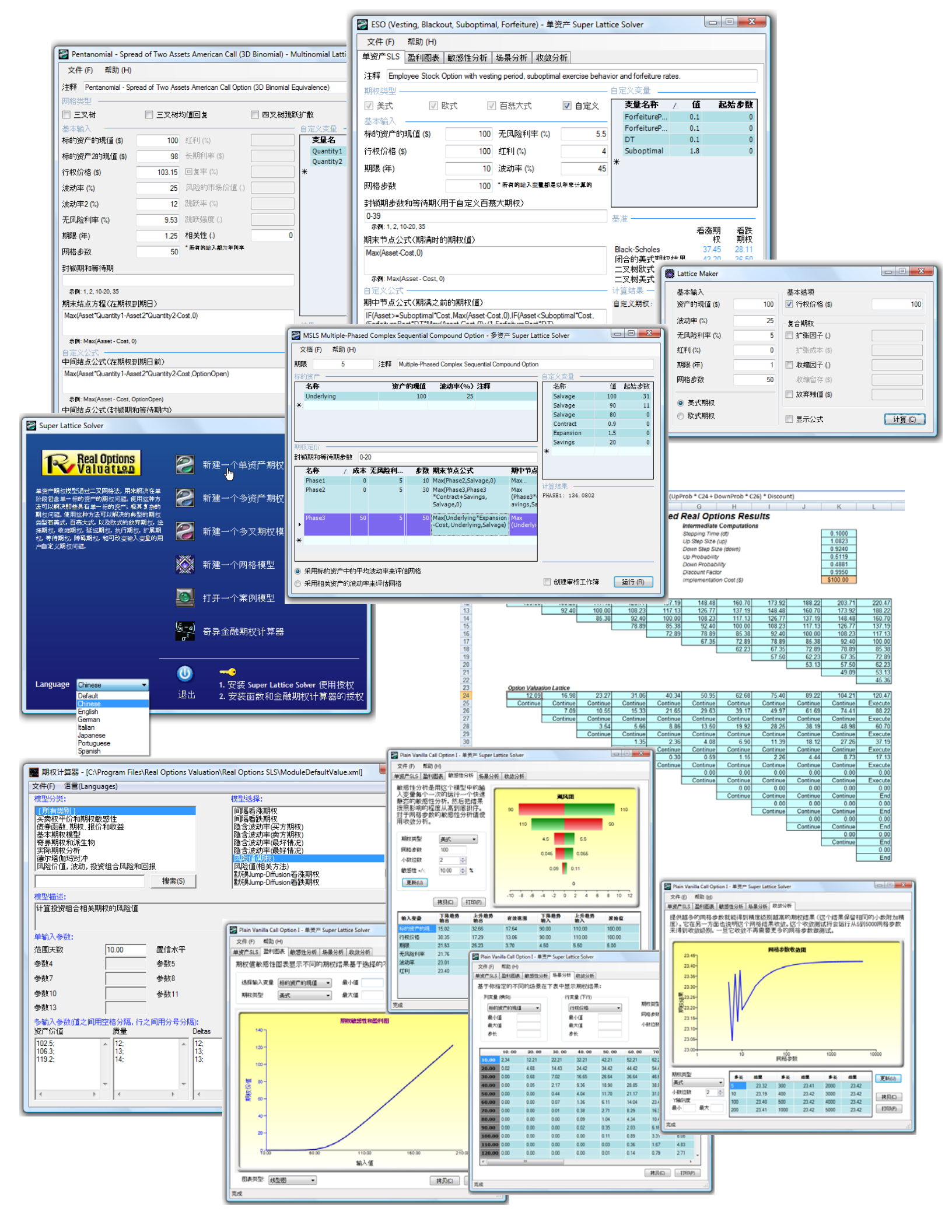
我们还有**针对分析员的实物期权分析**（***Real Options for Analysts***）课程，这非常适用于希望尽快开始将战略实物期权分析应用到工作中但缺少实物期权和建模经验的分析员。这个为期两天的课程内容包括如何建立实物期权分析模型，实物期权应用，和仿真应用，闭式方程或使用Real Options SLS软件的二叉和多叉网格模型解决实物期权等问题。

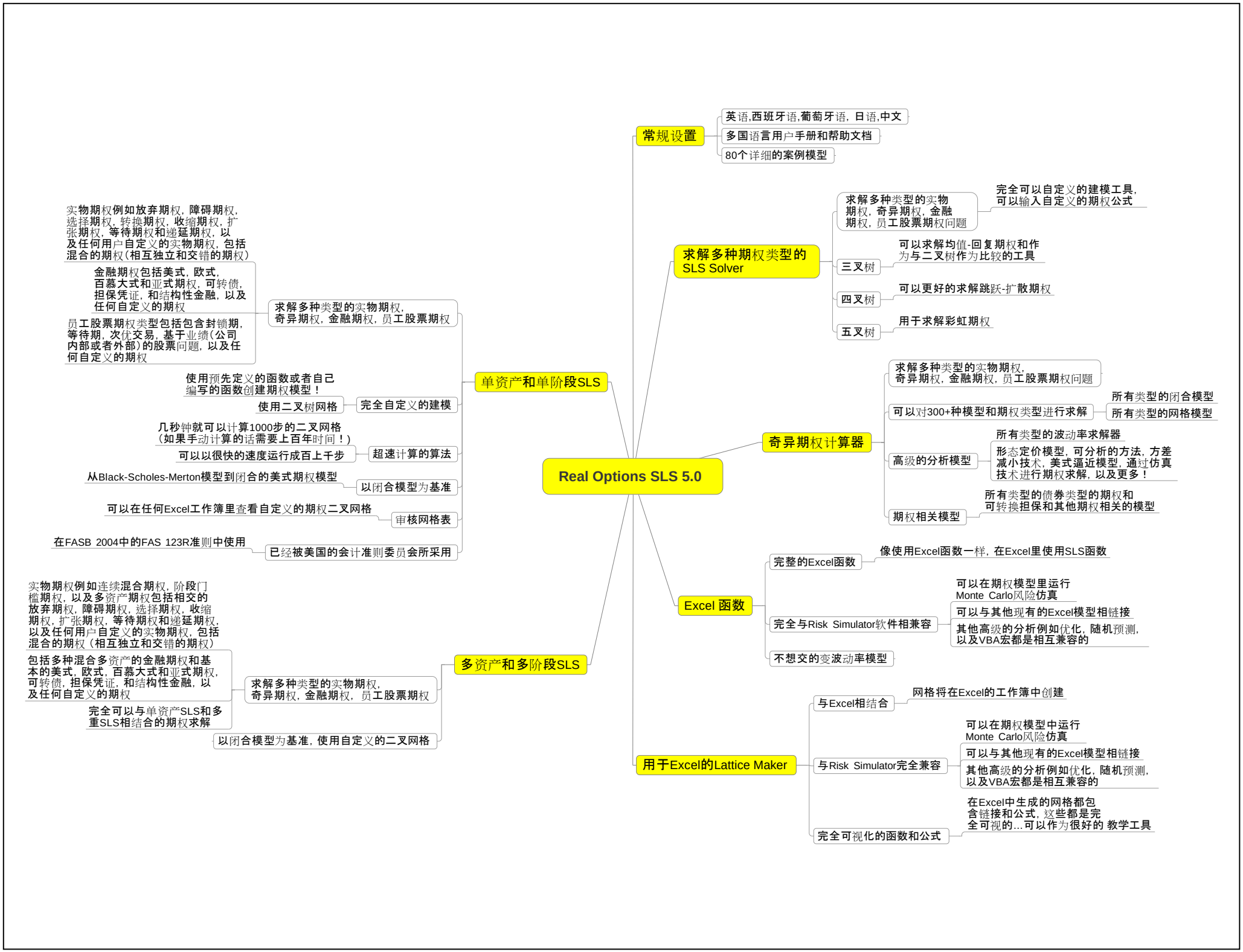
注册风险管理师（***CRM，Certified in Risk Management***）是一个为期四天注重实践操作的培训课程。内容包括我们的**风险分析**课程和**针对分析员的实物期权分析**课程，在通过相关学习之后还可以获得由**国际专业教育与研究协会**（**IIPER**，AACSB成员，同时可以获得**美国项目管理协会PMI**认可的300 PDU）颁发的CRM认证。

我们还提供其它的定制课程，包括关于决策分析，价值评估和风险分析等公司内部培训课程（完全根据客户的需要，基于客户的商业案例和模型定制开发的关于仿真，预测，优化和实物期权培训课程）。此外，我们还提供咨询服务，包括风险分析问题框架，仿真，预测，实物期权，风险分析，建模，决策分析，软件OEM和客户定制软件。

专家

乔纳森·文博士（Dr. Johnathan Mun）是RISK SIMULATOR软件的开发者，他同时教授**风险分析**（**Risk Analysis**）课程，**针对分析员的实物期权分析**（**Real Options for Analysts**）课程，**针对管理者的实物期权分析**（**Real Options for Managers**）课程，**注册风险管理师（CRM）**课程，和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型：从巴塞尔新资本协议到华尔街的800个函数和300个模型》（Wiley 2008）；《银行家信用风险手册：实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和CEO，负责分析软件的开发，咨询和培训服务。他曾是Decisioneering, Inc.（Oracle）公司分析服务部门副总裁和毕马威管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司（Viking, Inc）担任金融计划和分析部门主管。文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School）全职教授，以及法兰克福应用科学大学（University of Applied Sciences，Frankfurt）和瑞士管理学院（Swiss School of Management，Zurich）教授，同时还在世界各地的一些大学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。


Pentanomial - Spread of Two Assets American Call (3D Binomial) - Multinomial Latti
ESO (Vesting, Blackout, Suboptimal, Forfeiture) - 单资产 Super Lattice Solver
Lattice Maker
MSLS Multiple-Phased Complex Sequential Compound Option - 多资产 Super Lattice Solver
Super Lattice Solver
Real Options Valuation
新建一个单资产期权
新建一个多资产期权
新建一个多叉期权模
新建一个网格模型
打开一个案例模型
奇异金融期权计算器
退出
Language
Chinese
Default
English
German
Italian
Japanese
Portuguese
Spanish
Real Options Results
Option Valuation Lattice
期权计算器 - [C:\Program Files\Real Options Valuation\Real Options SLS\ModuleDefaultValue.xml]
Plain Vanilla Call Option I - 单资产 Super Lattice Solver


Real Options SLS 5.0
常规设置
英语,西班牙语,葡萄牙语，日语,中文
多国语言用户手册和帮助文档
80个详细的案例模型
求解多种期权类型的 SLS Solver
求解多种类型的实物期权，奇异期权，金融期权，员工股票期权问题
完全可以自定义的建模工具，可以输入自定义的期权公式
三叉树
可以求解均值-回复期权和作为与二叉树作为比较的工具
四叉树
可以更好的求解跳跃-扩散期权
五叉树
用于求解彩虹期权
奇异期权计算器
求解多种类型的实物期权，奇异期权，金融期权，员工股票期权问题
可以对300+种模型和期权类型进行求解
所有类型的闭合模型
所有类型的网格模型
高级的分析模型
所有类型的波动率求解器
形态定价模型，可分析的方法，方差减小技术，美式逼近模型，通过仿真技术进行期权求解，以及更多！
期权相关模型
所有类型的债券类型的期权和可转换担保和其他期权相关的模型
Excel 函数
完整的Excel函数
像使用Excel函数一样，在Excel里使用SLS函数
完全与Risk Simulator软件相兼容
可以在期权模型里运行 Monte Carlo风险仿真
可以与其他现有的Excel模型相链接
其他高级的分析例如优化，随机预测，以及VBA宏都是相互兼容的
不想交的变波动率模型
用于Excel的Lattice Maker
与Excel相结合
网格将在Excel的工作簿中创建
与Risk Simulator完全兼容
可以在期权模型中运行 Monte Carlo风险仿真
可以与其他现有的Excel模型相链接
其他高级的分析例如优化，随机预测，以及VBA宏都是相互兼容的
完全可视化的函数和公式
在Excel中生成的网格都包含链接和公式，这些都是完全可视的...可以作为很好的 教学工具
多资产和多阶段SLS
实物期权例如连续混合期权，阶段门槛期权，以及多资产期权包括相交的放弃期权，障碍期权，选择期权，收缩期权，扩张期权，等待期权和递延期权，以及任何用户自定义的实物期权，包括混合的期权（相互独立和交错的期权）
求解多种类型的实物期权，奇异期权，金融期权，员工股票期权
包括多种混合多资产的金融期权和基本的美式，欧式，百慕大式和亚式期权，可转债，担保凭证，和结构性金融，以及任何自定义的期权
完全可以与单资产SLS和多重SLS相结合的期权求解
以闭合模型为基准，使用自定义的二叉网格
单资产和单阶段SLS
实物期权例如放弃期权，障碍期权，选择期权，转换期权，收缩期权，扩张期权，等待期权和递延期权，以及任何用户自定义的实物期权，包括混合的期权（相互独立和交错的期权）
求解多种类型的实物期权，奇异期权，金融期权，员工股票期权
金融期权包括美式，欧式，百慕大式和亚式期权，可转债，担保凭证，和结构性金融，以及任何自定义的期权
员工股票期权类型包括包含封锁期，等待期，次优交易，基于业绩（公司内部或者外部）的股票问题，以及任何自定义的期权
完全自定义的建模
使用预先定义的函数或者自己编写的函数创建期权模型！
使用二叉树网格
超速计算的算法
几秒钟就可以计算1000步的二叉网格（如果手动计算的话需要上百年时间！）
可以以很快的速度运行成百上千步
以闭合模型为基准
从Black-Scholes-Merton模型到闭合的美式期权模型
审核网格表
可以在任何Excel工作簿里查看自定义的期权二叉网格
已经被美国的会计准则委员会所采用
在FASB 2004中的FAS 123R准则中使用

ROV MODELING TOOLKIT 1.2

- 一个可以通过Excel 进入使用包含300个模型模板和超过800个模型的知识库
- 与Risk Simulator软件和Real Options SLS软件完美兼容使用
- 全面覆盖的内容包括以下领域和应用
  - 数学和统计学分析
  - 银行业模型
  - 信用分析
  - 债务分析
  - 决策分析
  - 奇异期权
  - 预测
  - 行业应用
  - 优化
  - 期权分析
  - 违约率
  - 项目管理
  - Real Options SLS
  - 风险分析
  - 风险对冲
  - 敏感性分析
  - 仿真
  - 六西格玛
  - 价值评估
  - 在险价值
  - 波动率
  - 收益率曲线

Real Options Valuation

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV MODELING TOOLKIT

包含超过800个分析模型，函数和应用工具，以及大约300个分析模型（Excel/SLS模板和电子表格模板），覆盖的领域和应用包括风险分析，仿真，预测，Basel(II)（巴塞尔新资本协议）风险分析，信用和违约风险，统计模型，以及更多！这个工具包是使用C++语言编写的一系列复杂的数学应用模型，并可以与Excel电子表格连接。在这个工具包中，一共有超过1100个模型和函数，以及Excel电子表格和SLS模型模板，涉及的领域和应用包括：

数学和统计学分析: Central Limit Theorem, Central Limit Theorem (Lottery Analysis), Flaw of Averages, Mathematical Integration, Parametric and Nonparametric Hypothesis Tests Dataset, Projectile Motion, Regression Diagnostics, Ships in the Night, Statistical Analysis, Weighting of Ratios

银行业模型: Audit of Construction Lending, Banker's Construction Budget, Classified Breakeven Loan Inventory, Classified Loan Borrowing Base, Classified Loan Cash Budget and Overdraft Facilities, Federal Reserve Camels Rating System, Firm in Financial Distress, Project Finance Risk Rating Model, Queuing Models, Reconciling Enron's Cash Flow, Risk Rating Model, Sample Cash Flows, Sensitivity Projections, Stochastic Loan Pricing Model, Valuation and Appraisal

信用分析: Credit Default Swaps and Credit Spread Options, Credit Default Swaps (with Counterparty Defaults and Correlations), Credit Premium, Credit Risk and Effects on Prices, External Debt Rating and Spreads, Internal Credit Risk Rating Model, Profit Cost Analysis of New Credit, Debt Analysis, Asset Equity Parity Model, Cox Model on Price and Yield of Risky Debt with Mean Reverting Rates, Debt Repayment and Amortization, Debt Sensitivity Models, Merton Price of Risky Debt with Stochastic Asset and Interest, Vasicek Debt Option Valuation, Vasicek Price and Yield of Risky Debt

决策分析: Decision Tree Basics, Decision Tree with EVPI, Minimax and Bayes Theorem, Economic Order Quantity and Inventory Reorder Point, Economic Order Quantity and Optimal Manufacturing, Expected Utility Analysis, Inventory Control, Queuing Models

奇异期权: American, Bermudan and European Options, Asian Arithmetic, Asian Geometric, Asset or Nothing, Barrier Options, Binary Digital Options, Cash or Nothing, Commodity Options, Complex Chooser, Credit Spread Options, Currency Options, Double Barriers, Exchange Assets, Extreme Spread, Foreign Equity Linked Forex, Foreign Equity Domestic Currency, Foreign Equity Fixed Forex, Foreign Takeover Options, Forward Start, Futures and Forward Options, Gap Options, Graduated Barriers, Index Options, Inverse Gamma Out-of-the-money Options, Jump Diffusion, Leptokurtic and Skewed Options, Lookback Fixed Strike Partial Time, Lookback Fixed Strike, Lookback Floating Strike Partial Time, Lookback Floating Strike, Min and Max of Two Assets, Option Collar, Options on Options, Perpetual Options, Simple Chooser, Spread on Futures, Supershares, Time Switch, Trading Day Corrections, Two Assets Barrier, Two Assets Cash, Two Assets Correlated, Uneven Dividends, Writer Extendible

预测: Brownian Motion Stochastic Process, Data Diagnostics, Econometric, Correlations and Multiple Regression Modeling, Exponential J-Growth Curves, Forecasting Manual Computations, Jump-Diffusion Stochastic Process, Linear Interpolation, Logistic S-Growth Curves, Markov Chains and Market Share, Mean-Reverting Stochastic Process, Multiple Regression, Nonlinear Extrapolation, Stochastic Processes and Yield Curves, Stock Distribution at Horizon, Time-Series Analysis, Time-Series ARIMA

行业应用: Asset Liability Management ALM, Biotech—Manufacturing Strategy, Biotech-In-licensing and Deal Structuring, Biotech—Investment Valuation, Electric Utility—Efficient Frontier Generation, Electric Utility—Electricity Contract Risk, Information Technology—Forecasting Use, Information Technology—Decision Analysis, Pensions—Closed Group Portfolio Matching, Pensions—Accounting Modeling and Optimization, Real Estate—Commercial ROI

优化: Capital Investments (Part A), Capital Investments (Part B), Continuous Portfolio Allocation, Discrete Project Selection, Inventory Optimization, Investment Portfolio Allocation, Military Portfolio and Efficient Frontier, Optimal Pricing with Elasticity, Optimization of a Harvest Model, Optimizing Ordinary Least Squares, Stochastic Portfolio Allocation

期权分析: Binary Digital Instruments, Inverse Floater Bond Lattice Maker, Options Adjusted Spreads on Debt, Options on Debt, Options Trading Strategies

违约率: Empirical (Individuals), External Options Model (Public Company), Merton Internal Model (Private Company), Merton Market Options Model (Industry Comparable), Yields and Spreads (Market Comparable)

项目管理: Cost Estimation Model, Critical Path Analysis (CPM PERT GANTT), Project Timing

Real Options SLS: Employee Stock Options—Simple American Call, Employee Stock Options—Simple Bermudan Call with Vesting, Employee Stock Options—Simple European Call, Employee Stock Options—Suboptimal Exercise, Employee Stock Options—Vesting and Suboptimal Exercise, Employee Stock Options—Vesting, Blackout, Suboptimal, Forfeiture

奇异期权: American Call Option with Dividends, Exotic Options—Accruals on Basket of Assets, Exotic Options—American Call Option on Foreign Exchange, Exotic Options—American Call Option on Index Futures, Exotic Options—Barrier Option—Down and In Lower Barrier, Exotic Options—Barrier Option—Down and Out Lower Barrier, Exotic Options—Barrier Option—Up and In Upper Barrier Call, Exotic Options—Barrier Option—Up and In, Down and In Double Barrier Call, Exotic Options—Barrier Option—Up and Out Upper Barrier Call, Exotic Options—Barrier Option—Up and Out, Down and Out Double Barrier Call, Exotic Options—Basic American, European, versus Bermudan Call Options, Exotic Options—Chooser Option, Exotic Options—Equity Linked Notes, Exotic Options—European Call Option with Dividends, Exotic Options—Range Accruals

期权分析: Plain Vanilla Call Option I, Options Analysis—Plain Vanilla Call Option II, Options Analysis—Plain Vanilla Call Option III, Options Analysis—Plain Vanilla Call Option IV, Options Analysis—Plain Vanilla Put Option

实物期权: Abandonment American Option, Real Options—Abandonment Bermudan Option, Real Options—Abandonment Customized Option, Real Options—Abandonment European Option, Real Options—Contraction American and European Option, Real Options—Contraction Bermudan Option, Real Options—Contraction Customized Option, Real Options—Dual-Asset Rainbow Option Pentanomial Lattice, Real Options—Excel-based Options Models, Real Options—Exotic Complex Floating American Chooser, Real Options—Exotic Complex Floating European Chooser, Real Options—Expand Contract Abandon American and European Option, Real Options—Expand Contract Abandon Bermudan Option, Real Options—Expand Contract Abandon Customized Option I, Real Options—Expand Contract Abandon Customized Option II, Real Options—Expansion American and European Option, Real Options—Expansion Bermudan Option, Real Options—Expansion Customized Option, Real Options—Jump Diffusion Calls and Puts using Quadranomial Lattices, Real Options—Mean Reverting Calls and Puts using Trinomial Lattices, Real Options—Multiple Asset Competing Options (3D Binomial), Real Options—Multiple Phased Complex Sequential Compound Option, Real Options—Multiple Phased Sequential Compound Option, Real Options—Multiple Phased Simultaneous Compound Option, Real Options—Simple Calls and Puts using Trinomial Lattices, Real Options—Simple Two Phased Sequential Compound Option, Real Options—Simple Two Phased Simultaneous Compound Option, Real Options—Strategic Cases—High—Tech Manufacturing Strategy A, Real Options—Strategic Cases—High-Tech Manufacturing Strategy B, Real Options—Strategic Cases—High-Tech Manufacturing Strategy C, Real Options—Strategic Cases—Oil and Gas—Strategy A, Real Options—Strategic Cases—Oil and Gas—Strategy B, Real Options—Strategic Cases—R&D Stage-Gate Process A, Real Options—Strategic Cases—R&D Stage-Gate Process B, Real Options—Strategic Cases—Switching Option's Strategy A, Real Options—Strategic Cases—Switching Option's Strategy B

三叉网格: American Call Option, Trinomial Lattices—American Put Option, Trinomial Lattices—European Call Option, Trinomial Lattices—European Put Option, Trinomial Lattices—Mean Reverting American Call Option, Trinomial Lattices—Mean Reverting American Put Option, Trinomial Lattices—Mean Reverting European Call Option, Trinomial Lattices—Mean Reverting European Put Option, Trinomial Lattices—Mean Reverting American Abandonment Option, Trinomial Lattices—Mean Reverting American Contraction Option, Trinomial Lattices—Mean Reverting American Expansion Option, Trinomial Lattices—Mean Reverting American Abandonment, Contraction, Expansion, Trinomial Lattices—Mean Reverting Bermudan Abandonment, Contraction, Expansion, Trinomial Lattices—Mean Reverting Abandonment, Contraction, Expansion, Trinomial Lattices—Mean Reverting European Abandonment, Contraction, Expansion

四叉网格: Jump Diffusion American Call Option, Quadranomial Lattices—Jump Diffusion American Put Option, Quadranomial Lattices—Jump Diffusion European Call Option, Quadranomial Lattices—Jump Diffusion European Put Option

五叉网格: American Rainbow Call Option, Pentanomial Lattices—American Rainbow Put Option, Pentanomial Lattices—Dual Reverse Strike American Call (3D Binomial), Pentanomial Lattices—Dual Reverse Strike American Put (3D Binomial), Pentanomial Lattices—Dual Strike American Call (3D Binomial), Pentanomial Lattices—Dual Strike American Put (3D Binomial), Pentanomial Lattices—European Rainbow Call Option, Pentanomial Lattices—European Rainbow Put Option, Pentanomial Lattices—Exchange of Two Assets American Put (3D Binomial), Pentanomial Lattices—Maximum of Two Assets American Call (3D Binomial), Pentanomial Lattices—Maximum of Two Assets American Put (3D Binomial), Pentanomial Lattices—Minimum of Two Assets American Call (3D Binomial), Pentanomial Lattices—Minimum of Two Assets American Put (3D Binomial), Pentanomial Lattices—Portfolio American Call (3D Binomial), Pentanomial Lattices—Portfolio American Put (3D Binomial), Pentanomial Lattices—Spread of Two Assets American Call (3D Binomial), Pentanomial Lattices—Spread of Two Assets American Put (3D Binomial)

风险分析: Integrated Risk Analysis, Interest Rate Risk, Portfolio Risk and Return Profile

风险对冲: Delta Gamma Hedge, Delta Hedge, Effects of Fixed versus Floating Rates, Foreign Exchange Cash Flow Model, Foreign Exchange Exposure Hedging

敏感性分析: Greeks, Tornado and Sensitivity Charts Linear, Tornado and Sensitivity Nonlinear

仿真: Basic Simulation Model, Best Surgical Team, Correlated Simulation, Correlation Effects Model, Data Fitting, DCF, ROI and Volatility, Debt Repayment and Amortization, Demand Curve and Elasticity Estimation, Infectious Diseases, Recruitment Budget (Negative Binomial and Multidimensional Simulation), Retirement Funding with VBA Macros, Roulette Wheel, Time Value of Money

六西格玛: Confidence Intervals with Hypothesis Testing, Control Charts (c, n, p, u, X, XmR, R), Delta Precision, Design of Experiments and Combinatorics, Hypothesis Testing and Bootstrap Simulation, Sample Size Correlation, Sample Size DPU, Sample Size Mean, Sample Size Proportion, Sample Size Sigma, Statistical Analysis (CDF, PDF, ICDF) with Hypothesis Testing, Statistical Capability Measures, Unit Capability Measures

价值评估: APT, BETA and CAPM, Buy versus Lease, Caps and Floors, Convertible Bonds, Financial Ratios Analysis, Financial Statements Analysis, Valuation Model, Valuation—Warrant—Combined Value, Valuation—Warrant—Put Only, Valuation—Warrant—Warrant Only

在险价值: Optimized and Simulated Portfolio VaR, Options Delta Portfolio, Portfolio Operational and Capital Adequacy, Right Tail Capital Requirements, Static Covariance Method

波动率: EWMA Volatility Models, GARCH Volatility Models, Implied Volatility, Log Asset Returns Approach, Log Cash Flow Returns Approach Probability to Volatility

收益率曲线: CIR Model, Curve Interpolation BIM, Curve Interpolation NS, Forward Rates from Spot Rates, Spline Interpolation and Extrapolation.xls, Term Structure of Volatility, US Treasury Risk Free Rate, Vasicek Model

Employee Stock Options Valuation Toolkit

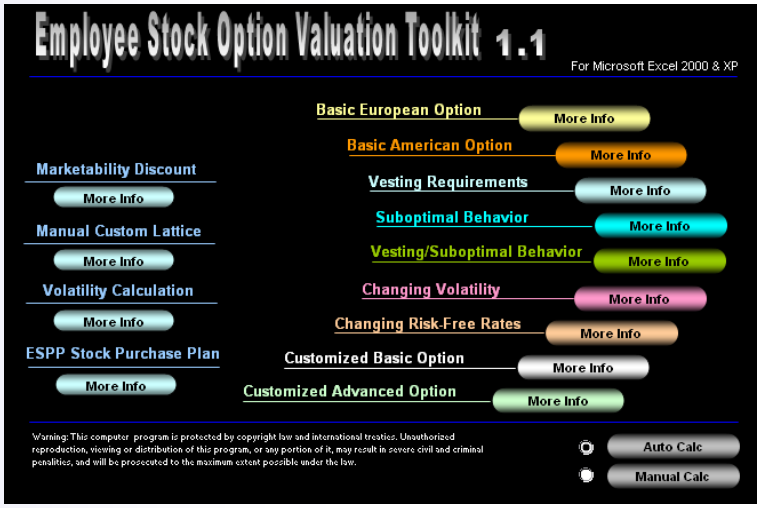
减少数百万美元的雇员股票期权(ESO)费用 通过应用一个基于FAS 123定制二叉网格模型对雇员股票期权（ESO）进行计算，并将之与应用简单的斯克尔斯期权（Black-Scholes）模型计算的结果进行比较，可以为公司减少数百万美元的雇员股权（ESO）费用。软件开发者Dr. Johnathan Mun是美国会计标准局（FASB）的高级顾问和金融分析领域的教授和专家。FASB在FAS 123准则中应用此软件来创建评估模型基准。我们来看看如何通过考虑雇员次优执行行为，罚没率，禁止期，等待期，可销售折扣率，随时间变化的输入量（波动率，红利率，无风险利率，罚没率，和次优执行行为乘数）更加精确地反映现实，减少费用，并且符合FAS 123的要求，通过审计要求。我们看看如何应用ESO评估软件正确地完成这些！

软件功能和应用介绍

软件由Dr. Johnathan Mun开发，他是FASB准则FAS 123的顾问。
使用FASB使用的软件。FASB在2004 FAS 123准则中使用此软件来创建评估基准。
软件使用闭式模型和各种不同的二叉网格和三叉网格模型。
软件模型的理论和应用在作者的书籍和文章中进行了详尽的介绍和解释，你使用出版的书籍和文章来成功地回答审计的问题。
当你创建你自己的期权定价模型时，可以在Excel中看到所有的方程。
成本比昂贵的顾问大大降低，你还可以应用这个软件来检验他们的工作。
可以将应用简单的Black-Scholes模型与更加复杂的二叉网格模型（FASB首推的方法）的结果进行比较。
咨询项目由乔纳森. 文博士亲自挂帅。他是金融教授、咨询师，同时他的书也广受好评。

可解决的雇员股票期权类型包括

禁止期
变化的罚没率
变化的无风险利率
变化的波动率
罚没率（等待期之前和之后）
设置障碍的股票价格
次优执行行为乘数
等待期
所有其它的奇异变量



这些算法可以应用来计算实物期权

美国式闭式模型
二叉和三叉网格模型
欧式斯克尔斯（Black-Scholes）期权模型
创建你定制的期权

咨询、培训和建模

高级分析工具如ESO Valuation Toolkit是较易使用的，但如果使用不当，可能会使分析员陷入麻烦。在这里理论结合实践经验是至关重要的，因此相关的咨询与培训是必须的。在咨询服务中，我们为顾客提供解释模型输入、模型计算与技术以及基于Excel的模型与软件的结论备忘录，使我们的顾客在未来可以重复使用以重新进行这个分析或者进行情景分析。此外，我们可以为客户的重要职员提供关于采用如Black-Scholes的闭合模型和二叉网格模型的ESO的使用与建模的培训。在培训后，客户就可以利用ESO评估Toolkit软件和SLS软件自行使用ESO了。

期权分析专家

乔纳森 • 文博士（Dr. Johnathan Mun）是 软件的开发者，他同时教授风险分析（**Risk Analysis**）课程，针对分析员的实物期权分析（**Real Options for Analysts**）课程，针对管理者的实物期权分析（**Real Options for Managers**）课程，注册风险管理师（CRM）课程和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型： 从巴塞尔新 资本协议到华尔街的800个函数和300个模型》（Wiley 2008）； 《银行家信用风险手册： 实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作 将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和 CEO，负责分析软件的开发，咨询和培训服务。他曾是 Decisioneering, Inc.（Oracle）公司分析服务部门副总裁 和毕马威 管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司 （Viking, Inc）担任金融计划和分析部门主管。 文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School） 全职教授，以及法兰克福应用科学大学（University of Applied Sciences， Frankfurt）和瑞士管理学院（Swiss School of Management， Zurich）教授，同时还在 世界各地的一些大 学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。

美国FASB使用这个软件！

下图中显示的是2004FAS123的附录A87中案例的解决方案。

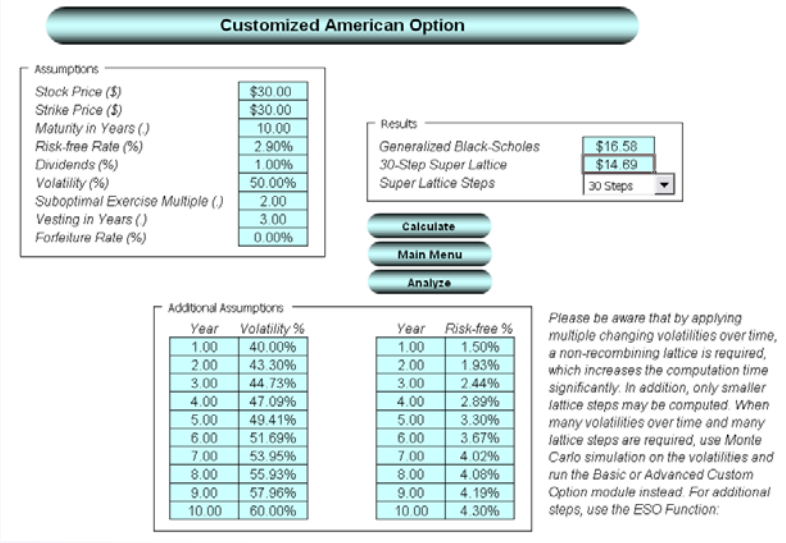
A87-A88中具体指出：
“A87.下表显示了发售于2005年1月的股票期权的前提假设与信息。
发售股票期权900,000；雇员授予期权3,000；预期年罚没率 3.0%；发售当日股价 $30；执行价$30；合同期限10年；合同期限中无风险利率1.5-4.3%；预期合同期限中波动率40-60%；合同期限中预期股息率1.0%；次优执行乘数为2；
A88.这个例子假设每位雇员接收到相等的300期权。采用上表中最后的七项作为输入，Entity T的基于网格 评估模型生成每股$14.69的公平价格。网格模型使用次优执行乘数来计算预期项目（即预期项是一个输出值）而非一个另外的输入值。如果一个企业采用Black-Scholes-Merton期权定价公式，则期望项将被当作一项输入而不是次优执行乘数。

数字显示的结果是$14.69，FASB在它的例子中使用的结果。在FASB的例子使用的3%的罚末率可以应用到模型以外来对减少的时间进行折现。软件允许用户在模型之中或者之外输入罚末率（等待期之前和等待期之后的不同罚末率）在这个特定的例子中，我们设置罚末率为零，期权的数量由外部输入来进行调整，正如FASB所做的一样， 在A91单元格：
“在授予日，进入等待期的股票期权预期数量将是*821,406 (900,000 × .97³).*”

证词

来自公司

Veritas出于分析的目的，使用一个由乔纳森•文博士开发的专有的定制二叉网格模型，来对公司的雇员股票期权进行评估。基于定制的二叉网格模型评估模型可以允许我们将多个影响要素考虑进去，这些影响要素包括等待期，雇员次优执行行为因素，罚末率，变化的无风险波动率，和随着期权的生命周期变化的波动率，这些要素在FASB的2004 FAS 123准则中都是要求的。在一个传统的修正Black-Scholes模型中是不可能考虑到这些因素的。基于Veritas使用的假设，定制的二叉网格模型与传统的修正Black-Scholes模型相比，定制的二叉网格模型可以产生一个相对较低的费用，这些费用化的指南包括在FAS 123的要求中。Don Rath, Veritas 软件公司税收和股票管理副总裁



来自顾问

这是一本罕见的书籍或者一套罕见的软件，因为它们能够预测到行业和经济的变化。FAS 123将让很多大的上市公司变得混乱。然而，明智的公司可以发现到机会来掌控整个流程和控制着驾驶席。由乔纳森•文博士开发的方法和工具是可验证和实用的，对于较早就遵循准则的公司来说具有重大的价值和好处。IBCOL咨询公司使用文博士的算法和方法是因为其适用性，精确，以及帮助我们为我们的客户获得更加公平的市场价值。 Markus Junginger博士，瑞士IBCOL咨询公司执行合伙人

来自软件开发者

在对FASB的准则进行大量的回顾和对多种期权评估方法进行考虑之后，E*TRADE FINANCIAL决定在Equity Edge 实施一个二叉网格模型，对于我们的股票的计划管理和报告软件的应用，在通过与乔纳森•文博士进行磋商之后，我们发现 文博士在雇员股票期权定价方面的工作非常有价值。
Naveen Agarwal, E*TRADE FINANCIAL服务公司产品管理总监

ROV MODELER, ROV OPTIMIZER, ROV VALUATOR, ROV SCHEDULER, ROV CHARTER, ROV BASEL II MODELER 1.1

- 对成百上千的数据快速地运行高级分析
- 与ODBC兼容的数据库相兼容，包括Oracle的OFDM，CSV，Excel，文本格式的文件以及其他的DSN系统
- Monte Carlo仿真，组合优化，随机预测，以及高级的分析（数据拟合，数据诊断，仿真，ARIMA，GARCH，以及超过600个高级的金融和分析模型）
- 结果可以与ROV的展示平台相结合，任何人都可以在线管理报告，分析以及与ROV Risk Simulator和ROV Real Options SLS软件相结合，其中的模型也可以与ROV Modeling Toolkit相结合
- 完全自定义的模型和行业特定的模型（Basel II信贷和市场风险模型）
- 在使用数据做分析之前，使用数据完整性检查和SQL命令清理数据列
- 定期安排运行独立的模型或者模型组合运算

Real Options Valuation, Inc.

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV Risk Modeler是一个综合的软件套件，由Real Options Valuation, Inc.,开发其中包含很多的模块。该软件可以在Excel之外的数据库环境进行建模，允许最终用户直接链接数据库或者大型的数据文件，清除数据以极高的速度运行高级的分析。ROV Risk Modeler包含很多模块：

- ROV Modeler是一个可以自定义的高级分析建模软件可以解决多种类型的建模问题，包括计算高级行业模型，预测模型和仿真模型，时间倒推拟合预测模型（ARMIA，自动计量经济学模型，回归，随机过程，以及其他），波动率计算（GARCH），以及其他的应用。该模块（包括在Basel Modeler和Risk Optimizer模块中）也可以连接到多个数据库和数据源（例如，Oracle OFDM，SQL服务器，Excel，CSV，text和其他的ODBC兼容的数据库），在使用之前先清理数据（使用SQL命令和数据清理的原则），计算基于现有数据的新变量，运行Monte Carlo风险仿真，应用数据和分布拟合，以及其他的原则。这个模块也可以自己定义，所有的模型都以列表的形式出现，用户可以优化列出的功能，描述，以及需要显示的模型和应用，这些工具完全都是可以自定义的。ROV Modeler也可以自定义，根据要求自己编辑满足要求，以确定哪些模型是重要的其他的人可以锁定和删除这些模型（例如，不同的部门，事业单位或者行业群体都可能有自定义的建模工具）
- ROV Basel II Modeler是一个高级的分析软件模块可以解决多种类型的模型，包括计算不同行业的高级模型（例如，对于银行，保险公司和金融机构，例如违约率，违约损失和风险敞口，VaR，以及其他的关键矩阵）。以下是对ROV Modeler的描述。
- ROV Optimizer可以通过仿真和随机优化技术，快速运行项目的筛选，投资或者项目组合，可以对离散的整数，二元和连续的约束特征进行求解，输出包括有效边际分析。优化在运行成百上千次之后可以很快的输出结果。
- ROV Risk Valuator具有600个模型和函数可以对简单期货，远期，资产组合为标的的期权和奇异期权求解。请参阅附录获得更多的关于模型的列表。
- ROV Charters运行不同的Modeler和Optimizer的文档，然后返回XML文件用于ROV 展示平台生成动态的图表和报告。ROV展示平台是由Real Options Valuation, Inc开发的另一软件程序。
- ROV Scheduler运行不同的Modeler，Optimizer，Charter和组合文档然后返回文本格式的文档然后在Excel或者其他的数据库里更新。
- ROV Portfolio可以立即运行Modeler 和Optimizer的文档以及多种模型。类似与Scheduler，可以选择多个模型一次运行多个文档，但是不同的是ROV Portfolio会马上进行分析的，而Scheduler会以后再进行分析。

此外，ROV Modeler软件套装可以：

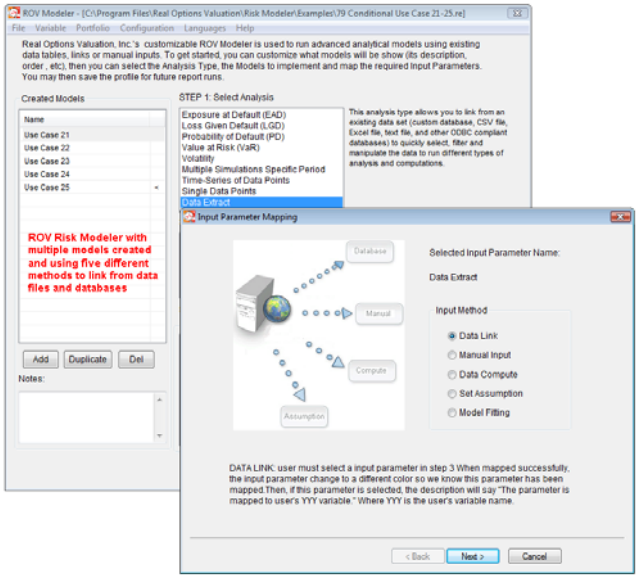
- 通过数据整合和SQL扫描器清理和筛选数据列，进行数据的计算，通过数据诊断查询数据的质量
- •在规定的时间运行单独的模型或者模型组合，工具可以自动从服务器下载预先定义的数据链接，运行分析和返回XML或者数据文本格式的文件
- •提供5个变量的路径，从数据库输出和下载需要的文件用于分析，包括数据的拟合，数据和变量的计算，分布的假设和仿真，手动输入，和链接数据文件
- 在单核或者多核上进行多线程运算
- 包括英语，中文，日语，西班牙语，葡萄牙语以及更多的语言版本也将陆续推出

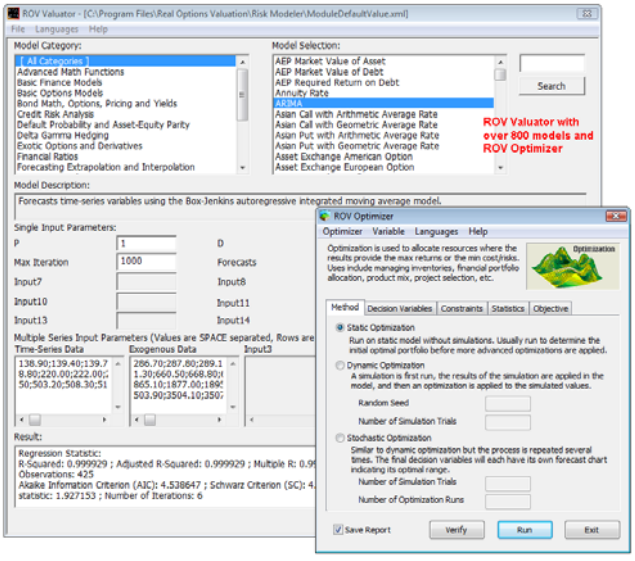
系统要求

该软件套装可以运行在Windows或者MAC环境中（MAC操作系统要求相应的虚拟机支持Windows环境），与Microsoft的Excel或者其他的ODBC兼容的数据库和数据文件相兼容。这些软件要求100MB的硬盘空间至少1GB的内存。建议用户持有管理员权限（大部分个人电脑的默认设置）但是也可以通过有限的用户权限登陆（只需要将软件安装在非保护的文件/文件夹）

试用版

本软件不像其他的桌面软件和服务器软件，并不提供试用版本，对于该软件的实施需要我们的咨询和培训。





ROV COMPILER 编译器 1.0

- 将任何现有的Excel2002，2003，2007模型转换成EXE文件
- 编译之后的文件具备所有的Excel文件的功能，但是最终用户无法看见计算和函数或者逻辑
- 所有的计算都是以二进制的形式进行的，经过加密以后，最终用户无法获得里面的信息
- 安全地发布模型而不失去任何知识产权或者公司的秘密
- 使用2048位的RSA加密技术（比军方的加密技术更为强大）
- 可创建用户授权（用户的数量，时间，和天数）
- 可以进行严格的质量控制和对模型恶意的破解或者无意中的破坏（没有损坏的链接，错误的函数和公式，等等）
- 可以在控制台模式下应用第三方的软件环境应用
- 将Excel作为一个开发平台而非仅仅建模…不需要了解高级的软件编程来创建属于自己的授权软件

Real Options Valuation, Inc.

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV编译器可以用来将Microsoft Excel XP, 2003 和2007的文件转换成纯数学关系式和代码输出到某种模型里，而同样的模型也可以继续使用，但是模型的知识产权却得到了保护。现在可以使用Excel作为一种软件开发工具而不仅仅是一种建模工具。即，假设您是一位某个行业的专家，例如生物制药业，制造业，银行业，保险业，航空航天业，等等。假设开发了一个Excel模型。这样，您就可以使用ROV编译器将Excel模型创建一个可执行的.exe文件，并且隐藏数学和计算逻辑，并且转化成二进制码，并且创建一个极其安全的硬件识别授权，保护您的文件，并且可以像软件一样发布您的文件。该编译后的文件在运行的时候外观和感觉和Excel没有多大区别，但是却无法看到关键的计算逻辑，但是却为文件添加了安全的授权。现有的软件可以很快地破解Excel的密码保护，但是这些软件却无法作用于编译后的文件。运行输出的模型，可以实现下面的某些项目，即：

将Excel作为一个开发平台而非仅仅建模…不需要了解高级的软件编程来创建属于自己的授权软件！

任何Excel2002，2003，2007或者更高的版本的文件都可以由XLS和XLSX文件编译输出成二进制的数据代码以及转化成一个可执行文件，当运行的时候将自动打开Excel。文件可以像Excel一样工作，包含所有的功能，但是最终用户将无法获得计算和函数的逻辑关系。外观和使用类似于Excel但是计算全部被转化成二进制的形式被加密，最终用户无法获得。

所有的商业智慧不再会担心被被最终用户获得。模型的创建者可以安全地发布模型而不会担心损失任何的知识产权和公司的机密。

使用2048位的RSA加密技术（比军方的加密技术更为强大）

编译的模型最终用户无法改动，防止恶意的篡改和模型的损坏（例如，函数和公式里包含损坏的链接，错误的公式和计算等等）。

编译的文件也可用于第三方的基于组件建模环境的软件应用。例如，最终用户可能会有自己的软件或者数据库包含有预先定义好的计算。编译的文件可以进行链接然后成为该系统的一部分。该私有的系统可以只需要将输入和编译的文件相链接，编译的文件就会进行计算然后返回需要的输出。

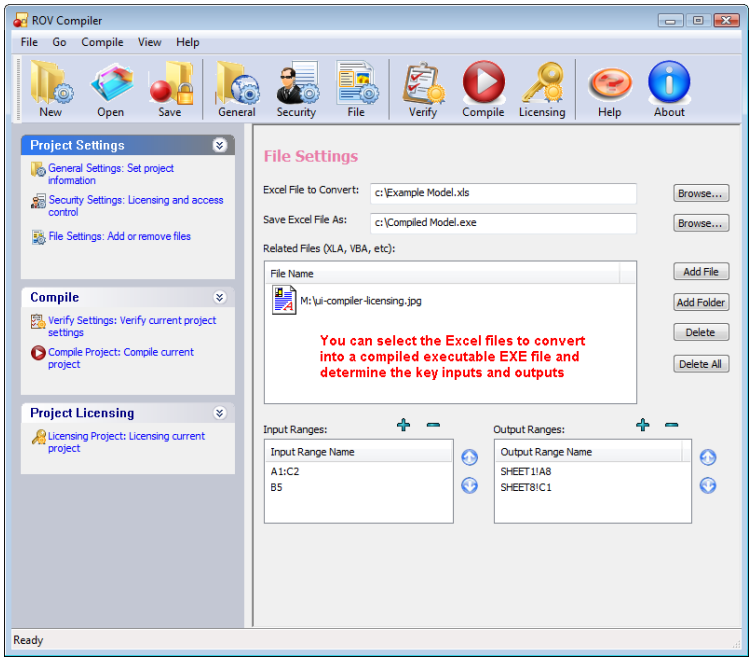
系统要求

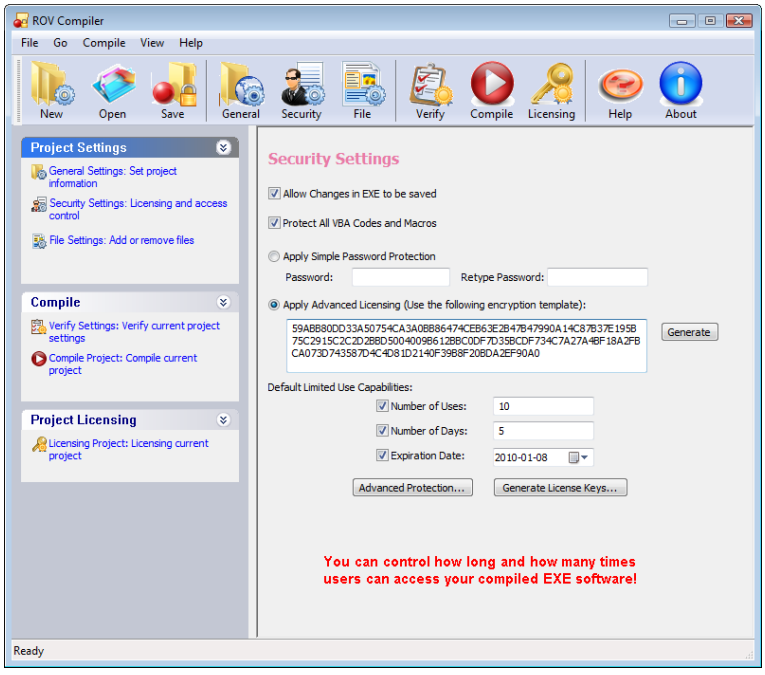
该软件可以运行在任何Windows和MAC环境下（MAC操作系统要求相应的或者虚拟机以支持Windows环境），而且可以与Microsoft Excel或者其他的ODBC相匹配的数据库和数据文件相兼容。软件包要求至少30MB的硬盘空间以及至少1GB的RAM以保证最佳的运行性能。

试用版和学术版

ROV编译器可以直接从我们的网站上下载具有10天的试用授权。我们的哲学是在买之前先试用。一旦使用，我们相信你一定会爱上他的简便和强大，它将成为你模型中不可分割的一部分。可是，请注意试用版只能创建一个10天的授权并且留下试用版的信息（在获得永久授权之后这些信息会消失）

如果想使您的文件完全脱离Excel环境，请使用Real Options Valuation, Inc.公司开发的ROV 风险分离器和风险计算器。完成ROV编译器编译后的文件需要花费很久在Excel环境下进行数据处理，而ROV风险分离器和风险计算器则需要很短的时间完成。大型的Monte Carlo风险仿真可以以很快的速度完成。稍大的模型包含不相干的部分，可以通过精简的方法包含进关键的输入和输出。例如，在一个模型中，例如A+B+C=D， B+E=F，F可以作为关键的输出，B 和 E是不相干的中间变量。通过确定关键的输入就会减少模型的计算时间，模型就运算的更加快速。稍大的模型可以变为一个类似计算器的环境，所有最终用户所要做的就是输入输入和获得输出。可以将它看做在Excel下创建一个VB函数，但是却不需要多行的计算过程，该功能就是整个包含相关链接Excel工作表的Excel工作薄。





ROV EXTRACTOR & ROV EVALUATOR 1.1

ROV分离器&计算器1.1

- ROV分离器能将现有的Excel 2007模型编译成EXP文件，该文件仅能在分离器中使用
- 所有的商业智慧不再会担心被被最终用户获得。模型的创建者可以安全地发布模型而不会担心损失任何的知识产权和公司的机密。
- 较大的模型将花费更少的时间运行于Excel之中，而且速度将更快。
- 编译的模型使用RSA1028加密技术（军事加密技术），只有输入正确的密码和授权（使用计算机硬件码锁定算法）的时候才能使用。
- 稍大的模型包含不相干的部分，可以通过精简的方法包含进关键的输入和输出。
- 稍大的Excel模型可以变为一个类似计算器的环境，所有最终用户所要做的就是输入输入和获得输出。可以将它看做在Excel下创建一个VB函数，但是却不需要多行的计算过程，该功能就是整个包含相关链接Excel工作表的Excel工作薄。
- 创建一个新的建模范式！输出的文件类似于在Excel中创建一个Visual Basic函数，但是却无法看见包含Excel函数和公式的计算过程，安全的发布模型，而不会损失任何公司的机密和知识产权
- 可以进行严格的质量控制和对模型恶意的破解或者无意中的破坏（没有损坏的链接，错误的函数和公式，等等）
- 可以在控制台模式下应用第三方的软件环境应用
- 将Excel作为一个开发平台而非仅仅建模...不需要了解高级的软件编程来创建属于自己的授权软件！

Real Options Valuation

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV风险分离器和计算器软件是由Real Options Valuation, Inc.公司开发的软件，将运行于Excel2007或者更高的版本。本软件是用来替代Excel 2007，将现有的模型转化成纯数学关系式和代码，这样相同的模型可以运行于Excel之外。通过运行分离的模型，必须完成很多项目，即：

- 所有的商业智慧不再会担心被被最终用户获得。模型的创建者可以安全地发布模型而不会担心损失任何的知识产权和公司的机密。
- 较大的模型可以以较高的速度在Excel里运行。
- 较大的模型将花费更少的时间运行于Excel之中，而且速度将更快。
- 编译的模型使用RSA1028加密技术（军事加密技术），只有输入正确的密码和授权（使用计算机硬件码锁定算法）的时候才能使用。
- 稍大的模型包含不相干的部分，可以通过精简的方法包含进关键的输入和输出。例如，在一个模型中，例如A + B + C = D，B + E = F，F可以作为关键的输出，B和E是不相干的。通过确定关键的输入就会减少模型的计算时间，模型就运算的更加快速。
- 稍大的Excel模型可以变为一个类似计算器的环境，所有最终用户所要做的就是输入输入和获得输出。可以将它看做在Excel下创建一个VB函数，但是却不需要多行的计算过程，该功能就是整个包含相关链接Excel工作表的Excel工作薄。
- 编译的模型最终用户无法改动，防止恶意的篡改和模型的损坏（例如，函数和公式里包含损坏的链接，错误的公式和计算等等）。
- 编译的文件也用于第三方的基于组件建模环境的软件应用。例如，最终用户可能会有自己的软件或者数据库包含有预先定义好的计算。编译的文件可以进行链接然后成为该系统的一部分。该私有的系统可以只需要将输入和编译的文件相链接，编译的文件就会进行计算然后返回需要的输出。

系统要求

系统要求包括：

- Windows Vista 或者 Windows XP
- Excel 2007（不向下支持老的Excel版本）
- 300MB的硬盘空间
- 至少1GB RAM
- 其他：Microsoft .NET 3.5 Framework 或者更高版本，VS Runtime，Microsoft Installer，等等

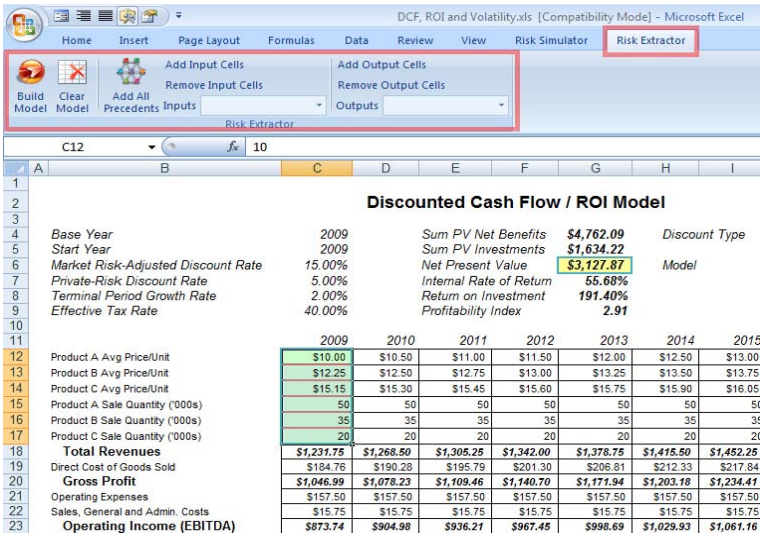
如果想将模型转换成EXE文件隐藏其中的计算和链接，通过授权的方式发布软件应用。ROV编译器软件和ROV风险分离器和计算器都是由同一家公司开发的产品。

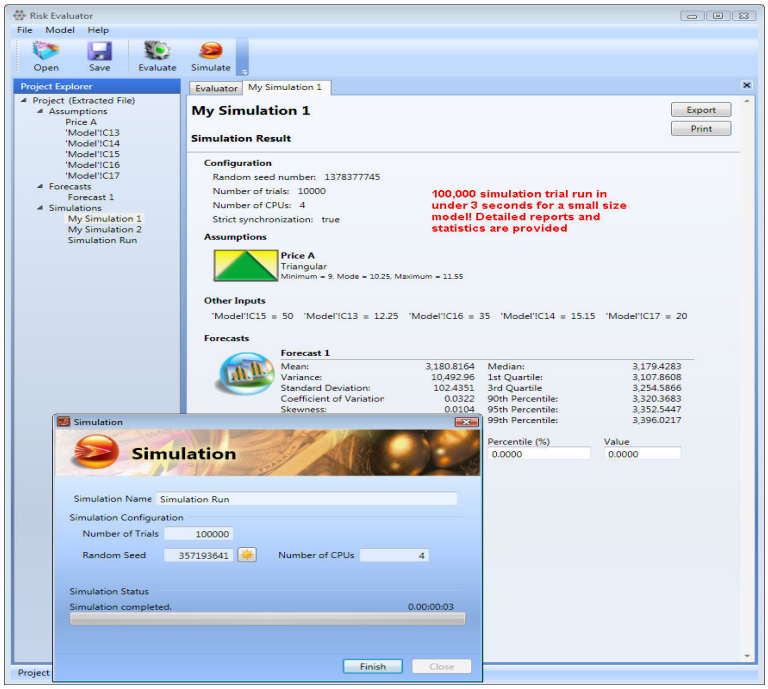
ROV风险分离器和计算器软件可以让您将模型转换（转化曾EXP文件）然后在Excel之外运行，这样里面的计算公式都得到隐藏和保护。ROV风险分离器和计算器使用ROV的编译器软件，较大的模型只需要很短的时间以很快的速度运行。

如果想将模型转换成EXE文件隐藏其中的计算和链接，通过授权的方式发布软件应用。ROV编译器软件和ROV风险分离器和计算器都是由同一家公司开发的产品。

试用版和学术版

ROV编译器可以直接从我们的网站上下载具有10天的试用授权。我们的哲学是在买之前先试用。一旦使用，我们相信你一定会爱上他的简便和强大，它将成为你模型中不可分割的一部分。可是，请注意试用版只能创建一个10天的授权并且留下试用版的信息（在获得永久授权之后这些信息会消失）。





ROV BIZSTATS 1.1

- 一个简单的可满足你日常统计应用的大部分需要商业统计Excel插件
- 使用简易并能自动生成详细报告（包括分析结果和对结果的详细解释）
- Model Chooser（模型选择者）功能可以帮助你选择合适的分析方法
- 方差分析（ANOVA）
- 基本统计应用
- 假设检验（单变量和双变量）
- 蒙特卡罗仿真
- 非参数测试
- 概率
- 随机预测
- 时间序列分析
- 回归分析

Real Options Valuation Inc

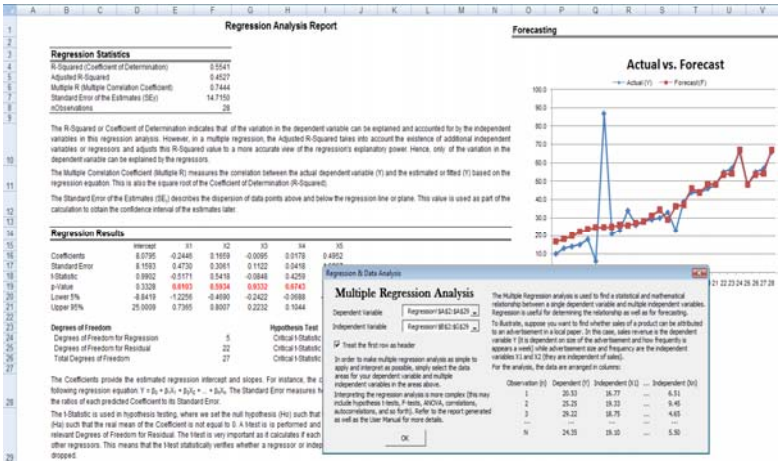
Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV BIZSTATS 是一个应用统计工具包，最大的特点就是简单易用，但同时其功能又足够强大来帮助用户解决大部分的日常统计问题。作为一个Excel插件，它可以对你手头的电子表格的数据进行分析。这是一个简单的商业统计Excel插件，可满足日常统计应用的大部分需要，使用简易并能自动生成详细报告（包括分析结果和对结果的详细解释）。

对于更高级的统计分析，请使用Risk Simulator软件来运行蒙特卡罗风险仿真，随机预测，组合优化，和其它的高级分析应用。

ROV BizStats 软件由以下十个分析模块组成：

- ROV BizStats 软件通过使用基本日常用语来询问你数个相关问题，然后基于数据类型和你感兴趣的测试类型，Model Chooser（模型选择者）功能可以帮助你选择合适的分析方法来运行。
- 方差分析（单因素方差分析，随机化模块多重处理，双因素方差分析），在考虑了某些控制变量以后，测试不同数据集合之间在统计学上相似或者不同。
- 基本统计应用（描述性统计，相关性矩阵，方差-协方差矩阵），可为你自动分析数据并返回最常用的统计技术。
- 假设检验（单变量和双变量，包括均值的t检验和检验，以及独立方差和依赖方差的比例），测试数据集与假设值是统计上相似或者不同。
- 蒙特卡罗仿真（运行7个简单的分布来进行仿真，请使用Risk Simulator来运行更高级的仿真类型）。
- 非参数分析（chi-square拟合优度，独立性和方差检验，Friedman检验，Kruskal-Wallis检验，Lilliefors 检验，Runs检验，对单变量和双变量Wilcoxon 符号排列检验）。
- 概率（从18种分布类型中创建精确的概率表）。
- 随机预测（跳跃扩散，均值回复和随机游走）。
- 时间序列分析（自回归移动平均模型（ARIMA），自动ARIMA分析，以及8个时间序列分解模型）。
- 回归分析（多元回归分析和主成因分析）。



Real Options Valuation

系统要求

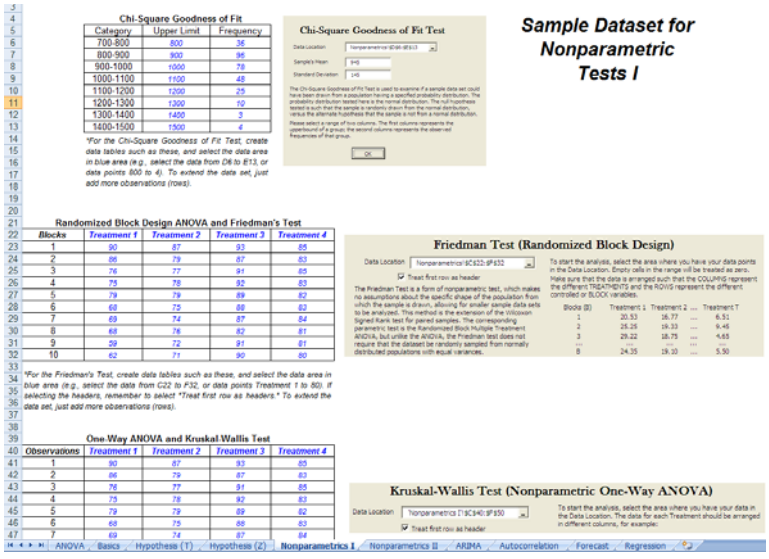
Windows XP或Vista和Excel XP，2003 或2007，需要30MB以上的硬盘空间和512MB以上内存。可以在MAC或者虚拟计算机运行。

试用版本

我们乐意可为你提供本软件的试用版（默认为10天使用授权），你也可以我们的网站下载，欢迎和我们联系。

专家

乔纳森·文博士（Dr. Johnathan Mun）是RISK SIMULATOR软件的开发者，他同时教授风险分析（Risk Analysis）课程，针对分析员的实物期权分析（Real Options for Analysts）课程，针对管理者的实物期权分析（Real Options for Managers）课程，注册风险管理师（CRM）课程，和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型：从巴塞尔新资本协议到华尔街的800个函数和300个模型》（Wiley 2008）；《银行家信用风险手册：实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和CEO，负责分析软件的开发，咨询和培训服务。他曾是 Decisioneering, Inc.（Oracle）公司分析服务部门副总裁 和毕马威管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司 （Viking, Inc）担任金融计划和分析部门主管。文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School）全职教授，以及法兰克福应用科学大学（University of Applied Sciences, Frankfurt）和瑞士管理学院（Swiss School of Management, Zurich）教授，同时还在 世界各地的一些大学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。



ROV DASHBOARD 展示平台1.0

- 创建专业的报告，图表，非常的直观，同样也可以通过密码和登陆权限来保护
- 创建无纸化环境在全球任何地区通过登陆来查看自动更新的报告
- 支持多国语言版本，包括英语，中文，西班牙语，日语，葡萄牙语，意大利语，法语，德语和俄罗斯语
- 完全与ROV Risk Modeler相兼容
- 将管理员和日常用户通过权限分开
- 图表相互交互，在25个图形列表中选择
- 为所有的报告和数据源一次创建设置，日后就可以自动等待数据的更新和生成报告

Real Options Valuation Inc.

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV展示平台　是一个企业级的软件应用，它可以安装在集团的服务器端，支持多用户使用，也可以作为单独的软件使用

企业版或者ROV展示平台使用非常的简单，作为用户，可以通过内部的网站访问然后通过管理员分配的账户和密码登陆。所有的技术要求都可以由服务器管理员控制。作为最终用户，可以简单的通过URL网页地址登陆，登陆账户和密码信息都在登陆页面显示。网络管理员可以分配这些信息。

ROV展示平台系统具有以下亮点：

- 创建专业的报告，图表，非常的直观，同样也可以通过密码和登陆权限来保护
- 创建无纸化环境在全球任何地区通过登陆来查看自动更新的报告
- 支持多国语言版本，包括英语，中文，西班牙语，日语，葡萄牙语，意大利语，法语，德语和俄罗斯语
- 完全与ROV Risk Modeler相兼容　输出的XML文件可以在被ROV展示平台读取和更新
- 为所有的报告和数据源一次创建设置，日后就可以自动等待数据的更新和生成报告
- 图表相互交互，在25个图形列表中选择

与ROV　Modeler相结合，ROV展示平台提供了一个终端对终端数据分析的无缝连接解决方案

- 我们将提供咨询和培训对公司的数据和需求进行分析，将他们与内置在Excel中的ROV Risk Simulator 和ROV Modeling Toolkit相结合，将他们转换成ROV Modeler的真实软件实施（我们将会提供我们的IT阮元配置这些服务器设置），管理层可以很容易得到ROV展示平台的管理报告
- 创建报告非常简单和直观的4步：
    - 设定用户
    - 设定部件和数据源
    - 设定报告
    - 将报告分配给特定用户
- 两种类型的用户可以设定：管理员和日常用户
- 管理员具有的权限是：
- 创建新的用户，更改密码和登陆权限
- 创建新的报告分配这些报告给不同的用户和报告群体
- 创建新的组建例如图表，以及数据源的地址
- 日常用户具有：
    - 查看展示平台的报告（只被授予收到和查看的权利）
    - o更新报告里特定的图表

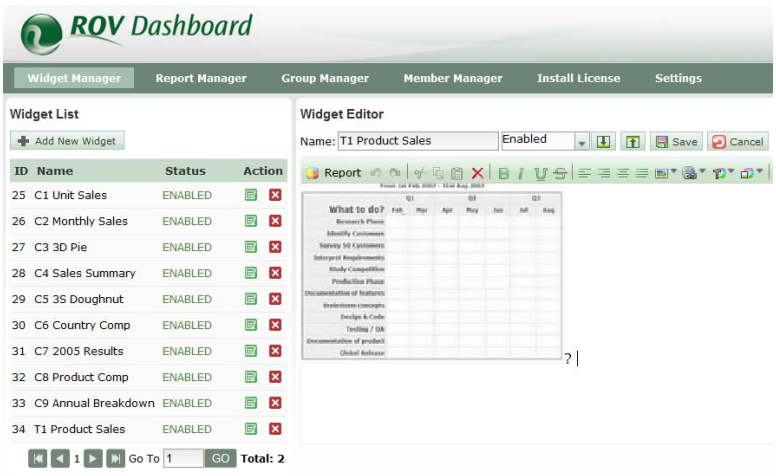
试用版

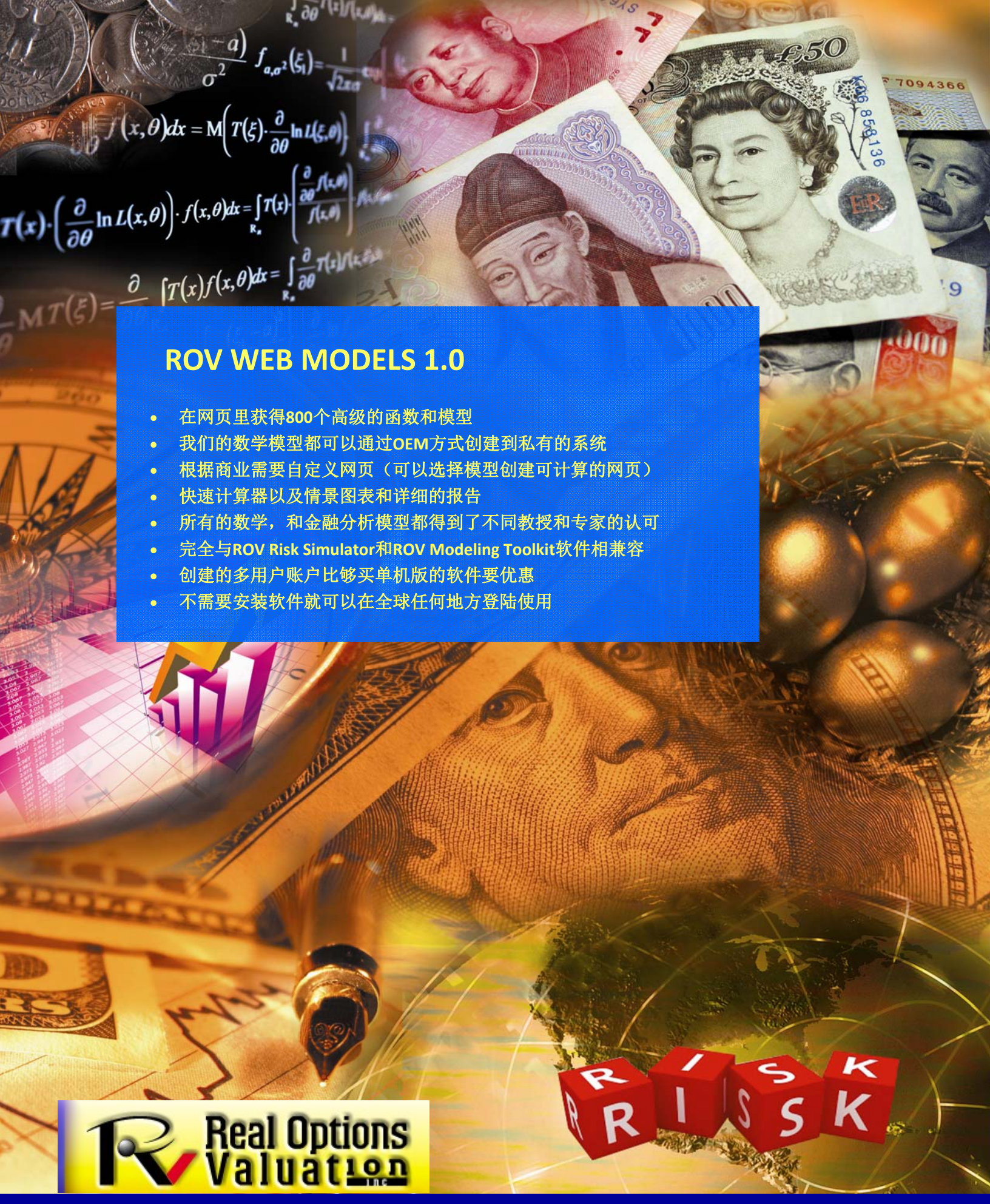
ROV　展示平台工具不包含任何试用版本，需要在实施之前需要我们的咨询和培训，典型实施是基于服务器环境，和ROV Modeler套装相结合（ROV Modeler用来下载和链接数据库和数据文件进行对上千上万的数据进行高级的分析，然后以XML的格式返回，可以被展示平台读取和更新生成报告）

系统要求

ROV是一个基于Hibernate, Spring和 Struts技术的 Java Web应用。对于，桌面版本，所需要的就是Windows（XP和Vista，32位和64位），Linux，Unix或者Max系统，Internet浏览器例如IE和火狐。

对于服务器版本，它都运行在Java应用的服务器上，支持所有常规的数据库管理系统（RDBMS）。可以安装在Windows（XP和Vista,32位和64位），Linux，Unix或者Max系统，支持X86，X64，AMD64，以及IA64构架。可以支持所有常规的RDBMS例如MSSQL Server, Oracle, DB2, Sybase, MySQL,等等。前端和终端用户界面是基于Web 2.0的应用的，使用Ajax，Flash，以及XML技术。最后，对于服务器环境，我们提供初步的咨询和实施。咨询包括应用ROV Modeler分析公司的数据和使用ROV Modeler在ROV展示平台生成结果





ROV WEB MODELS 1.0

- 在网页里获得800个高级的函数和模型
- 我们的数学模型都可以通过OEM方式创建到私有的系统
- 根据商业需要自定义网页（可以选择模型创建可计算的网页）
- 快速计算器以及情景图表和详细的报告
- 所有的数学，和金融分析模型都得到了不同教授和专家的认可
- 完全与ROV Risk Simulator和ROV Modeling Toolkit软件相兼容
- 创建的多用户账户比够买单机版的软件要优惠
- 不需要安装软件就可以在全球任何地方登陆使用

Real Options Valuation, Inc.

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

ROV WEB Models是一系列的模型和函数可以通过IE和火狐浏览器的方式登陆. 下面是ROV Web Models的一些亮点:

- 在网页里获得800个高级的函数和模型
- 多种基本的理财模型包含交互式的图表（生命保险，加速按揭抵
- 押还款，退休计划，大学存款计划，个人投资理财计划，以及更多）
- 我们可以自定义和创建新的模型可以满足不同的需要，这些模型
- 都可以更新到我们的网站或者自己的操作系统
- 我们的数学模型都可以通过OEM方式创建到私有的系统
- 根据商业需要自定义网页（选择模型创建可计算的网页）
- 快速计算器以及情景图表和详细的报告
- 所有的数学，和金融分析模型都得到了不同教授和专家的认可
- 完全与ROV Risk Simulator和ROV Modeling Toolkit软件相兼容
- 创建的多用户账户比够买单机版的软件要优惠
- 不需要安装软件就可以在全球任何地方登陆使用

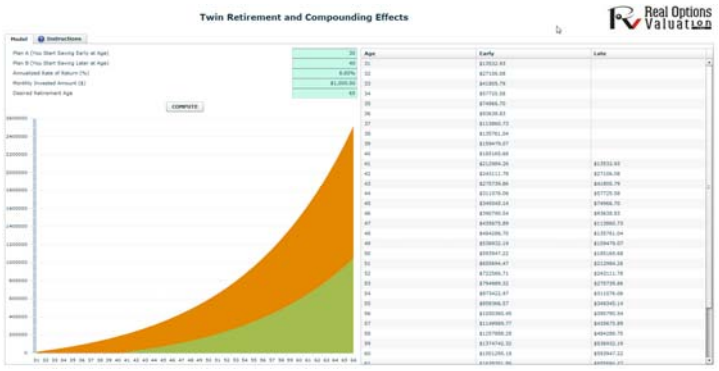
- 详细的800+个模型都可以根据需要下载，这些模型可以分为以下几类：
    - 高级数学函数
    - 基本的财务模型
    - 基本的期权模型
    - 基本的数学，期权，定价和收益率模型
    - 信贷风险分析模型
    - 违约率和资产权益配比模型
    - 对冲模型
    - 奇异期权和衍生品
    - 金融比率
    - 内插和外插预测
    - 存货分析
    - 概率分布 CDF，ICDF，PDF
    - 概率分布理论矩
    - 看涨-看跌均衡和期权敏感性
    - 排队模型
    - 六西格玛模型
    - 波动率，组合的风险和回报模型
    - 实物期权分析

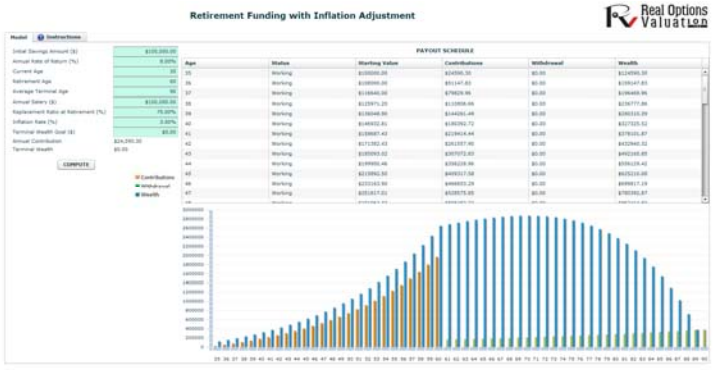
系统要求

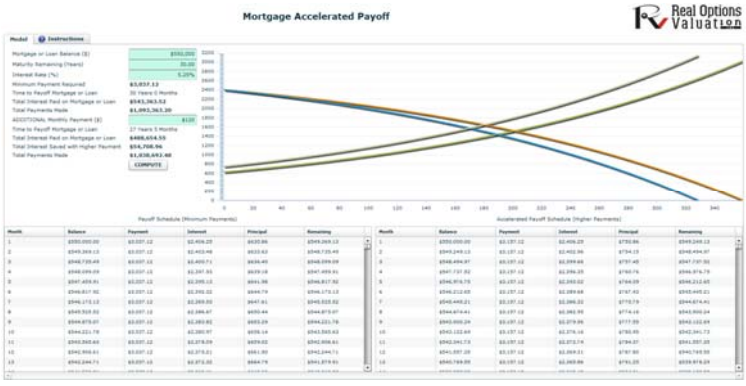
所需要的就是一个IE或者火狐浏览器。我们将在服务器管理这些请求。

试用版

不存在任何网页模型的试用版







Real Options Valuation LLC

软件实际操作

研讨会和课程

Certified in Risk Management (CRM)注册风险管理认证
Senior Credit Risk Management (SCRM) 高级信用风险管理认证

风险分析课程

- 分析工具
- 基本实物期权（SLS软件）
- 预测（Risk Simulator软件）
- Monte Carlo 仿真（Risk Simulator)
- 优化（Risk Simulator）

实物期权分析（分析师课程）

- 基本实物期权概念
- 了解实物期权的基础
- 构建基本的期权

实物期权分析（高管人员课程）

- 基本实物期权概念
- 使用实物期权制定战略决策
- 构建战略期权
- 解释实物期权的结果

员工股票期权

- 使用ESO软件二叉树模型评估员工股票期权满足FAS 123准则的要求

客户化课程

- 由公司指定的培训课程

参与我们培训课程的公司客户评价：

3M, Accenture, AIG, Allstate Insurance, Airbus, Alexion, Aquiva Trading, AT&T, Boeing, Chevron Texaco, Duke Energy, Eli Lily, GE, GE Capital, Glaxo SmithKline, Intel, Johnson & Johnson, Lloyds Bank, Motorola, Phillips, Pioneer, Roche Molecular Diagnostics, Seagate, Schlumberger, Shell, Sprint, Sunoco, Syngenta, Timken, Total Elf Fina, Washington Gas, and many others!

Real Options Valuation

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438. www.realoptionsvaluation.com

高级的分析工具例如Risk Simulator软件操作简便但是如果使用不当也会给分析人员带来麻烦。有效的理论支持加上实用的应用就变的十分重要。因此，培训是必要的。我们提供多个实际操作演练课程涵盖风险分析实物期权分析，等多个话题。保持较少的参与人数，保证更好的学习环境，和一对一的交流机会。课程在全球范围内开设（详细的时间安排请查看我们的最新培训安排），课程都安排在培训中心进行，客户可以使用自己的电脑作为软件终端。

我们两天的**风险分析**课程包括软件实际操作，内容包括基本的风险和不确定性概念，使用Monte Carlo仿真（缺点和注意事项），以及预测和优化的详细模型。两天的上机操作，使用Risk Simulator软件进行：

- Monte Carlo仿真（仿真，非参数拔靴仿真，相关性copula仿真，截取仿真，分布拟合，解释仿真结果，假设检验，数据输出，多维仿真，缺陷以及注意事项）
- 预测（时间序列预测，多远回归，非线性内插法，随机过程预测，Box-Jenkins ARIMA，基本计量经济学，GARCH模型，逻辑曲线，无数据预测，德尔菲法，季节模型，以及更多）
- 优化（线性连续离散整型变量优化，组合优化，有限前沿和决策分析技术）
- 建模分析（情景分析，敏感性分析，飓风图蜘蛛图，仿真，重叠图，以及更多）

基本的实物期权理论（商业案例，实物期权应用，实物期权基础）
对于分析人员我们通过引入实际案例操作，将实物期权分析和模拟直接引入工作之中。两天的课程包括如何设定实物期权模型，应用实物期权，以及使用仿真解决实物期权问题，闭合的数学模型，二叉，以及多叉树模型。
这个两天的实际操作课程包括

- 实物期权介绍：what, where, who, when, how, why
- 实物期权分析的相关案例
- 不同的期权评估技术：闭合模型，偏微分方程，二叉树
- 使用风险中性定价技术，欧式，美式期权以及百慕大期权，包括妨碍，扩张，收缩，选择，以及4种波动率估计模型和方法
- SLS软件的不同模块和计算波动率方法
- 改动参数和自定义奇异期权求解期权问题，复杂的多阶段混合期权，均值回复期权，跳跃扩散期权，双资产彩虹期权，三叉以及四叉期权
- 构建实物期权——构建问题模型

对于**高管人员**的一天风险分析课程专门为管理层所设计，所有的案例都来自于3M，空中客车，波音以及更多。为管理层提供了一个风险分析，实物期权，组合优化，预测和风险的视角，而并不包含过多的模型细节。这些课程的内容包括：

- 风险分析和期权分析的视角
- 部分真实世界中的跨国企业应用
- 战略期权的构建
- 构建战略期权的注意要点
- 理解如何解释实物期权的结果

注册风险管理认证（**CRM**）课程是一个4天的实战课程，包含的内容有风险分析和实物期权分析。该认证由国际职业教育和研究委员会提供。在完成了4天的培训和相关的项目活动就可以进入CRM认证流程。4-6周后，就可以得到CRM认证，以及相关的商业证明文件。

国际职业教育和研究委员会在全球多个国家和地区拥有办事处和合作伙伴，这些国家和地区包括：美国，瑞士，香港，墨西哥，葡萄牙，新加坡，尼日利亚，马来西 亚等国家。国际职业教育和研究委员会的CRM认证是得到国家认证委员会认可的证书。国际职业教育和研究委员会是具有极高声望的商学院进步委员会的成员之 一。商学院进步委员会是美国教育部最大的认证机构，它拥有500商学院的成员。而且，国际职业教育和研究委员会的国际准则委员会包括众多大学（宾州利哈伊 大学，苏黎世应用科学大学，加利福尼亚美国海军研究生院，堪萨斯密苏里大学，等等）的教授。国际职业教育和研究委员会也和世界众多地区的研究机构保持良好 的战略合作伙伴关系。

完全自定义的企业内训
任何培训都可以由客户定制。包括由客户指定的培训内容，在行业中的商业案例，以及开放式提问，关于模型，数据或者战略

- 从行业的专家那里获得实战经验
- 直接获得有效的资源！我们的培训师就是Risk Simulator软件和Real Option SLS软件的发明人，7本风险建模，实物期权，和项目评估专著的编写人。他本人也是金融学和经济学的教授，曾经为多个国家的公司做过咨询和培训，世界公认 的风险分析和实物期权方面的专家。
- 得到我们免费的书籍，培训模型，案例，视频，课程的PPT和很多的学习资料。

专家
乔纳森·文博士（Dr. Johnathan Mun）是软件的开发者，他同时教授风险分析（**Risk Analysis**）课程，针对分析员的实物期权分析（**Real Options for Analysts**）课程，针对管理者的实物期权分析（**Real Options for Managers**）课程，注册风险管理师（CRM）课程和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型： 从巴塞尔新资本协议到华尔街的800个函数和300个模型》（Wiley 2008）；《银行家信用风险手册： 实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作 将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和CEO，负责分析软件的开发，咨询和培训服务。他曾是 Decisioneering, Inc.（Oracle）公司分析服务部门副总裁 和毕马威管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司 （Viking, Inc）担任金融计划和分析部门主管。文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School）全职教授，以及法兰克福应用科学大学（University of Applied Sciences, Frankfurt）和瑞士管理学院（Swiss School of Management, Zurich）教授，同时还在 世界各地的一些大学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。

CERTIFIED IN RISK MANAGEMENT

Certified in Risk Management crm

“Dr. Johnathan Mun是一位充满激情的导师，最困难的项目到他手里都会变得通俗易懂。他真的是我遇见过最好的导师。”
-Curtis Ching，通用，通用金融（亚洲）商业发展和金融总监

“Dr. Mun可以让最复杂最专业的概念变得通俗易懂，并应用到不断变化充满挑战的商业环境中。这是我所参加过的最好的一次研讨会，我承认Dr. Mun是这个领域的领头人。”
-Robert Finocchiaro博士，3M公司（美国）公司研发服务部总监

参加一个为期四天的风险管理培训课程，完成相关的课程学习和获得由国际教育和研究机构（IIPER）颁发的注册风险管理师认证

“没有见过如此能干的培训师！” *-Hussein Alghamdi，沙特阿拉伯Savola集团 Group*
“没有见过如此能干的培训师！” *-Y.L.Lee，希捷科技（Seagate Technology）工业工程师*
“一次结合实例的非常好的培训” *-Aprianto Sommantri，印尼Chevron Texaco工程师*

“Dr. Johnathan Mun将学习方法和教学材料有效结合起来，用一种可以理解的形式解释我们如何管理风险的认知图式的变化。鉴于未来商业的发展主要是基于警觉性决策的制定，Dr. Mun的方法是迄今为止支持公司可持续发展的最有效的机制。”
-Kenneth English，Timken 公司（美国）新兴技术部总监

“Dr. Mun有能力将非常复杂的事情以事实和难忘的方式表达出来，参加他的研讨会，你不仅会收获很多，还可以立刻将所学运用到实践中。“
-Robert Fourt，Gerald Eve咨询公司(英国)合伙人

Real Options Valuation Inc

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

Real Options Valuation, Inc.公司是全球一家提供国际专业教育和研究的机构（IIPER）的首选课程提供商，我们被授权开设CRM认证课程，4天的研讨会，以及课程最后一天的认证考试。参与者如果通过考试可以获得SCRM证书！Real Option Valuation公司是全球有权颁发CRM证书的三家机构之一。

那么，与其他相比我们的研讨会由哪些优势呢？令人吃惊的是，我们的培训班价格比其他类似的模拟课程低很多，在培训完之后，你会获得CRM证书，这是很多其他公司不能提供的。此外，我们有指定的资深CRM培训师Dr. Johnathan Mun先生，Real Option Valuation公司的创始人及CEO，一位世界知名的风险分析领域的专家教授，在风险、估值和战略领域出版过7本书的作者，以及风险模拟器和实物期权SLS软件的开发者。相比之下，其他公司的培训师都是两年以下工作经验的大学毕业生，或是在风险分析理论和实践背景不足的普通MBA。你不仅可以学习到风险分析的实际应用，还可以用理论来支撑这些应用。

优势

参与注册风险管理师（CRM）课程的几大优势：

- 获得注册风险管理师（CRM) 认证
- 学习的对象是本领域最知名的专家。
- 利用源头！课程是首席讲师是Risk Simulator和Real Options SLS软件的开发者，以及银行风险管理，信用风险管理，风险建模、实物期权分析和价值评估等专题12本书籍的作者。他们还是金融学和经济学学科的教授，多家跨国公司的咨询顾问，是风险分析和实物期权分析领域的全球知名专家。
- 获得免费的教材（银行风险管理和风险建模），培训，模型和案例，食品，课件，以及其它一些相关的入门学习资料。

国际专业教育和研究机构（IIPER）是一家全球性机构，其合作伙伴和办公地点包括美国，瑞士，香港，墨西哥，葡萄牙，新加坡，尼日利亚，马来西亚等等。IIPER的SCRM证书由国际认证委员会认可，IIPER是世界上享有声望的AACSB（美国国际管理教育联合会）的成员之一。AACSB是最大的由美国教育部授权的认证机构之一，全世界有500多所商学院都是其成员。此外，IIPER的研究会也获得项目管理机构（PMI）的认可，参与者在完成课程之后可以获得30个PMI认可的专业发展单元（PDU）。IIPER的国际标准董事会是由来自世界各地许多知名大学的教授组成的，包括Lehigh大学（宾夕法尼亚州），应用科学大学（瑞士），海军研究生院（加利福尼亚），密苏里州大学（堪萨斯州）等等。此外IIPER还与世界很多研究机构结成了战略合作伙伴关系。

CRM 培训课程包括内容

模块 1: 风险分析介绍

第 1 章：培训介绍
第 2 章：如何制订商业决策的？
第 3 章：什么是风险/为何要考虑风险?
第 4 章：风险分析软件应用综述

模块 2: 使用Risk Simulator软件进行蒙特卡罗分析

第 1 章：Risk Simulator 软件概述
第 2 章：仿真文档，假设，预测和运行仿真
第 3 章：解释预测统计
第 4 章：运行仿真选项和随机数种子
第 5 章:运行报告，保存，输出仿真数据

模块 3: 高级仿真技术

第 1 章：相关性和截断仿真
第 2 章:可替换参数
第 3 章：多维仿真
第 4 章：分布拟合
第 5 章：仿真的优点和缺陷

模块 4: 仿真和分析工具

第 1 章：静态飓风图和蛛网图分析
第 2 章：动态敏感性分析
第 3 章：不同分布的假设检验
第 4 章：非参数拔靴仿真

模块 5: 通过过Risk Simulator软件进行优化

第 1章：优化介绍
第 2 章：连续优化
第 3 章：整型优化

模块 6: 预测

第 1 章：预测技术和数据的类型
第 2 章：无数据预测
第 3 章：时间序列分析预测
第 4 章：非线性外推
第 5 章：多元回归分析
第 6 章：随机过程
第 7 章：高级预测：Box-Jenkins ARIMA和自动ARIMA, GARCH, J-曲线， S-曲线，马耳可夫链， 数据诊断，统计特性和基本计量经济学应用

模块 7: 实物期权分析:理论和背景

第 1 章: 实物期权介绍: What, Where, Who, When, How, and Why?
第 2 章：示例商业应用
第 3 章：不同的期权评估技术:实物期权和金融期权的比较
第 4 章：风险中性概率技术
第 5 章：解决欧式和美式看涨期权
第 6 章：使用Excel解决基本的欧式和美式看涨期权
第 7 章：解决基本的放弃期权，扩展期权，收缩期权，和选择期权

模块 8: 实物期权分析:应用SLS软件

第 1 章：SLS软件不同模块介绍和波动性的估计
第 2 章：波动性估计
第 3章：改变输入变量解决期权问题和自定义的奇异期权
第 4 章：MSLS: 多阶段连续混合期权
第 5 章：MNLS: 使用三叉网格，四叉网格和五叉网格解决均值-回复，跳跃-扩散，和双资产彩虹期权
第 6 章：构建实物期权—问题结构化
第 7 章：下一步是什么…
CRM 考试复习

专家

乔纳森·文博士（Dr. Johnathan Mun）是 软件的开发者，他同时教授风险分析（**Risk Analysis**）课程，针对分析员的实物期权分析（**Real Options for Analysts**）课程，针对管理者的实物期权分析（**Real Options for Managers**）课程，注册风险管理师（CRM）课程和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型： 从巴塞尔新资本协议到华尔街的800个函数和300个模型》（Wiley 2008）； 《银行家信用风险手册： 实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作 将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和CEO，负责分析软件的开发，咨询和培训服务。他曾是 Decisioneering, Inc.（Oracle）公司分析服务部门副总裁 和毕马威 管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司 （Viking, Inc）担任金融计划和分析部门主管。 文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School） 全职教授，以及法兰克福应用科学大学（University of Applied Sciences， Frankfurt）和瑞士管理学院（Swiss School of Management， Zurich）教授，同时还在 世界各地的一些大学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。

SENIOR CREDIT RISK MANAGEMENT (SCRM) CERTIFICATION PROGRAM

“Dr. Johnathan Mun是一位充满激情的导师，最困难的项目到他手里都会变得通俗易懂。他真的是我遇见过最好的导师。”
- Curtis Ching, 通用电器 Business Development Finance总监

对于 Morton Glantz教授...
“对一些复杂的概念进行了极好的诠释” *- Tim P., African Development Bank*
“对理论和实践进行了非凡的综合” *- Javier C., Banco Bac San Jose, Costa Rica*
“简单但是尖端的内容和技术” *- Aamir L., Allied Bank Limited*

参与一个为期五天的高级信用风险管理课程，完成相关的课程学习和获得由国际教育和研究机构（IIPER）颁发的注册高级信用风险管理师认证

“Dr. Mun可以让最复杂最专业的概念变得通俗易懂，并应用到不断变化充满挑战的商业环境中。这是我所参加过的最好的一次研讨会，我承认Dr. Mun是这个领域的领头人。”
-Robert Finocchiaro博士，3M公司的研发部合作总监

“没有见过如此能干的培训师！” *- Hussein Alghamdi, Savola Group, Saudi Arabia*
“优秀的导师，实例的工场。” *- Y.L.Lee, Industrial Engineer, Seagate Technology*
“一次结合实例的非常好的培训” *- Aprianto Sommantri, 工程师, Chevron Texaco, Indonesia*

“Dr. Johnathan Mun将学习方法和教学材料有效地结合起来，用一种易于理解的方式向我们解释风险管理的认知范式的变化。鉴于未来商业发展主要是基于警觉性决策的制定，Dr. Mun的方法是迄今为止支持公司可持续发展的最有效的机制。”
- Kenneth English, Director Emerging Technologies, The Timken Company

“Dr. Mun有能力将非常复杂的事情以事实和难忘的方式传递出来，参加他的研讨会，你不仅会收获很多，你还可以立刻将所学运用到实践中去。”
- Robert Fourt, Partner, Gerald Eve Consulting (UK)

Real Options Valuation

Real Options Valuation, Inc. 4101-F Dublin Blvd., Ste 425, Dublin, CA 94568 USA +1.925.271.4438. www.realoptionsvaluation.com
China Representative: Leo Email: leo@realoptionsvaluation.com Mobile: (21) 13817400963

高级信用风险管理(SCRM)
BASEL II合规认证课程

背景

巴塞尔新资本协定的到来和对于更加全面和显著地进行管理风险的需求正在驱使各个金融机构寻求新的系统和技术来规避和减少各种风险，这些风险包括非预期的风险暴露，无担保信用风险，组合风险，运营风险和其它的各种风险等等。金融机构需要高级的技术资源和风险管理工具来精确地测量各种风险，各个银行的董事会都期望能够获取这种方法和技术。

因此，银行家和监管机构同样需要对所采用的用来测量银行风险的方法有足够的自信。需要确保这些方法在概念上可靠，逻辑上清晰，同时能够通过实证检验，通过这些方法计算出来的资本要求可以被利益相关者、管理层、董事会和监管机构所接受。

课程目标

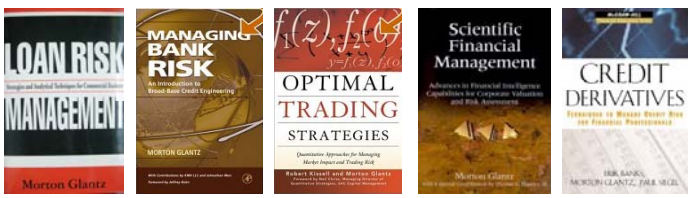
- 学习去确认与行业集中度有关的交易对手风险
- 测定Basel II的实施对企业技术的影响
- 获得与运营风险相关的合规问题的知识
- 利用复杂的高级工具，比如期权定价技术（Real Options SLS软件）和风险模拟技术(Risk Simulator 软件)来对冲市场风险
- 掌握规避风险的技术，学习如何使用风险矩阵来对贷款进行定价和对贷款组合进行优化
- 开发随机RAROC定价和VaR模型
- 通过对安然（Enron）事件进行分析来掌握高级现金流分析技术
- 通过开发Basel II 合规的针对特定行业来对投资组合进行积极管理的风险评估系统来减少运营风险
- 通过设立一个有效的测试区域和通过减少组合风险来减少运营风险
- 获得蒙特卡罗模拟、动态预测、动态优化，以及战略实物期权风险规避技术
- 学习抵押债务和信用关联票据组合的信用评级方法和技术

谁应该来参与

信用经理，会计师，公司和财务顾问，信用分析员，财务部经理，风险分析员，财务分析员，企业银行家，投资银行家，公司贷款经理，研究和评级人员，组合经理，银行监管者，管理和战略人员，风险投资首席顾问，和其它。

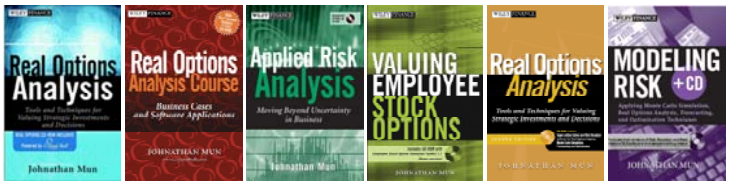
课程讲师—MORTON GLANTZ教授

Glantz教授长期在全球的多个银行业与公司任职。他为外国政府、国际银行与大型软件公司提供了大量的关于价值评估、财务软件开发与风险管理方面的咨询。他的主要领域是帮助为发展中国家提供金融服务援助（主要是非洲）。他在JP摩根大通银行的管理培训项目中的信用风险分析模型的重组和开发中起到了关键作用，此培训项目被认为是当今银行业最好的培训项目之一。他是Fordham研究生院金融学讲师。他是哈佛大学国际商业与管理学者名录成员，并获得Fordham大学优秀教师称号。他在金融报刊发表了大量文章，并出版了《信用衍生产品》（与Erik Banks与 Paul合著） 《最佳交易战略》AMACOM2003(共同作者：RoberKissel)，《银行风险管理》Elsevier Science 2003（RISKBOOK. COM奖：2003十佳金融著作），《科学金融管理》，AMACOM2000以及《贷款风险管理》（1994）, McGram Hill（1995）。他的最新著作《银行家新巴塞尔协议手册》已经于2008年由Elsevier Science出版社出版。



课程讲师—DR. JOHNATHAN MUN教授

Dr. Johnathan Mun教授是风险模拟软件（Risk Simulator）和实物期权分析软件（Real Options SLS）的开发者，同时他教授包括注册风险管理师（CRM）和高级注册风险管理培训师（SCRM）等多个课程。他为多家财务500强公司提供风险分析，价值评估和实物期权咨询工作，并出版了大量的相关书籍包括：《风险建模：蒙特卡罗模拟，实物期权分析，预测和优化应用》(Wiley, 2006)，《实物期权分析：工具和技术》（第二版，Wiley Finance, 2005），《实物期权分析课程：商业案例》(Wiley Finance, 2003)，风险分析应用(Wiley, 2003)，《*2004 金融会计标准 123下的雇员股权评估*》(Wiley, 2004)，和其它，他是Real Options Valuation, Inc.公司的创始人和首席执行官，负责分析软件产品开发、咨询和培训服务。他曾是Decisioneering, Inc. 公司的分析部副总裁和KPMG全球金融战略咨询经理。他还是美国海军研究生院全职教授以及应用科学大学（苏黎世和法兰克福）教授。他曾获得金融学与经济学博士，MBA，管理科学硕士，以及应用科学学时头衔。他是注册风险管理师(CRM).、注册金融咨询师CFC)和注册金融奉贤管理师(FRM)。



关于高级信用风险管理(SCRM)认证

Real Options Valuation, Inc.公司是全球一家提供国际专业教育和研究的机构（IIPER）的首选课程提供商，我们被授权开设SCRM认证课程，5天的研讨会，以及课程最后一天的认证考试。参与者如果通过考试可以获得SCRM证书！Real Option Valuation公司是全球有权颁发CRM证书的三家机构之一。

SCRM课程是一个高强度的培训课程，可以帮助参与者理解和应用新巴塞尔资本协议中的量化技术的要求。SCRM课程是专门针对在新巴塞尔协议方面需要进行额外培训和认证的高级银行执行官。虽然此课程主要以计算机和案例为主，但是我们没有像在专门针对分析员的CRM课程那样深入到建模的细节，因此此课程最适合银行执行官参与。

参与SCRM课程的几大优势：

- 获得高级信用风险管理**Senior Credit Risk Management (SCRM)** 认证。
- 学习的对象是本领域最知名的专家。
- 利用源头！课程是首席讲师是Risk Simulator和Real Options SLS软件的开发者，以及银行风险管理，信用风险管理，风险建模、实物期权分析和价值评估等专题12本书籍的作者。他们还是金融学和经济学学科的教授，多家跨国公司的咨询顾问，是风险分析和实物期权分析领域的全球知名专家。
- 获得免费的教材（银行风险管理和风险建模），培训，模型和案例，食品，课件，以及其它一些相关的入门学习资料。

国际专业教育和研究机构（IIPER）是一家全球性机构，其合作伙伴和办公地点包括美国，瑞士，香港，墨西哥，葡萄牙，新加坡，尼日利亚，马来西亚等等。IIPER的SCRM证书由国际认证委员会认可，IIPER是世界上享有声望的AACSB（美国国际管理教育联合会）的成员之一。AACSB是最大的由美国教育部授权的认证机构之一，全世界有500多所商学院都是其成员。此外，IIPER的研究会也获得项目管理机构（PMI）的认可，参与者在完成课程之后可以获得30个PMI认可的专业发展单元（PDU）。IIPER的国际标准董事会是由来自世界各地许多知名大学的教授组成的，包括Lehigh大学（宾夕法尼亚州），应用科学大学（瑞士），海军研究生院（加利福尼亚），密苏里州大学（堪萨斯州）等等。此外IIPER还与世界很多研究机构结成了战略合作伙伴关系。

Real Options Valuation, Inc. 4101-F Dublin Blvd., Ste 425, Dublin, CA 94568 USA +1.925.271.4438. www.realoptionsvaluation.com
China Representative: Leo Email: leo@realoptionsvaluation.com Mobile: (21) 13817400963

课程介绍

第一部分: 信用风险(GLANTZ教授)

第一天：模块 1 - 信用风险介绍

必须要整合到银行的总体风险暴露中才能准确地监控，分析和计算信用风险。此分析针对按照部门，地理位置和交易对手的风险进行分类的资产组合的弱点进行确定和测量。同时还分析了经受了时间考验的PRISM信用模型和巴塞委员会关于管理信用风险的原则。

第一天：模块 2 - 违约距离（DTD）分析

关于违约概率、违约损失、转移风险、违约概率和违约距离、Moody-KMV 违约距离和转换违约距离到预期违约频率的计算，和如何减少单个贷款和贷款组合的风险等内容。

第一天：模块 3 - 高级现金流建模和分析

开发银行的现金流模型，确定会计欺诈的处理等困饶银行家的难题，对报表的控制和合并等问题。

案例研究：通过分析安然的现金流量表来学习银行家需要了解但忽视的地方。

第一天：模块 4 - 贷款定价和RAROC

将计算机化的风险评估系统整合到定价矩阵中去，来决定关键的ROE, ROA和RAROC（贷款方面的要求），探讨这些金融工具的预期损失频率是如何影响这些工具的VaR定价和和经过风险调整的绩效测量，贷款服务和活动成本和相关的计算。

第二部分：高级风险模拟，随机预测，组合优化(DR. MUN教授)

本部分涉及容易上手的模型和简短的案例应用

第二天：模块1 - 基于风险的蒙特卡罗模拟

模拟是非常有用的预测工具，能帮助决策者，行业专家和贷款人回答如何应对预算限制，利润规划和资产管理决策等问题。学员将学习蒙特卡罗模拟方法，在任何给定的情景下，了解结果出现的整个范围和对应的置信区间。蒙特卡罗模拟的原则包括了现实世界中的多个场景和无法进行分析的多个复杂要素。我们将比较确定型和随机型预测方法，预测，压力测试中的置信区间以及预期违约频率的确定等问题。

第二天：模块2 - 分析技术

静态和动态敏感性分析，自助模拟法，数据拟合和其它的在模型中展示的决策分析技术。我们还将计算和模拟在险价值（VaR）模型和贷款组合。此外，我们还将分析包含相关关系的分析线形和非线性模型，并通过一个包含相关关系的组合模型来确定组合分散化的效果。

第二天：模块3 - 随机优化

在受到一定约束的情况下确定借款人最优化的最大价值或最小价值，以及如何通过随机优化来分析公司重组融资的非线形关系，组合最优化和资源与项目分配效率以及效率前沿等问题也进行讨论。

第二天：4 - 随机预测

讨论了多种预测技术，包括时间序列分解方法，Delphi专家法，Box-Jenkins ARIMA，多元回归和随机过程等方法。SCRM认证计划需要学员理解这些分析技术的基本逻辑，优点和缺点，而不是成为这个领域的专家。这个模块的关键就是在使用预测方法和评估结果的时候需要对所选用的方法和结果进行谨慎的尽职评估。

第三部分: 实物期权分析(DR. MUN教授)

第三天：模块 1 - 实物期权分析介绍

介绍一个非常强大的风险分析和风险管理的方法就是实物期权分析，这个方法和技术已经在多个世界著名的大学例如哈佛和MIT进行教学。简单来说，这个模块解释了5W1H，即是什么，哪里，谁，什么时候，怎么和为什么进行实物期权分析等问题，同时提供了很多现实的应用案例。例如Airbus, Boeing, 3M, Motorola, Seagate, U.S. Miltary使用实物期权分析的案例。

第三天：模块 2 - 实物期权分析

首先对金融期权和实物期权进行了一个分析比较，包括多种用来求解金融期权和实物期权多种分析方法（闭式方程的求解方法，二叉和多叉格子树法，蒙特卡罗模拟方法等等）。解决了多种实物期权分析和定价的问题，包括等待和延迟期权，放弃期权，扩展期权，收缩期权，障碍期权，连续复合期权等等。.

第三天：模块 3 - 实物期权分析

使用期权定价理论来求解内嵌在权益市场的信用信息等问题。使用期权定价模型来动态地确定预期违预频率和影响贷款价值的转移矩阵和合适的工具收益率，波动性和债务/权益价值。确定无风险对冲，确定实值期权中的概率，量化风险和定价问题中的交互作用等问题，还有通过期权定价技术来分析转移风险等问题。

第三天：模块 4 - 在信用分析中应用实物期权分析

使用折现现金流分析技术来估算项目的基准价值，考虑负面风险影响，增加实物期权分析来考虑估算项目价值正面的不确定性对项目价值的影响。介绍实物期权，需要考虑的问题，实施实物期权分析，行业应用，运行蒙特卡罗和使用不同的实物期权来对项目进行优化等内容。还有，还讨论了实物期权分析在行业应用中的案例研究。

第四部分: 贷款组合和运营风险 (GLANTZ教授)

第四天：模块 1 - 贷款组合和运营风险

为了符合新巴塞尔资本协议的要求，银行机构必须为董事会和高级管理层提供合适的关于运营风险头尺和损失的数据，特别是组合层面的数据。这些报告必须包括运营风险暴露，损失情况，相关的商业环境和内部控制评估，确定和评估所有贷款产品，活动，流程和系统中的组合风险等问题。

案例研究：Savannah West (一个建设项目的电子表格预测和模拟分析)
案例研究：RI Furniture Corp. (在给定的约束和不确定的情况下优化项目收益，进行估值和运行模拟。).

第四天：模块 2 - 运营风险和信用评级模型

在为专业借贷和积极的组合管理构建的风险评级系统中，学员通过计算机建模，使用现实数据构建一个行业或者针对特定部门的信用评级模型。风险评级系统必须针对行业的特定属性来确定足够的储备金来对抗损失，在新巴塞尔的框架进行资本分配，确定预期损失和银团交易。学员学习构建一个高度结构化的风险评级系统，这个系统包括项目融资和房地产/建设项目。并且特别关注在全球知名银行构建的风险评级系统的实践工作，例如JP摩根的组合风险管理模型，设计项目融资风险评级模型的应用学习来自国际清算银行（BIS）指定的信用评级工具和方法，包括金融和非金融的因素，和被巴塞尔提议的三年累积违预率基准监控和触发水平的介绍。在风险评级评估中整合了审计功能的借款人和交易风险和在建立的信用风险评级系统中对债务人的财务风险的权重分配和审计的分析；基于一定的违约损失情况下，转移矩阵贷款损失储备金分析。

专家团队陈述- 案例研究：石油开发公司

学员对这个家涉及石油和天然气的公司进行风险评估和对该贷款申请使用买入和卖出的定价结构进行分析。学员通过学习更多的知识来解释和陈述案例（请参看以下模块）解释该贷款评级的理由。

第四天：模块 3 - 运营风险和贷款管理信息系统：来自数据分析的挑战

要符合新巴塞尔资本协议的要求需要分析大量的数据，特别是银行的国内和国外网络对贷款行业和关于国家的风险暴露方面的信息。许多金融机构发现现有的解决方案不能提供详细的分析信息，也无法提高新巴塞尔资本协议所要求的全球风险管理报告职能。

在这里，学员需要学习这些重要的组合管理工具，同时学习如何将这些工具和知识应用到自己的工作中去。我们会检验数据挖掘和数据仓库系统，组合风险暴露管理，GES基本数据协调单位，如何在一个GES中设立报告功能和为董事会提交的报告，还包括信息流：数据技术，数据挖掘，数据仓库，在线分析过程(OLAP) 和数据超市等。

第四天：模块 4 - 运营风险和贷款测试

测试的目标有两个：解释信用分析的方法和解释如何针对相关的问题来思考解决方案。没有很好组织的测试区域会增加运营风险和减少组合的质量。贷款测试的本质和目标，分类贷款的描述和测试过程中十一个相关问题都需要文件化和程序化，遵守协议的规定，跟随的流程和文件化，债务恢复和价值评估等。

专家团队陈述- 案例研究：Jen Krist公司

第四天：模块 5 - 当今最流行的组合模型分析

- CreditMetrics
- 麦肯锡（McKinsey） CreditPortfolioView
- Moody's KMV Portfolio Manager:
- Moody's-KMV 其它模型： RiskAnalyst, LossCalc, CreditEdge
- 标准普尔（S&P）的模型：CDO Evaluator, Credit Risk Tracker, Credit-Model, Default Filter, Model Evaluation, CreditPro, CreditRisk+

第四天：模块 6 - 信用衍生产品和债务担保证券

信用衍生产品是是一种考虑了隐蔽的信用风险交易的金融工具，因此对对冲和投资活动提供了新的方法。他们可以在风险减少和组合分散中使用，同时也可以在综合资产，市场无效率套利和贴水预期投资的创造中进行使用。CDOs是一种将现存金融资产（通常是债券和贷款）组合重新打包为新的产品的方法和工具，这些新的产品可以根据需要来设计成具备不同的风险。

第五天：模块 1 - 违约相关性

在计算组合效率前沿的时候确定和计算违约相关性。

案例研究：什么是组合的相关性？

Food Products 公司是一个牛肉生产商（在一个假想的银行组合中的唯一的风险暴露）。银行可以通过给一个家禽饲养所提供贷款来对其组合进行风险分散。两个贷款除了行业的差别和宏观经济的敏感程度以外都是相同的：贷款的数量，风险评级，资产规模，关键的指标，质量，量级，现金流趋势等等。这个新的贷款是否会减少组合的预期的损失和减少资本的分配呢？

第五天：模块 2 - 交易分析：评级机构对资产组合信用关联票据的分析

这是本课程中最重要的一个案例。参考资产组合为20亿美元，学员通过结合在本课程中所学到的知识来尝试对该复杂组合对冲进行评级，结构化，定价和估值等工作，涉及到期权定价，模拟，交互的风险评级等知识。此交易的情况为：由First City Bank Group于2003年12月12日发起的，至少有70多家公司参与的包含高级别的担保和无担保债务组合，在该组合中，每个公司有一个评级机构提供的评级或者由First City Bank Group公司提供的等价的评级，评级在BBB-或者更高。根据与First City Bank Group的信用互换协议，票据持有人在当初发生的137百万美元损失中不受影响。这相当于20亿美元资产中的6.85% 。

此案例建立在关于连续信用和重建决策等作为这个生产商信用退化的一个触发事件的基础上。学员需要以小组工作的方式来决定这个集团在信用供给方面的限度。

第五部分：组合和合规/审计管理(GLANTZ教授)

第五天：模块 3 - 贷款政策委员会

本模块的话题包括：

- 信用政策委员会
- 建立贷款政策制度
- 信用审核部门
- CAMELS - 一个分析银行信用的结构，由世界银行（IMF）使用
- 银行监管分析
- 监管和内部审计
- 审计检查要求，手册和审计清单

第五天：模块4 –银行董事会的职责

董事会报告的回顾可以帮助确保银行，资产负债表的状况，收入表，和资本和贮备帐户变更表的合规要求，包括了自从上次报告直至现在这段期间变化的分类证券投资报告，帐面和市场价值，收益贷款报告，列示的重要的过往到期贷款，不良行为的趋势，费率的减少，非收入生产贷款，和新授予的贷款。所有新执行官最新的介绍的审计和检查报告，列示了由银行介绍的类型和数额，银行保险覆盖的声明，董事会的联系地址，和任何其它的银行流动头寸的源头分析和资本需求的预测，和一个现存诉讼和潜在风险暴露的状况报告。

第五天：模块5 - 针对SCRM测试要求的回顾

这是一个针对SCRM测试的一个全面回顾，这个回复是为帮助学员成功地通过SCRM认证考试而设计的。

第六部分：SCRM认证考试 (DR. MUN教授)

SCRM或者高级CRM认证考试包含50道多项选择题，学员需要需要获得60%以上的正确率，和参加了为期5天的高强度培训课程才能通过考试。学员必须拥有最少5年以上的工作经验和持有学士或以上学位，如果没有学士学位，则需要有10年的工作经验。考试在课堂上进行，学员可以参考课本和计算机来进行考试，但是每位学员都毕业独立完成考试，所有参加了考试的学员都必须事先完成和提交IIPER的申请表格，所有相关的费用已经包含在培训课程的费用中。

Sample Clients

- ABS Consulting
- Accenture
- AIG
- Air Products and Chemicals
- Alexion
- Alliant Energy
- Allstate Insurance Company
- Aquila
- Arena Pharmaceutical
- AT&T
- Bayer
- **Bank of China**
- Becton Dickinson
- Bergey Inc.
- **BHK Bank**
- Black & Veatch
- BOC Gases
- Boeing
- Booz Allen & Hamilton
- BP
- Bristol Myers Squibb
- British Energy plc
- Caledonia Group, Inc.
- Cap Gemini Ernst & Young
- Cargill
- CB Hillier Parker
- Cemex Cental SAD CV
- ChevronTexaco
- Chiron
- CIBC World Markets
- City of Palo Alto
- CNF Inc
- Colorado Springs Utilities
- Commonwealth Energy Advisors
- Con Edison Energy
- Conoco
- Corpomtle Value Advisors
- Crisp Hughes Evans LLP
- **Cyprus Development Bank**
- Decision Strategies
- Department of Interior
- Discovision Associates
- Duke Energy
- ECS Risk Control
- Editions MEV
- Eli Lilly & Company
- EMI Music Publishing
- eNMARKET
- Entergy Services
- Enviros
- Equiva Trading
- EURESAS
- **Euromoney**
- Exelon Power Team
- Foamex
- **GE Capital**
- **GE Money**
- GE Power Systems
- Gemplus Corp
- Gerald Eve
- Gibralter Business Appraisals, Inc.
- Glaxo SmithKline
- **Gulf Bank (Kuwait)**
- GMO
- Halliburton Energy Services
- Hewlett Packard
- Hostcentric, Inc
- **IBM Credit Corporation**
- **ICICI Bank (India)**
- INAVISIS
- Ingersoll-Rand
- Intel Corporation
- Intecap
- Iowa State University
- **Iran Development Bank**
- ITESM
- Janssen Pharmaceutica Products
- Johns Mansville
- Johnson & Johnson Consumer Products Company
- Kawasumi Laboratories America
- Keyspan Corporate Services
- Lafarge North America
- **Lloyds Bank TSB**
- Louis Dreyfus
- Michigan State University
- Monitor Group
- MYOB Australia Pty, Ltd.
- Nahle & Company, S.C.
- Navigant Consulting, Inc.
- NE Public Power District
- NOVA Chemicals Corporation
- Occidental Oil & Gas Corp
- Oklahoma Gas & Electric
- Panorama Research
- Pfizer
- PG&E
- Phillips 66 Company RM&T
- Pinnacle West
- Pioneer Hi Bred International, Inc.
- PolyOne Corp
- Public Service of West Virginia
- Purushothaman
- Rack Space
- Renessen LLC
- Roche Diagnostics Corporation
- Rohm and Haas Company
- Russell, Ronnie
- **Salomon Smith Barney**
- Schlumberger Doll Research
- SDI GmbH
- Seagate Technologies
- Sempra Energy
- Shell International Holdings Limited
- Software Spectrum
- Sprint PCS
- Steve Shaw Associates
- StorageTek
- Sunoco, Inc.
- Syngenta Biotechnology
- The Timken Company
- Total Fina Elf
- UCS Investment Co.
- Union Pacific Railroad
- United States Sugar Corporation
- Washington Gas
- Williams Communications
- American College
- Arizona State University
- Baylor University
- Boston College
- Capella University
- Chung-Ang University (South Korea)
- Colorado School of Mines
- Dartmouth College
- Georgetown University
- IESA
- Iowa State University
- ITESM (Mexico)
- Michigan State University
- **MIT**
- **New York University**
- Norwegian University
- Open University (Germany)
- Oregon Graduate Institute of Tech
- Otto Beisheim Graduate (Germany)
- Pennsylvania State University
- Southern New Hampshire University
- Stockholm University (Sweden)
- Universidad de los Andes (Chile)
- Universidad Simon (South America
- Universitat Bern Institut (Germany)
- University of Alaska
- University of Albany (Canada)
- University of Alberta
- University of Cape Town (Africa)
- University of Chile (Chile)
- University of Cincinnati
- University of Cordoba (Central America)
- University of Denver
- University of Florida
- University of North Carolina
- University of North Dakota
- **University of Pennsylvania (Wharton)**
- University of Siegen (Europe)
- University of Wisconsin
- University of Wuppertal
- Wayne State University

Real Options Valuation, Inc. 4101-F Dublin Blvd., Ste 425, Dublin, CA 94568 USA +1.925.271.4438. www.realoptionsvaluation.com
China Representative: Leo Email: leo@realoptionsvaluation.com Mobile: (21) 13817400963

Sample References and Quotes

参加过我们培训课程的公司包括（部分）：

3M, Accenture, AIG, Allstate Insurance, Airbus, Alexion, Aquiva Trading, AT&T, Bank of China, BHF Bank, Boeing, Chevron Texaco, Cyprus Development Bank, Development Bank of South Africa, Duke Energy, Eli Lily, Euromoney, GE, GE Capital, Glaxo SmithKline, Gulf Bank, Intel, Johnson & Johnson, Lloyds Bank, Motorola, Phillips, Pioneer, Roche Molecular Diagnostics, Salomon Smith Barney, Seagate, Schlumberger, Shell, Sprint, Sunoco, Syngenta, Timken, Total Elf Fina, UAL Merchant Bank, USC Investment, Washington Gas, and many others!

QUOTED FROM OUR TRAINING SEMINARS/BOOKS

GE *(world's largest corporation):*

"Dr. Johnathan Mun is a brilliant and energetic instructor able to take the most difficult subjects and make them understandable and practical. Certainly the best instructor I have had in a long time."
-Curtis Ching, Director Business Development Finance, GE, GE Money (Asia)

ING INVESTMENT MANAGEMENT

(One of the worlds largest investment managements with over $700 billion assets under management)

"The seminal book titled "Optimal Trading Strategies," by Kissell and Glantz... coined the term "efficient trading frontier" to refer to an optimal trade-off between impact cost and timing risk".

3M *(world's most creative firm):*

"Johnathan Mun is able to take even the most difficult and technically challenging concepts and make them simple to understand and applicable to today's challenging and changing business environments. It is definitely one of the best seminars I have ever attended and I would rate Dr. Mun as the top lecturer in the field." ***-Dr. Robert Finocchiaro, Director of Corporate R&D, The 3M Company (USA)***

U.S. Department of Defense *(world's largest employer):*

"Great presentation! A must have! Very good session with the best cost/option/risk discussion I've seen. This should be required for every new crop of Navy Admirals. This session was awesome. Great presenter – kept us interested. He described and presented a set of tools for a senior leader to use to make better decisions. Dr. Mun was very animated and enthusiastic. Real-world examples added significantly to understanding. Demanded the audience to think. Very good real world examples were included. Simply outstanding!"
-A compilation of quotes from Navy Commanders and Captains at the U.S. Naval Postgraduate School (USA)

The Timken Company *(most charitable corporation):*

"Dr. Johnathan Mun has been able to put together both the learning approach and teaching materials that make the changing of our cognitive schema of how we manage risk in a digestible form. Since the future of business is focused on vigilant decision making, the approach that Dr. Mun utilizes is by far the most effective mechanisms for supporting corporate sustainability."
-Kenneth English, Director Emerging Technologies, The Timken Company (USA)

Gerald Eve *(a real estate consulting firm based in the U.K.):*

"Dr. Mun has the ability to take the rocket out of the science and bring complicated matters very much down to earth in a matter of fact and memorable way. Put simply you come away from his sessions not only having learnt a great deal, but starting to use it in practice immediately." ***- Robert Fourt, Partner, Gerald Eve Consulting (UK)***

ON BOOKS, METHODOLOGY, AND ANALYTICS

AIRBUS *(the world's largest aircraft manufacturer in Europe):*

"Johnathan Mun has previously published a number of very popular books dealing with different aspects of risk analysis, associated techniques and tools. This last publication puts all the pieces together. The book is really unavoidable for any professional who wants to address risk evaluation following a logical, concrete and conclusive approach." ***-Jean Louis Vaysse, Deputy Vice President Marketing, Airbus (France)***

SEAGATE *(one of the world's largest hard drive makers):*

"A must read for product portfolio managers... it captures the risk exposure of strategic investments, and provides management with estimates of potential outcomes and options for risk mitigation." ***-Rafael E. Gutierrez, Exec. Director of Strategic Marketing Planning, Seagate Technology (USA)***

GEMPLUS *(makers of flash memory and smart cards in France):*

"Mun demystifies real options analysis and delivers a powerful, pragmatic guide for decision makers and practitioners alike. Finally, there is a book that equips professionals to easily recognize, value, and seize real options in the world around them." ***- Jim Schreckengast, Sr. Vice President, R&D Strategy, Gemplus International SA (France)***

MONITOR GROUP *(a premier consulting firm):*

"…this book is a must have and must read… Dr. Mun's new book is a refreshing, cutting-edge look at a powerful new decision making process… it isn't often you can truthfully say a book breaks new ground, but [this book] has certainly done that." ***-Glenn G. Kautt, President, Monitor Group, Inc. (USA)***

WHARTON *(one of the world's best business schools):*

"Real Options Analysis is the clearest book on real options that we have read to date. It does an excellent job of demystifying a difficult and complex subject. It provides a solid basis for conceiving, assessing, and evaluating real options investments, which will make it useful to practitioners and students alike."
-Ian MacMillan, Ph.D., Fred Sullivan Professor of Entrepreneurship, Wharton School, University of Pennsylvania (USA)

"Managing Bank Risk should be required reading for the growing number of Credit Risk Managers and Credit Risk Departments at big banks and even community banks. One thing we learned from Enron and other troubled borrowers that did not make it through the 2001-2002 recession is that there can never be too much credit analysis, especially on complicated deals which are becoming more the rule rather than the exception. This book will be one of the most important tools in this regard for bankers, examiners and others interested in understanding and measuring credit risk." ***- Kenneth H. Thomas, Professor of Finance, Wharton School, University of Pennsylvania (USA)***

GARTNER GROUP *(a premier consulting and publication outfit):*

"Strategy development has fallen on hard times being judged not relevant for a rapidly changing world. With this book, Dr. Mun attacks this poor excuse head-on by presenting a clearly organized, tool supported, methodology that logically progresses from exploring uncertainty that bounds risk to the creation of options for constructing realistic business strategies"
-Robert Mack, Vice President, Distinguished Analyst, Gartner Group (USA)

"Morton Glantz's book truly deserves 5 stars. It is literally stuffed with very specific steps, processes and case studies. Moreover the book is easy to understand. It is very worth the money. I highly recommend this book to credit risk managers, financial analysts or to those readers who are involved in development of credit policies or procedures." - ***www.very-clever.com***

"…finally, a real options analysis book that is technically sophisticated enough to be useful, and practically written so that it can actually be used. It is destined to become the handbook of real options."
-Tracy Gomes, President, Intellectual Property Economics, (USA)

"...written from the viewpoint of an educator and a practitioner, his book offers a readable reference full of insightful decision making tools to satisfy both the novice and the experienced veteran."
-Richard Kish, Ph.D., Associate Professor of Finance,
Lehigh University (USA)

"Mun has converted his tacit financial knowledge into a digestible user-friendly book. He effectively leads the reader on a solid path starting from *discounted cash flow*, progressing through *Monte Carlo analysis* and evolving to *real options* to get even closer to the target of achieving confident corporate decisions. His ability to clearly explain the relationships of popular competing analysis methods will make this a must-have reference book for today's decision makers."
-Kenneth English, Director of R&D, The Timken Company (USA)

"Dr. Mun's latest book is a logical extension of the theory and application presented in *Real Options Analysis*. More specifically, This book presents numerous real options and risk analysis examples and provides the reader with step-by-step problem solving techniques. After having read the book, readers will better understand the underlying theory and the opportunities for applying real option theory in corporate decision-making."
-Chris D. Treharne, M.B.A., A.S.A., M.C.B.A., President ,
Gibraltar Business Appraisals, Inc. (USA)

"This text provides an excellent follow up to Dr. Mun's first book, *Real Options Analysis*. The cases provide numerous examples of how the use of real options and the Real Options Toolkit Software can assist in the valuation of strategic and managerial flexibility in a variety of arenas, with many practical and useful examples."
-Charles T. Hardy, Ph.D., M.B.A., Chief Financial Officer &
Director of Business Development, Panorama Research, Inc. (USA)

"Mun provides a very practical step-by-step guide to applying simulations and real option analysis—invaluable to those of us who are no longer satisfied with conventional valuation approaches alone."
-Fred Kohli, Head of Portfolio Management,
Syngenta Crop Protection Ltd. (Switzerland)

"Once again, Dr. Johnathan Mun has attained his usual standard: excellence in making not-so-simple but very useful quantitative analytical techniques accessible to the interested reader who doesn't necessarily have an engineering or scientific training. This book presents a seriously comprehensive guide to everyday users of spreadsheet models, particularly those interested in Risk Analysis and Management, on how to move beyond simple statistical analysis. It is a "must have" to academicians searching for user-friendly bibliography, and to practitioners willing to get a first-hand experience on cutting-edge, high-productivity analytical tools."
-Dr. Roberto J. Santillan-Salgado, Director of the M.S.,
EGADE-ITESM, Monterrey Campus (Mexico)

"Johnathan Mun's book is a sparkling jewel in my finance library. Mun demonstrates a deep understanding of the underlying mathematical theory in his ability to reduce complex concepts to lucid explanations and examples. For this reason, he's my favorite writer in this field. Experienced professionals will appreciate Mun's competence in boiling down complex math to a clear presentation of the essential solutions to financial risk, corporate finance, and forecasting."
-Janet Tavakoli, President, Tavakoli Structured Finance (USA)

"Mort Glantz has succeeded in writing a book which reformulates proven concepts of credit risk management in the context of contemporary best practice techniques in portfolio management. The invaluable supporting and reference materials make this a benchmark publication for the financial community."
-George Votja, Director, Financial Services Forum (USA)

Morton Glantz has written a "soup-to-nuts" text on the commercial lending process within banks. The book is exceptional, offering both breadth and depth of coverage, and was awarded the "RiskBook.com Top 10 Finance Books published in 2003." ***-The editors at Riskbook.com***

Optimal Trading Strategies by Kissel and Glantz ...it is an important contribution to the literature and well worth its price." ***-Neil A. Chriss, Managing Director of Quantitative Strategies, S.A.C. Capital Management (USA)***

"Mun certainly has earned the reputation of being an expert on the subject… consultants, analysts, decision makers and engineers will be all over this book and its software."
-Phyllis Koessler, Managing Director, Koessler and Associates (Switzerland)

"Most of us come to real options from the perspective of our own areas of expertise. Mun's great skill with this book is in making real options analysis understandable, relevant and therefore immediately applicable to the field within which you are working." ***-Robert Fourt, Partner, Gerald Eve (UK)***

"Every year the market of managerial books is flooded again and again. This book is different. It puts a valuable tool into the hands of corporate managers, who are willing to stand up against uncertainties and risks and are determined to deliver value to shareholder and society even in rough times. It is a book for the new generation of managers, for whom Corporate America is waiting."
-Dr. Markus Götz Junginger, Managing Partner,
IBCOL Consulting AG (Switzerland)

"Dr. Mun breaks through the hyperbole and presents a clear step-by-step approach revealing to readers how quantitative methods and tools can truly make a difference. In short, he teaches you what's relevant and a must know. I highly recommend this book, especially if you want to effectively incorporate the latest technologies into your decision making process for your real world business. "
- Dr. Paul W. Finnegan, MD, MBA, Vice President,
Commercial Operations and Development, Alexion Pharmaceuticals, Inc.

"Mun has the uncanny ability to clarify the complex, distilling risk analysis concepts into a truly readable and practical guide for decision-makers. This book blazes a trail that connects abstract yet powerful theories with real-world applications and examples, leaving the reader enlightened and empowered. "
-Stephen Hoye, MBA, President, Hoye Consulting Group (USA)

"This book is a pleasure to read both for subject matter experts as well as for novices. It holds a high risk of addicting the readers. Dr. Mun leads the readers through step by step complex mathematical concepts with unmatched ease and clarity. Well chosen examples and pointers to pitfalls complement the splendidly written chapters. This book will be a bestseller in Risk Management and is a *must read* for all professionals."
-Dr. Hans Weber, Syngenta AG (Switzerland)

"Dr. Mun's new book provides the best and most comprehensive pragmatic guide to valuing strategic decisions and options—both in the corporate setting as well as in evaluating strategic military decisions. This book is an instant classic and must be read by anyone who needs to perform real options, decision, and risk analysis. The second edition is more versatile by expanding the scope and coverage of practical hands-on real options cases while continuing the high standard of excellence in the first edition. Simply put, this is the most practical and theoretically sound book I have ever read on the subject of real options."
-Tom Housel, Ph.D., Professor of Information Sciences (Naval Postgraduate School, Monterey, California) and author of "Measuring and Managing Knowledge." (USA)

"…the clarity and comprehensive coverage makes it one of the best guides for all practitioners… coupled with state-of-the-art financial tools CD-ROM."
-Michael Sim, Partner, Moores Rowland International (Hong Kong)

客户评论

以下是我们的培训，软件和咨询服务的部分客户名单：

3M, Accenture, AIG, Allstate Insurance, Airbus, Alexion, Aquiva Trading, AT&T, Boeing, Chevron Texaco, Duke Energy, Eli Lily, GE, GE Capital, Glaxo SmithKline, Goodyear, Halliburton, Intel, Johnson & Johnson, Lloyds Bank, Motorola, Phillips, Pioneer, Roche Molecular Diagnostics, Seagate, Schlumberger, Shell, Sprint, Sunoco, Syngenta, Timken, Total Elf Fina, Washington Gas, 以及更多！

培训

GE（世界最大的公司）：

“Dr. Johnathan Mun是一位充满激情的导师，最困难的项目到他手里都会变得通俗易懂。他真的是我遇见过最好的导师。”

Curtis Ching，通用，通用金融（亚洲）商业发展和金融总监

3M（世界最具创新精神的公司）：

“Dr. Mun可以让最复杂最专业的概念变得通俗易懂，并应用到不断变化充满挑战的商业环境中。这是我所参加过的最好的一次研讨会，我承认Dr. Mun是这个领域的领头人。”

Robert Finocchiaro，博士，3M公司美国, 公司研发服务部总监

美国国防部（世界上最大的雇主）：

“精彩的报告！你一定要参加！我所见过得最好的有关成本、期权、风险讨论的研讨会。每一位新的海军上将都应该参加这次培训。会议气氛是紧张的，有好的演讲者——能抓住我们的好奇心。他为高层领导者描述了如何利用一系列工具来作出更高的决策。Dr. Mun是一位充满激情的人。他提供了很多好的现实世界中的案例，引导听众参与思考，提高了大家的理解力。太棒了！”

个美国海军研究生院（U.S. Naval Postgraduate School）海军指挥官和统帅的评论编辑

铁姆肯公司（Timken Company）（最热忠于慈善事业的公司）：

“Dr. Johnathan Mun将学习方法和教学材料有效结合起来，用一种可以理解的形式解释我们如何管理风险的认知图式的变化。鉴于未来商业的发展主要是基于警觉性决策的制定，Dr. Mun的方法是迄今为止支持公司可持续发展的最有效的机制。”

Kenneth English，Timken 公司（美国）新兴技术部总监

Gerald Eve（英国一家房地产咨询公司）：

“Dr. Mun有能力将非常复杂的事情以事实和难忘的方式表达出来，参加他的研讨会，你不仅会收获很多，还可以立刻将所学运用到实践中。”

Robert Fourt，Gerald Eve询公司（英国）合伙人

“Dr. Johnathan Mun博士在全球金融和商业的历史上最有天才的定量风险分析之一。所有他的书籍集科学，艺术，直觉，创造性于一体。当面临不确定性的时候，在关于如何制定合适的商业决策方面，它们非常容易理解，非常实用，并且达到令人吃惊的清晰。他那包含800个模型的软件工具和之前被开发的所有软件不同，如同一个宝库，绝对的独一无二。在他的书，软件和课程中的风险模型的实际应用将会普遍应用到我们的工作中，这一天将不会遥远！”

Brian Watt， GECC（美国）首席风险执行官

“通过使用现实世界的案例来阐述概念实在是太棒了，Mun对所讲的知识有着彻底的理解和能够将知识传授给参与者。”“

Tim Mull，美国国防部（美国）海军上尉

“讲师的知识深度和引导我们通过在计算机上进行实际操作的方法来学习实际案例的能力简直不可思议！”

Debra Gordon，National Bank of Dominica（加勒比海）信用分析员

“通过出色的解释和案例，所有的技术材料都非常容易理解。”

Mark Rhoades，Naval University（美国）教授

“对于复杂的培训主题的出色传达，Mun博士一直让我们融入到整个培训课程中去。”

Lou Owayni，Adaptec （美国）高级项目经理

“培训的大部分内容都与我的工作非常相关，培训师的陈述方式非常棒。”

Chris Law ，Genentech（美国）项目服务部总监

“收获了非常出色的知识。”

Vitorio Stana，Avcorp Industries（加拿大）质量保障部总监

“对培训主题的清晰解释，热情和平容近人的Mun博士。”

Andrew Putney，Maxiom咨询集团（美国）

“Mun博士的，对所培训主题的热情，以及提供实用案例的能力成就了这次出色的培训体验”

Kristi Novinger，APL Limited（美国）高级IT项目经理

“Mun博士的知识非常不可思议，他的热情非常高涨并且极度具有感染力，我真的非常喜欢这些主题”

Brian Suter，Wells Fargo（美国）项目经理和分析师

关于书籍，分析工具和分析方法

AIRBUS（空中客车）（位于法国的世界最大飞机制造商）：
“Johnathan Mun在风险分析及相关的技术和工具方面已出版了大量的热销书籍。最后这本著作集所有前者的精华于一身。对于希望采用合乎逻辑的、有效和确定的方法来进行风险评估的人士来说这是一本必备宝典。
Jean Louis Vaysse, 空中客车（法国）副主席

SEAGATE（希捷公司，世界最大的硬盘生产商之一）：
“一本产品组合管理经理的必读书籍…它捕捉了战略投资的风险暴露，并提供了对潜在结果估算的管理和风险缓解的解决方法。”
Rafael E. Gutierrez, Executive Director of Strategic Marketing , Seagate Technology (USA)

GEMPLUS（金普斯公司，法国一家内存和智能卡生产商）：
“Mun揭开了实物期权的神秘面纱，并且给予决策者和实践工作者强有力的、有效的指导。于是，也就诞生了一本配备给专业人员的书，从而可以使他们轻松地确认、评估并抓住现实生活中的实物期权。”
Jim Schreckengast，Gemplus国际SA（法国）研发战略部高级副总裁

MONITOR GROUP（摩立特咨询集团，一家世界顶级咨询公司）：
“此书绝对是一本的必读书籍… Dr. Mun的新书让人振奋，着眼于一个强大的新的决策制定流程。你总不会经常认为一本书就开辟了一个新天地，但是这本书确实这么做到了。”
Glenn Kautt，摩立特咨询集团（美国）首席执行官

WHARTON（沃顿商学院，世界上最好的商学院之一）：
“截至目前，在实物期权分析领域内，Dr. Mun的《实物期权分析》是我们能读到的思路最清晰的一本书，它在阐明一门艰深而又复杂的学科方面做得非常优异。这本书为实物期权投资分析的构思和评估提供了坚实的理论基础，这对务实工作者和学生都大有帮助。”
Ian MacMillan博士， 宾西法尼亚大学（美国）沃顿商学院企业家精神教育教授

KOZO（日本一家一流开发商）：
“很对关于实物期权的书都十分晦涩。Mun博士的书却很实用、可靠，提供轻松的指导和具有趣味性。复杂的概念和公式，辅之以精选的案例以及在多个行业中的逐步示例清晰地被展示出来。”
Shota Hattori，Kozo Keikaku公司（日本）总裁和首席执行官

GARTNER GROUP（一家世界一流的咨询和出版机构）：
“相对于这个快速变化的世界来说，战略策划正经历一个困难的时期。在本书中，从探索不确定条件下的风险到构建现实的商业战略，Dr. Mun通过结构清晰、有技术支持和符合逻辑的方法做到了这一点。”
Robert Mack，Gartner集团（美国）副总裁

“总之，《实物期权分析》这本书有着足够实用的复杂技术，行文从实际出发，所以十分实用。因此，它注定会成为实物期权领域工作指南。”
Tracy Gomes，美国知识产权经济学有限责任公司总裁

“从一个教育家兼实践者的视角出发，他的这本书提供了充满真知灼见的决策制定工具和方法的索引，同时满足了初学者和经验人士的需求。”
Richard Kish博士，利哈伊大学（Lehigh University）金融学教授

“Mun博士将金融分析技术和教学材料有效地结合起来，以一种容易理解的方式向我们解释了关于管理风险方法和技术的演化进程，从折现现金流到蒙特卡罗分析再到实物期权分析。鉴于未来商业的发展主要是基于警觉性决策的制定，Mun博士的方法是迄今为止支持公司可持续发展最有效的机制”
Kenneth English，美国铁姆肯公司（Timken Company）研发部主管

“这本书详述了实物期权分析，将成为任何对进行这些分析感兴趣的人的必读书目。Mun博士已经将一门艰难的科学解释得如水晶般清晰透彻，使高层管理者可以加深对该学科的理解。蒙特卡罗模拟和实物期权的软件本身就能使这本书的价格增加数倍。”
Morton Glantz，美国著名金融学教育家，多本书籍作者，政府和私人企业金融顾问

“Mun对于模拟和实物期权分析的应用为我们做了一步步详尽的指导，这对我们这些不再仅仅满足于传统估值方法的人来说是无价之宝。”
Fred Kohli，Syngenta有限公司（瑞士）组合管理负责人

“我们中的大多数人都是从本领域的角度出发来接触实物期权的。Mun博士的这本书中就是教我们如何理解实物期权，如何将这些分析方法和你的工作联系起来，而且如何迅速应用到其中。”
Robert Fourt, Gerald Eve公司（英国）合伙人

“Johnathan Mun的书是我金融书库中的一颗瑰宝。通过将复杂的概念融合在明晰的案例和解释之中，Mun向我们展示了他对于其中所包含的根本数学理论的深刻理解。由于这个原因，他是这个领域里我最喜欢的作家。即使是经验丰富的专家都会赞赏Mun能够将复杂的数学概念融合到对金融风险，公司金融和预测清晰的解决方案中的能力。”
Janet Tavakoli，Tavakoli 机构金融公司首席执行官

“每年市场上关于管理方面的书籍都泛滥成灾，但这本书却有别于其他书籍。它为公司的管理者提供了一种有价值的工具，适用于那些想要回避不确定性和风险，想要在困难时期依旧为股东和社会创造价值的那些人。这是为新时代的经理人准备的一本书，美国企业正翘首企盼它的到来。”
Markus Junginger博士，瑞士IBCOL咨询公司执行合伙人

“Mun博士毫不夸张地以一种清晰的方式向读者揭示了定量方法和工具所带来的不同效果。简单来说，他会教你什么是相关的必备知识。我强烈推荐这本书，尤其是当你想要在业务决策中有效地纳入和使用这种最新的技术方法。”
Paul W. Finnegan博士， MD，MBA，Alexion 制药公司商业运营发展部副总裁

“Mun拥有神奇的能力，他能够将复杂的风险分析概念以一种决策者能够理解的方式阐述出来。本书是将抽象的理论与现实应用和实例结合的一次尝试，启发和教育读者。”
Stephen Hoye，Hoye咨询公司首席执行官

“本书对于本领域的专家和初学者来说都是一本值得阅读的好书。对于读者来说极具吸引力。Mun博士轻松地一步步向读者阐述了复杂的数学概念。精心选择的案例和阅读警示使本书变得完美。这本书会成为风险管理领域的畅销书以及所有专家的必备读物。”
Hans Weber博士， Syngenta AG（瑞士）

“Mun博士的新作为我们在评估战略决策和期权方面提供了最容易理解和最富有实效的指导，特别是在公司决策和战略军事决策的评估方面。这本书对于那些想要学习实物期权、决策和风险分析的人来说是必备的经典读物。第二版在保持第一版高标准的前提下增加了部分内容和一些有用的实物期权案例，更加实用。简单来说，这本书是我在实物期权分析领域所读到的最实用的书籍。”
Tom Housel博士，美国Monterey国防部海军研究生院信息科学系教授

“清楚完整的介绍使该书对所有从业者都是最好的指南之一，CD-ROM中还附有顶尖的金融工具分析。”
Michael Sim，Moores Rowland International（香港）合伙人

“这一次Johnathan Mun博士用采用了以往的风格，就是能让那些没有工程学或科学培训背景的读者接受这些复杂但非常有用的定量分析方法。本书为电子数据库模型的日常使用者提供了有效的指导，尤其是那些对风险分析和管理有兴趣并想在简单统计分析基础上更进一步的人。它对于那些寻找便利参考书的研究者以及那些想要在尖端高效的分析工具方面获得第一手经验的人来说是一本“必备”的参考书。”
Roberto J. Santillan-Salgado博士，Monterrey Campus（墨西哥）EGADE-ITESM，M.S.总监

“Mun博士的新作是《实物期权分析》一书在理论和应用的逻辑拓展。具体来说，实物期权分析课程有大量实物期权应用案例，并为读者提供了逐步的解决方法。在读完本书之后，读者将会更好地理解实物期权理论在公司制定决策的过程中的潜在原理和应用实物期权理论在公司决策制定过程中的机会。”
Chris D. Treharne, M.B.A., A.S.A., M.C.B.A.，Gibraltar商业评估公司（美国）总裁

“这本书是Mun博士是其第一本著作《实物期权分析》之后的又一力作。实物期权分析课程中的案例教授我们如何使用实物期权，而实物期权软件工具箱则在很多领域的战略和管理灵活性估值都有广泛的应用，提供了很多富有实践性的实用案例。”
Charles T. Hardy, Ph.D., M.B.A.，Panorama Research公司（美国）首席财务总监和业务发展总监

“在这一领域，Mun博士已经是一个顶级的专家，在这本书和他的软件中散发的智慧，将使其成为读者的咨询师、分析师，决策者和工程师。”
Phyllis Koessler，Koessler and Associates（瑞士）执行董事

创始人简介

DR. JOHNATHAN MUN, Ph.D., MS, MBA, BS, CRM, CRA, FRM, CFC, MIFC

Dr. Johnathan C. Mun 博士是Real Options Valuation公司（ROV）创始人，主席兼CEO。ROV是一家集咨询培训和软件开发为一体的专业化公司，专注于战略实物期权，财务评估，Monte Carlo仿真，随机预测，优化，以及风险评估，公司坐落在加利福尼亚硅谷北部。ROV在加利福尼亚，纽约，墨西哥，智利，瑞士，澳大利亚，日本都有合作伙伴，在中国上海也开设有一家分公司。Mun博士也国际职业教育发展研究所（IIPER）的主席，是一家官方认证全球性机构，提供注册风险管理师认证（CRM），该机构由全球多家知名大学的教授组成。

Dr. Mun博士也开发了Modeling Toolkit软件，Real Options Super Lattice Solver软件，Risk Simulator软件，以及Employee Stock Options Valuation软件，以及风险分析的培训DVD，他还是主讲风险分析和注册风险管理师的课程项目。十本专著的作者包括Basel II Handbook on Credit and Market Risk (Elsevier 2008),Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting, (Wiley 2006), Real Options Analysis: Tools and Techniques, First and Second Editions (Wiley 2003 and 2005), Real Options Analysis Course: Business Cases (Wiley 2003),等。他的专著和软件已经被全球多家著名大学所使用（包括德国的伯恩大学，南韩的中央大学，约翰顿大学，墨西哥的ITESM，MIT，美国海军大学，纽约大学，瑞典斯托霍姆大学，智利大学，沃顿商学院，约克大学以及苏格兰爱丁堡大学，以及更多知名学府）。

Dr. Mun博士目前是金融学和经济学的教授，在本科生和MBA课程中教授:财务管理，投资学，实物期权，经济学，统计学。所授课的大学遍布世界，从美国的海军部研究生院，应用科技大学（德国和瑞士），金门大学的全职教授，圣玛丽学院全职教授，以及多个研究委员会的主席。他也教授风险分析，实物期权分析的经理人公共课程。他也是美国财务管理研究会的重要成员。他曾经是Decisioneering公司分析部门的副总裁。毕马威战略咨询部门的咨询经理。FedEx维京公司财务规划部的负责人，主导财务预测，经济分析，市场调研活动。

Dr. Mun博士在利哈伊大学获得金融学和经济学的博士学位，研究方向设计财务投资，计量经济学建模，金融期权，公司理财，以及微观经济学。他还拥有MBA学位，管理学的学士学位和生物物理学士学位。拥有FRM，CFC和CRM注册认证。多个职业组织的重要会员，在数量财务和金融月刊，应用金融经济学月刊，国际金融市场，金融工程新闻等多个刊物上上发表过文章。

部分客户列表

- 3M
- ABS Consulting
- Accenture
- Airbus
- AIG
- Air Products and Chemicals
- Alexion
- Alliant Energy
- Allstate Insurance Company
- Aquila
- Arena Pharmaceutical
- AT&T
- Bayer
- Becton Dickinson
- Bergey Inc.
- Black & Veatch
- BOC Gases
- Boeing
- Booz Allen & Hamilton
- BP
- Bristol Myers Squibb
- British Energy plc
- Caledonia Group, Inc.
- Cap Gemini Ernst & Young
- Cargill
- CB Hillier Parker
- Cemex Cental SAD CV
- ChevronTexaco
- Chiron
- CIBC World Markets
- City of Palo Alto
- CNF Inc
- Colorado Springs Utilities
- Commonwealth Energy Advisors
- Con Edison Energy
- Conoco
- Corpomtle Value Advisors
- Crisp Hughes Evans LLP
- Decision Strategies
- Department of Interior
- Discovision Associates
- Duke Energy
- ECS Risk Control
- Editions MEV
- Eli Lilly & Company
- EMI Music Publishing
- eNMARKET
- Entergy Services
- Enviros
- Equiva Trading
- EURESAS
- Exelon Power Team
- Foamex
- GE Capital
- Gemplus Corp
- Gerald Eve
- Gibralter Business Appraisals, Inc.
- Glaxo SmithKline
- GMO
- Goodyear
- Halliburton Energy Services
- Hewlett Packard
- Hostcentric, Inc
- INAVISIS
- Ingersoll-Rand
- Intel Corporation
- Intecap
- Iowa State University
- ITESM
- Janssen Pharmaceutica Products
- Johns Mansville
- Johnson & Johnson
- Kawasumi Laboratories America
- Keyspan Corporate Services
- Lafarge North America
- Lloyds Bank TSB
- Louis Dreyfus
- Michigan State University
- Monitor Group
- Motorola
- MYOB Australia Pty, Ltd.
- Nahle & Company, S.C.
- Navigant Consulting, Inc.
- NE Public Power District
- NOVA Chemicals Corporation
- Occidental Oil & Gas Corp
- Oklahoma Gas & Electric
- Panorama Research
- Pfizer
- PG&E
- Phillips 66 Company RM&T
- Pinnacle West
- Pioneer Hi Bred International, Inc.
- PolyOne Corp
- Public Service of West Virginia
- Rack Space
- Renessen LLC
- Roche Diagnostics Corporation
- Rohm and Haas Company
- Russell, Ronnie
- Salomon Smith Barney
- Schlumberger Doll Research
- SDI GmbH
- Seagate Technologies
- Selection Resource
- Sempra Energy
- Shell International Holdings Limited
- Six Sigma Systems, Inc.
- Sprint PCS
- Steve Shaw Associates
- StorageTek
- Strategic Decisions Group
- Sunoco, Inc.
- Syngenta Biotechnology
- Timken Company
- Total Fina Elf
- UCS Investment Co.
- Union Pacific Railroad
- United States Sugar Corporation
- Washington Gas
- Williams Communications
- American College
- Arizona State University
- Baylor University
- Boston College
- Capella University
- Chung-Ang University (South Korea)
- Colorado School of Mines
- Cornell University
- Dartmouth College
- Georgetown University
- IESA
- Iowa State University
- ITESM (Mexico)
- Michigan State University
- MIT
- New York University
- Norwegian University
- Open University (Germany)
- Oregon Graduate Institute of Tech
- Otto Beisheim Graduate (Germany)
- Pennsylvania State University
- Southern New Hampshire University
- Stockholm University (Sweden)
- Universidad de los Andes (Chile)
- Universidad Simon (South America
- Universitat Bern Institut (Germany)
- University of Alaska
- University of Albany (Canada)
- University of Alberta
- University of Cape Town (Africa)
- University of Chile (Chile)
- University of Cincinnati
- University of Cordoba (Central America)
- University of Denver
- University of Florida
- University of North Carolina
- University of North Dakota
- University of Pennsylvania Wharton School
- University of Siegen (Europe)
- University of Wisconsin
- University of Wuppertal

Risk Analysis 风险分析 Training DVD培训DVD

培训DVD包含：

使用Risk Simulator进行Monte Carlo仿真

- 使用仿真统计结果
- 选择相应的分布
- 相关和截取分布
- 解释仿真结果
- 多维仿真

使用Risk Simulator进行预测

- Box-Jenkins ARIMA建模
- 多元回归分析
- 随机过程预测
- 时间序列预测和非线性外推

Risk Simulator进行优化

- 连续性优化
- 决策分析
- 整型优化

实物期权分析和SLS软件

- 实物期权分析基础
- 解释风险分析过程和波动性预测
- 使用SLS软件求解期权问题，包括放弃期权，美式期权，障碍期权
- 百慕大期权，选择期权，收缩期权，欧式期权，扩张期权，连续混合期权，转换期权，多资产多阶段复杂混合期权

分析工具

- 分布拟合
- 假设检验
- 非参数拔靴法

Real Options Valuation, Inc.

Real Options Valuation, Inc. 4101-F Dublin Blvd., Suite 425, Dublin, CA 94568 USA +1.925.271.4438 www.realoptionsvaluation.com

培训DVD包含10张DVD碟片主要涵盖了一下内容：

使用Risk Simulator软件进行蒙特卡洛仿真
使用Risk Simulator软件进行预测
使用Risk Simulator软件进行优化
通过Real Options Super Lattice 求解器软件进行实物期权分析
分析工具

作为培训DVD的一部分，您可以获得10张DVD光盘，一本幻灯片式的教材，以及包含在DVD中的案例，以及以下两本由Johnathan Mun博士编 写的专著 :“Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Forecasting, and Optimization, 2nd Edition,” (Wiley Finance, 2006), 以及由Johnathan Mun博士编写的 “Real Options Analysis: Tools and Techniques, 2nd Edition,” (Wiley Finance 2005),
以及培训中所要使用的模型CD。点击下载我们的培训DVD手册。

课程均是由Johnathan Mun博士开发，由他开发了Risk Simulator软件，Real OptionsSLS软件，他是金融学，经济学的教授，多本关于实物期权，风险分析专著的作者，Real Options Valuation公司的CEO。

在每套DVD中都涵盖了以下的内容。每盘DVD都分为不同的章节和模块，详细内容如下：

DVD 1: 风险分析介绍
章节 1: 培训DVD介绍
章节 2: 商业决策是如何制定的？
章节 3: 什么是风险？为何要考虑风险？
章节 4: 风险分析软件应用概述

DVD 2: 应用Risk Simulator软件进行蒙特卡洛仿真
章节 1: Risk Simulator软件概述
章节 2: 仿真文档，定义假设，预测和运行仿真
章节 3: 解释预测的结果
章节 4: 运行仿真的设置和随机数种子
章节 5: 运行报告，保存输出的仿真数据
DVD 3: 高级仿真技术
章节 1: 相关分布
章节 2: 备选参数
章节 3: 多维仿真
章节 4: 数据拟合和概率分布选择
章节 5: 仿真的缺陷和应注意事项
DVD 4：仿真和分析工具
章节1: 静态的飓风图和蛛网图
章节 2: 静态的敏感性分析
章节 3: 不同分布的假设检验
章节 4: 非参数自助

DVD 5: 预测
章节 1: 预测技术和数据类型概述
章节 2: 无数据预测
章节 3: 时间序列预测
章节 4: 非线性外推法
章节 5: 多元回归分析
章节 6: 随机过程
章节 7: Box-Jenkins ARIMA

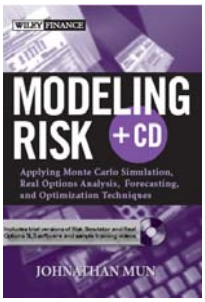
DVD 6 & 7: 实物期权分析：理论和背景
章节 1：介绍实物期权：5W1H
章节 2：商业案例分析
章节 3：不同的期权分析技术概述：金融期权和实物期权比较
章节 4：风险中性概率
章节 5：解决基本的欧式期权和美式期权
章节 6：使用微软Excel解决基本的欧式期权和美式期权问题
章节 7：解决基本的放弃期权，扩展期权，交易期权和选择期权问题

DVD 8 & 9: 通过SLS 软件进行预测
章节 1：SLS软件不同模块介绍
章节 2：波动率预测估计
章节 3：改变输入参数和客户化奇异期权解决期权问题
章节 4：多重阶段混合期权
章节 5：使用三叉，四叉和五叉栅格解决均值-回复，跳跃-扩散，二重资产彩虹期权问
章节 6：构建实物期权模型
章节 7：下一步骤...

DVD 10: 使用Risk Simulator软件进行优化
章节 1：优化介绍
章节 2：连续优化
章节 3：整数优化

专家

乔纳森·文博士（Dr. Johnathan Mun）是软件的开发者，他同时教授风险分析（Risk Analysis）课程，针对分析员的实物期权分析（Real Options for Analysts）课程，针对管理者的实物期权分析（Real Options for Managers）课程，注册风险管理师（CRM）课程和其它的课程。他为很多《财富》500强公司提供风险分析、价值评估和实物期权分析方面的咨询服务，并撰写了大量相关的书籍：包括《实物期权分析：工具和方法》第一和第二版（Wiley Finance，2002，2005）；《实物期权分析课程：商业案例》（Wiley Finance 2003）；《风险分析应用：超越不确定性》（Wiley Finance 2003）；《基于2004 FAS 123雇员股票期权定价》（Wiley Finance 2004）；《风险建模：应用蒙特卡罗模拟，实物期权分析，预测及最优化》（Wiley 2006）；《高级分析模型： 从巴塞尔新资本协议到华尔街的800个函数和300个模型》（Wiley 2008）；《银行家信用风险手册： 实施巴塞尔新资本协议》（Elsevier Academic Press 2008），以及其它的一些书籍（以上著作 将陆续推出中文版本）。他是Real Options Valuation, Inc公司的创始人和CEO，负责分析软件的开发，咨询和培训服务。他曾是 Decisioneering, Inc.（Oracle）公司分析服务部门副总裁 和毕马威管理咨询公司（KPMG）全球金融战略部门的咨询经理。在加盟毕马威之前，他曾在联邦快递维京公司 （Viking, Inc）担任金融计划和分析部门主管。文博士目前还是美国海军研究生院（U.S. Naval Postgraduate School）全职教授，以及法兰克福应用科学大学（University of Applied Sciences, Frankfurt）和瑞士管理学院（Swiss School of Management, Zurich）教授，同时还在 世界各地的一些大学担任访问教授。他是金融学和经济学博士，工商管理硕士（MBA），管理科学硕士和应用科学学士。文博士持有注册金融风险管理师（FRM）认证、金融咨询师（CFC）认证，注册风险管理师（CRM）认证。



Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Stochastic Forecasting, and Optimization,

Dr. Johnathan Mun
ISBN: 0471789003 (2006)
Hard Cover and Cloth, 610 Pages
Available on www.amazon.com
Keyword: JOHNATHAN MUN

We live in an environment fraught with risk and operate our businesses in a risky world, as higher rewards only come with risks. It is unimaginable if the element of risk is not considered when corporate strategy is framed and when tactical projects are implemented. Modeling Risk provides a novel view of evaluating business decisions, projects, and strategies by taking into consideration a unified strategic portfolio analytical process. The book provides a qualitative and quantitative description of risk, as well as introductions to the methods used in identifying, quantifying, applying, predicting, valuing, hedging, diversifying, and managing risk, through rigorous examples of the methods' applicability in the decision-making process.

Pragmatic applications are emphasized in order to demystify the many elements inherent in risk analysis. A black box will remain a black box if no one can understand the concepts despite its power and applicability. It is only when the black box becomes transparent that analysts can understand, apply, and convince others of its results, value-add, and applicability, that the approach will receive wide-spread influence. This is done through step-by-step applications of risk analysis as well as presenting multiple business cases, and discussing real-life applications. This book is targeted at both the uninitiated professional as well as those verbose in risk analysis—there is always something for everyone. It is also applicable for use as a second-year M.B.A. level or introductory Ph.D. textbook. A CD-ROM is included in the book, including a trial version of the Risk Simulator and Real Options SLS software, and associated Excel models.

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including *Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation* software and others (some of these tools are showcased in this book), as well as the risk analysis Training DVD. He has authored ten books published by John Wiley & Sons and Elsevier Science, including *The Banker's Handbook on Credit Risk* (2008); *Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond* (2008); *Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting* (2006); *Real Options Analysis: Tools and Techniques, First and Second Editions* (2003 and 2005); *Real Options Analysis Course: Business Cases* (2003); *Applied Risk Analysis: Moving Beyond Uncertainty (2003); and Valuing Employee Stock Options* (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his Ph.D. in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

PRAISES FOR *REAL OPTIONS ANALYSIS*

Johnathan Mun's book is a sparkling jewel in my finance library. Mun demonstrates a deep understanding of the underlying mathematical theory in his ability to reduce complex concepts to lucid explanations and examples. For this reason, he's my favorite writer in this field. Experienced professionals will appreciate Mun's competence in boiling down complex math to a clear presentation of the essential solutions to financial risk, corporate finance, and forecasting.
Janet Tavakoli
President, Tavakoli Structured Finance

Every year the market of managerial books is flooded again and again. This book is different. It puts a valuable tool into the hands of corporate managers, who are willing to stand up against uncertainties and risks and are determined to deliver value to shareholder and society even in rough times. It is a book for the new generation of managers, for whom Corporate America is waiting.
Dr. Markus Götz Junginger
Managing Partner, IBCOL Consulting AG (Switzerland)

Dr. Mun breaks through the hyperbole and presents a clear step-by-step approach revealing to readers how quantitative methods and tools can truly make a difference. In short, he teaches you what's relevant and a must know. I highly recommend this book, especially if you want to effectively incorporate the latest technologies into your decision making process for your real world business.
Dr. Paul W. Finnegan, MD, MBA
Vice President, Commercial Operations and Development
Alexion Pharmaceuticals, Inc.

Johnathan Mun has previously published a number of very popular books dealing with different aspects of risk analysis, associated techniques and tools. This last publication puts all the pieces together. The book is really unavoidable for any professional who wants to address risk evaluation following a logical, concrete and conclusive approach.
Jean Louis Vaysse
Deputy Vice President Marketing, Airbus (France)

A must read for product portfolio managers... it captures the risk exposure of strategic investments, and provides management with estimates of potential outcomes and options for risk mitigation.
Rafael E. Gutierrez
Executive Director of Strategic Marketing and Planning, Seagate Technology

Mun has the uncanny ability to clarify the complex, distilling risk analysis concepts into a truly readable and practical guide for decision-makers. This book blazes a trail that connects abstract yet powerful theories with real-world applications and examples, leaving the reader enlightened and empowered.
Stephen Hoye, MBA
President, Hoye Consulting Group

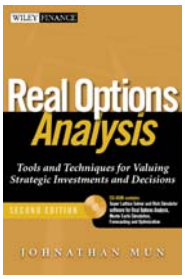
Strategy development has fallen on hard times being judged not relevant for a rapidly changing world. With this book, Dr. Mun attacks this poor excuse head-on by presenting a clearly organized, tool supported, methodology that logically progresses from exploring uncertainty that bounds risk to the creation of options for constructing realistic business strategies.
Robert Mack
Vice President, Distinguished Analyst, Gartner Group

This book is a pleasure to read both for subject matter experts as well as for novices. It holds a high risk of addicting the readers. Dr. Mun leads the readers through step by step complex mathematical concepts with unmatched ease and clarity. Well chosen examples and pointers to pitfalls complement the splendidly written chapters. This book will be a bestseller in Risk Management and is a "must read" for all professionals.
Dr. Hans Weber
Syngenta AG (Switzerland), Product Development Project Leader

Once again, Dr. Johnathan Mun has attained his usual standard: excellence in making not-so-simple but very useful quantitative analytical techniques accessible to the interested reader who doesn't necessarily have an engineering or scientific training. This book presents a seriously comprehensive guide to everyday users of spreadsheet models, particularly those interested in Risk Analysis and Management, on how to move beyond simple statistical analysis. It is a "must have" to academicians searching for user-friendly bibliography, and to practitioners willing to get a first-hand experience on cutting-edge, high-productivity analytical tools.
Dr. Roberto J. Santillan-Salgado
Director of the M.S., EGADE-ITESM, Monterrey Campus (Mexico)

A fundamental principal in finance is the relationship between risk and reward, yet today empirical risk measurement, valuations, and deal structuring are still the norm. Business professionals, venture capitalists and other investors will all find Johnathan Mun's latest book on conceptualizing and quantitatively measuring risk in business of considerable value and a welcome addition to their libraries.
Dr. Charles T. Hardy
Principal, Hardy & Associates

TABLE OF CONTENTS



Real Options Analysis, 2nd Edition: Tools and Techniques for Valuing Strategic Investments & Decisions

Dr. Johnathan Mun
ISBN: 0471747483 (2005)
Hard Cover and Cloth, 670 Pages
Available on www.amazon.com
Keyword: JOHNATHAN MUN

Real Options Analysis, 2nd edition provides a novel view of evaluating capital investment strategies by taking into consideration the strategic decision-making process. The book provides a qualitative and quantitative description of real options, the methods used in solving real options, why and when they are used, and the applicability of these methods in decision making. In addition, multiple business cases and real-life applications are discussed. This includes presenting and framing the real options problems, as well as introducing a stepwise quantitative process developed by the author for solving these problems using the different methodologies inherent in real options. Included are technical presentations of models and approaches used as well as their theoretical and mathematical justifications. The book is divided into three parts: the qualitative discussions of real options; the quantitative analysis and mathematical concepts; and practical applications. The first part looks at the qualitative nature of real options, providing actual business cases and scenarios of real options in the industry, as well as high-level explanations of how real options provide the much-needed insights in decision making. The second part of the book looks at the step-by-step quantitative analysis, complete with worked-out examples and mathematical formulae. The third part illustrates the use of the Real Options Valuation's Super Lattice Solver software and Risk Simulator software both developed by the author and included in the enclosed CD-ROM (standard 30-day trial with extended academic license). In this section, more detailed business cases are solved using the software.

This second edition provides many updates including:

- A trial version and introduction to the Real Options Super Lattice Solver software that supersedes the author's older Real Options Analysis Toolkit software (all bugs and computational errors have been fixed and verified).
- A trial version and introduction to the Risk Simulator software also created by the author.
- Extended examples and step-by-step computations of American, Bermudan, European, and Customized options (including abandon, barrier, chooser, contraction, expansion, and other options).
- More extensive coverage of advanced and exotic real and financial options (multiple-phased sequential compound options, complex sequential compound option, barrier options, trinomial mean-reverting options, quadranomial jump-diffusion options, pentanomial dual-asset rainbow options, multiple-asset with multiple-phased options, engineering your own exotic options, and so forth).
- Extended real options cases with step-by-step worked out solutions using the Super Lattice Solver software.
- Several brand new case studies on applying real options in the industry.
- An extended discussion on volatility estimates, risk, and uncertainty.
- This book is targeted at both the uninitiated professional as well as those well-versed in real options applications. It is also applicable for use as a second-year M.B.A. level textbook or introductory Ph.D. reference book.

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including ***Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation*** software and others (some of these tools are showcased in this book), as well as the risk analysis Training DVD. He has authored ten books published by John Wiley & Sons and Elsevier Science, including ***The Banker's Handbook on Credit Risk*** (2008); ***Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond*** (2008); ***Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting*** (2006); ***Real Options Analysis: Tools and Techniques, First and Second Editions*** (2003 and 2005); ***Real Options Analysis Course: Business Cases*** (2003); ***Applied Risk Analysis: Moving Beyond Uncertainty (2003); and Valuing Employee Stock Options*** (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his Ph.D. in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

PRAISES FOR *REAL OPTIONS ANALYSIS*

"…this book is a *must have* and *must read…* Dr. Mun's new book is a refreshing, cutting-edge look at a powerful new decision-making process… it isn't often you can truthfully say a book breaks new ground, but [this book] has certainly done that."
-Glenn G. Kautt, President, Monitor Group, Inc. (USA)

"Many books on real options can be intimidating. Dr. Mun offers a pragmatic, reliable and entertaining guide. Complex concepts and formulas are brilliantly interspersed with well chosen examples and step-by-step walk through from a variety of industries."
-Shota Hattori, President and CEO, Kozo Engineering, (Japan)

"Real Options Analysis is the clearest book on real options that we have read to date. It does an excellent job of demystifying a difficult and complex subject. It provides a solid basis for conceiving, assessing and evaluating real option investments, which will make it useful to practitioners and students alike."
-Ian C. MacMillan, Professor
The Wharton School of the University of Pennsylvania (USA)

"…the clarity and comprehensive coverage makes it the best guide for all practitioners… coupled with state-of-the-art financial tools CD-ROM."
-Michael Sim, Partner, Moores Rowland International (Hong Kong)

"Dr. Johnathan Mun certainly has earned the reputation of being an expert on the subject… consultants, analysts, decision-makers and engineers will be all over this book and its software."
-Phyllis Koessler, Managing Director, Koessler and Associates (Switzerland)

"…finally, a real options analysis book that is technically sophisticated enough to be useful, and practically written so that it can actually be used. It is destined to become the handbook of real options."
-Tracy Gomes, CEO, Intellectual Property Economics (USA)

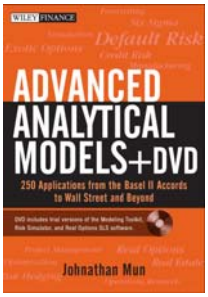
"Dr. Mun demystifies real options analysis and delivers a powerful, pragmatic guide for decision-makers and practitioners alike. Finally, there is a book that equips professionals to easily recognize, value, and seize real options in the world around them."
- Jim Schreckengast, Sr. Vice President, R&D Strategy – Gemplus International SA (France)

"…written from the viewpoint of an educator and a practitioner, his book offers a readable reference full of insightful decision-making tools to satisfy both the novice and the experienced veteran."
-Richard Kish, Ph.D., Professor of Finance, Lehigh University (USA)

"Dr. Mun has converted his tacit financial knowledge into a digestible user-friendly book. He effectively leads the reader on a solid path starting from *discounted cash flow,* progressing through *Monte Carlo analysis* and evolving to *real options* to get even closer to the target of achieving confident corporate decisions. His ability to clearly explain the relationships of popular competing analysis methods will make this a must have reference book for today's decision makers."
-Ken English, Director of R&D, The Timken Company (USA)

"The book leads the field in real options analytics and is a must-read for anyone interested in performing such analyses. Dr. Mun has made a formidable subject crystal clear and exponentially easy for senior management to understand. *Monte Carlo simulation* and *real options* software alone is worth the book price many times over."
-Morton Glantz, Renowned educator in finance, author of several books, financial advisor to government (USA)

TABLE OF CONTENTS



Advanced Analytical Models: Over 800 Models and 300 Applications from the Basel II Accords to Wall Street and Beyond

Dr. Johnathan Mun
Hard Cover and Cloth: 1,000 Pages
Available on www.amazon.com
ISBN: 9780470179215 (2008)

Advanced Analytical Models is a large collection of advanced models with a multitude of industry and domain applications. The book is based on years of academic research and practical consulting experience, coupled with domain expert contributions. The Modeling Toolkit software that holds all the models, Risk Simulator risk simulation software, and Real Options SLS software were all developed by the author, with over 1,000 functions, tools, and model templates in these software applications. The trial versions are included in the accompanying DVD. The applications covered are vast. Included are Basel II banking risk requirements (credit risk, credit spreads, default risk, value at risk, etc.) and financial analysis (exotic options and valuation), risk analysis (stochastic forecasting, risk-based Monte Carlo simulation, optimization), real options analysis (strategic options and decision analysis), Six Sigma and quality initiatives, management science and statistical applications, and including everything in between, such as applied statistics, manufacturing, operations research, optimization, forecasting, and econometrics.

This book is targeted at practitioners who require the algorithms, examples, models, and insights in solving more advanced and even esoteric problems. This book does not only talk about modeling or illustrate basic concepts and examples; it comes complete with a DVD filled with sample modeling videos, case studies, and software applications to help you get started immediately. In other words, this book dispenses with all the theoretical discussions and mathematical models which are extremely hard to decipher and apply in the real business world. Instead, these theoretical models have been coded up into user-friendly and powerful software, and this book shows the reader how to start applying advanced modeling techniques almost immediately. The trial software applications allow you to access the approximately 300 model templates and 800 functions and tools, understand the concepts, and use embedded functions and algorithms in their own models. In addition, you can get run risk-based Monte Carlo simulations and advanced forecasting methods, and perform optimization on a myriad of situations as well as structure and solve customized real options and financial options problems.

Each model template that comes in the Modeling Toolkit software is described in this book. Descriptions are provided in as much detail as the applications warrant. Some of the more fundamental concepts in risk analysis and real options are covered in the author's other books. It is suggested that these books, Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Stochastic Forecasting, and Portfolio Optimization (2006) and Real Options Analysis, Second Edition (2005), both published by John Wiley & Sons, be used as references for some of the models in this book. Those modeling issues that are, in the author's opinion, critical, whether they are basic issues or more advanced analytical ones, are presented in detail. As software applications change continually, it is recommended that you check the author's Web site (www.realoptionsvaluation.com) frequently for any analytical updates, software upgrades, and revised or new models.

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation software and others (some of these tools are showcased in this book), as well as the risk analysis Training DVD. He has authored ten books published by John Wiley & Sons and Elsevier Science, including *The Banker's Handbook on Credit Risk* (2008); *Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond* (2008); *Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting* (2006); *Real Options Analysis: Tools and Techniques, First and Second Editions* (2003 and 2005); *Real Options Analysis Course: Business Cases* (2003); *Applied Risk Analysis: Moving Beyond Uncertainty* (2003); and *Valuing Employee Stock Options* (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his PhD in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

PRAISES FOR *REAL OPTIONS ANALYSIS*

Advanced Analytical Models contain many powerful and useful applications ranging from R&D strategy valuation and Six Sigma models to risk simulation and strategic options. A must-have book for those starting out in Excel modeling to advanced modelers. An excellent resource for those applying stochastic models for portfolio project prioritization and valuation."
-Dr. Robert Finocchiaro, Technical Director, Corporate R&D Services, The 3M Company

Dr. Johnathan Mun is one of the most gifted teachers of quantitative risk analysis in the history of global finance and business. All of his books combine science, art, intuition, creativity, and above all, they are acutely perceptive, always practical, and provide startling clarity, on the methods and pathways of proper business decision making, when faced with uncertainty. Advanced Analytical Models contains a vast treasure trove of over 800 models, unlike anything ever published in the field. Absolutely groundbreaking…The practical application of the risk models in this book, will keep the rest of us busy, for years to come.
-Brian Watt, CRM, Chief Risk Officer and Chief Financial Officer, GECC

Dr. Mun's expertise in real options and practical modeling methodologies in real world cases is superb, and was used to value technologies in the U.S. military's Improved Engineering Design Process. His approach quantified real net benefits when considering the knowledge reuse on an enterprise scale and his approach is the most powerful when business value is most difficult to quantify.
-Dr. Ali Farsaie, President & CEO, Spatial Integrated Systems, Inc.

"Dr. Mun's latest book is scholarly strong and practically meaningful, by successfully synthesizing all aspects of risk and analytical models and presents them in a well-integrated manner. It is a must-read for both practitioners and students in the field of risk management. The Basel II risk analysis is covered extensively through real examples. With in-depth coverage of the most important and practical models, Dr. Mun's book has set a high standard of publishing in the area of analytical models, risk and decision analysis. The book has significant practical contributions at all levels of risk management. I strongly recommend this book to all readers who want to gain a clear and applied understanding of risk and analytical models.
-Dr. Ehsan Nikbakht, CFA, FRM, PRM, Professor of Finance, Zarb School of Business, Hofstra University, New York

An outstanding collection of important analytic models that span numerous disciplines and can be used in a wide range of industries. The models and their underlying discussion are sound and can be applied as is or modified by the reader for their own applications. The well-written book together with the trial software and models are a powerful combination and provide an exceptional learning opportunity for the reader. This material should be valuable to both analysts and managers who need a sound analytical framework to help them develop and support their decisions.
-Dr. Edmund H. Conrow, CRM, PMP, Risk Management Consultant/Author

Dr. Mun has created 'The Encyclopedia of Models', which addresses a wide-range of cross-industry and cross-enterprise analytical challenges. The models span the spectrum – from simple techniques that one can perform in a few minutes to advanced problems that are tackled in a robust manner. Dr Mun's new book will show you how to combine analytical methods to point at the right answers. Three words to sum it up: Comprehensive, Lucid, and, Elegant. Every aspiring and accomplished analyst needs to have this book in their library.
-Mark A. Benyovszky, Managing Director, -Zero Delta Center for Enterprise Alignment and Zero Delta University

Risk simulation, binomial lattices, and other computational models have not been within effective reach for many in-the-trenches professionals who did not get this training years ago. Through this book, on top his other books before it, and through his software, Dr. Mun has explained the mysteries, made available the tools, and continues to publish example upon example of how these models can be applied to improve the professional work we've been doing. Once in a while, a new thought leader emerges with a train long enough for the rest of us to ride to attain a new level of professionalism – Dr. Mun is one of these.
-James F. Joyner III, CPA/ABV, CVA, CPC, AIFA, Managing Member, Integra Benefits Consulting LLC

The mechanics of risk and options analyses are simple, but successful real-life application is all about the art of framing which requires constant practice. This book is a framing-fitness work-out through an extraordinary variety of recipes. Framing is not just for modeling, without it, decision making under uncertainties is much harder than it already is. If the answer is not explicit in an example, it is likely to exist as a variant in another – reading them triggered solutions to two commodity related problems that have plagued me for some time.
-Fanton Chuck, Chief Executive Officer, Renova Energy plc

Over the years Johnathan Mun's books have become our corporate bibles with multiple copies in our library. We have recently made the big switch over to Dr. Mun's Modeling Toolkit, Risk Simulator, and Real Options SLS because we found it easier to use while still being more sophisticated and flexible for our needs. "Advanced Analytical Models" is designed to complement the software and is just packed with useful real-life models that are directly applicable to our consulting work. The small refinements such as being able to specify the random number sequence so that you actually can get the same results in a live presentation reflect his sensitivity and understanding of the consulting environment. We have found his Real Options SLS invaluable in helping hospitals understand the different phasing options available to them when contemplating seemingly unreachable $500M capital projects. Dr. Mun's genius lies in his ability to take extremely complex theory and bring it down to the level that the rest of us can understand and easily apply to our respective fields. Entertaining as always, who ever thought we would get a book on advance analytics that was actually funny! For an industry (healthcare) that increasingly has to forecast 10 and 15 years into the future while still relying on "budget period" analytics and single point estimates, Dr. Mun's book is a "light in the storm." Numerous healthcare examples from queuing theory to methods for analyzing surgical outcomes bring serious analytics into the realm of the practical.
-Lawrence D. Pixley, FACMPE, Founding Partner, Stroudwater Associates

TABLE OF CONTENTS

This book covers the following applications:

Modeling Toolkit

- **Over 800 functions, models and tools and over 300 Excel and SLS templates**
- **Covering the following applications:**
- **Business analytics and statistics (CDF, ICDF, PDF, data analysis, integration)**
- **Credit and Debt Analysis (credit default swap, credit spread options, credit rating, debt options and pricing)**
- **Decision Analysis (decision tree, Minimax, utility functions)**
- **Exotic Options (over 100 types of financial and exotic options)**
- **Forecasting (ARIMA, econometrics, EWMA, GARCH, nonlinear extrapolation, spline, time-series)**
- **Industry Applications (banking, biotech, insurance, IT, real estate, utility)**
- **Operations Research and Portfolio Optimization (continuous, discrete, integer)**
- **Options Analysis (BDT interest lattices, debt options, options trading strategies)**
- **Portfolio Models (investment allocations, optimization, risk and return profiles)**
- **Probability of Default and Banking Credit Risk (private, public and retail debt, credit derivatives and swaps)**
- **Real Options Analysis (over 100 types: abandon, barrier, contract, customized, dual asset, expand, multi-asset, multi-phased, sequential, switch)**
- **Risk Hedging (delta and delta-gamma hedges, foreign exchange and interest rate risk)**
- **Risk Simulation (correlated simulation, data fitting, Monte Carlo simulation, risk-simulation)**
- **Six Sigma (capability measures, control charts, hypothesis tests, measurement systems, precision, sample size)**
- **Statistical Tools (ANOVA, Two-Way ANOVA, nonparametric hypotheses tests, parametric tests, principal components, variance-covariance)**
- **Valuation (APT, buy versus lease, CAPM, caps and floors, convertibles, financial ratios, valuation models)**
- **Value at Risk (static covariance and simulation-based VaR)**
- **Volatility (EWMA, GARCH, implied volatility, Log Returns, Real Options Volatility, probability to volatility)**
- **Yield Curve (BIS, Cox, Merton, NS, spline, Vasicek)**

Risk Simulator

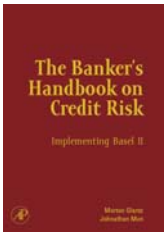
- **Over 25 statistical distributions**
- **Covering the following applications:**
- **Applied Business Statistics (descriptive statistics, CDF/ICDF/PDF probabilities, stochastic parameter calibration)**
- **Bootstrap Simulation and Hypothesis Testing (testing empirical and theoretical moments)**
- **Correlated Simulations (simulation copulas and Monte Carlo)**
- **Data Analysis and Regression Diagnostics (heteroskedasticity, multicollinearity, nonlinearity, outliers)**
- **Forecasting (J-S curves, Markov chains, multivariate regressions, stochastic processes)**
- **Optimization (static, dynamic, stochastic)**
- **Sensitivity Analysis (correlated sensitivity, scenario, spider, tornado)**

Real Options SLS

- **Fully Customizable Binomial, Trinomial, Quadranomial and Pentanomial Lattices**
- **Lattice Makers (simulated lattices)**
- **Super fast super lattice algorithms (running thousands on lattice steps in seconds)**
- **Covering the following applications:**
- **Exotic Options Models (barriers, benchmarked, multiple assets, portfolio options)**
- **Financial Options Models (3D dual asset exchange, single and double barriers)**
- **Real Options Models (abandon, barrier, contract, expand, sequential compound, switching)**
- **Specialized Options (mean-reverting, jump-diffusion, and dual asset rainbows)**

Employee Stock Options Valuation Toolkit

- **Applied by the U.S. Financial Accounting Standards Board for FAS 123R 2004**
- **Binomial and closed-form models**
- **Covers:**
- **Blackout Periods**
- **Changing Volatility**
- **Forfeiture Rates**
- **Suboptimal Exercise Multiple**
- **Vesting**



The Banker's Handbook on Credit Risk: Implementing Basel II

Morton Glantz & Johnathan Mun
Hard Cover and Cloth, 420 Pages
Available at www.amazon.com
ISBN: 9780123736666 (2008)

Much literature has been published on banking—and for bankers. The authors tell us how to derive clients' cash flows and financial needs but not how to model value drivers with the latest technology. They advise us how to analyze financial alternatives and choose what appears the best decision but not how to create choices germinal in a client's corporate data. They refer us to quantitative objective functions and many formulae. They do not give us the means to run up stochastic solutions, quickly and easily and thereby improve chances of ever being able to explain, qualitatively, optimal objectives on which any assessment of loss reserves, risk adjusted pricing and capital allocation must reside. They provide macrostructures but not how micro processes work, such as leveraging the latest stochastic technology to improve credit-decision making. Thanks in part to Basel II-–in the last few years, we have seen banking evolve from a casual discipline to a rigorous science. Just over a decade or so ago, technologies in the banking business such as neural nets, stochastic optimization, simulation, fuzzy logic, and data mining were still largely exploratory and at best quite tentative. Algorithms, as a term, rested on the outskirts of financial thought. More than a few bankers had not even heard of Monte Carlo outside of casinos and travel magazines. Machine learning was in its infancy while migration risk, default frequencies concepts were encased in the Stone Age logic of ratios, deterministic forecasts, rudimentary cash flows, and on more than a few occasions, front page accounting shenanigans. Yet, the concern is that some bankers are resisting computer-actualized solutions and are under the wrong impression the past will satisfy (Basel II) compliance. Quantitative methods, such as the use of advanced models or even the use of math, do not alarm sharp banking professionals. Modeling tools are not black boxes that ignore or inhibit wisdom or that mechanize the loan approval process. However, in many financial institutions, models and, for that matter, change may intimidate banking professionals, inhibiting technological growth and, alas, the requisite skills to participate in strategic Basel II decision making at the highest level. Otherwise capable bankers find it difficult to creatively deploy sophisticated modeling techniques to crystallize value drivers, explain optimal capital allocation strategies, and otherwise deliver the goods to their boss or to money committee. Knowledge gaps, particularly when it comes to the new world of banking are detrimental to continued growth both within the institution and in advancing one's career.

The hands-on applications covered in this book are vast, including areas of Basel II banking risk requirements (credit risk, credit spreads, default risk, value at risk, market risk, and so forth) and financial analysis (exotic options and valuation), to risk analysis (stochastic forecasting, risk-based Monte Carlo simulation, portfolio optimization) and real options analysis (strategic options and decision analysis). This book is targeted at banking practitioners and financial analysts who require the algorithms, examples, models, and insights in solving more advanced and even esoteric problems. This book does not only talk about modeling or illustrates some basic concepts and examples, but comes complete with a DVD filled with sample modeling videos, case studies, and software applications to help the reader get started immediately. The various trial software applications included allows the reader to quickly access the approximately 8000 modeling functions and tools, 250 analytical model templates, and powerful risk-based simulation software to help in the understanding and learning of the concepts covered in the book, and also to use the embedded functions and algorithms in their own models. In addition, the reader can get started quickly in running risk-based Monte Carlo simulations, run advanced forecasting methods, and perform optimization on a myriad of situations, as well as structure and solve customized real options and financial options problems. This book is unique in that it is a handbook or application-based book, and the focus is primarily to help the reader hit the ground running, and not delve into the theoretical structures of the models where there are a plethora of mathematical modeling and theory-laden books without any real hands-on applicability. Indeed, this book should help you carry out your decision making tasks more succinctly and might even empower you to grab the modeling hardball and to pitch winning games in a domain that is hot, dynamic, complex, and often combative.

ABOUT THE AUTHORS

Prof. Morton Glantz is a world renowned scholar in international banking and risk management. He serves as a financial advisor and educator to a broad spectrum of professionals, including corporate financial executives, government ministers, privatization managers, investment and commercial bankers, public accounting firms, members of merger and acquisition teams, strategic planning executives, management consultants, attorneys and representatives of foreign governments and international banks. As a senior officer of JP Morgan Chase, he built a progressive career path specializing in credit analysis and credit risk management, risk grading systems, valuation models and professional training. He was instrumental in the reorganization and development of the credit analysis module of the Bank's Management Training Program Finance, acknowledged at the time as one of the foremost training programs in the banking industry. A partial list of client companies Morton has worked with includes, Institutional Investor, The Development Bank of Southern Africa, CUCORP, Canada, The Bank of China, GE Capital, Cyprus Development Bank, Decisioneering, Iran Development Bank (Cairo), Gulf Bank (Kuwait), Institute for International Research (Dubai), Inter-American Investment Corporation, Ernst & Young, Euromoney, ICICI Bank (India), Council for Trade and Economic Cooperation (Russia), BHF Bank and IBM Credit Corporation. Morton is on the finance faculty at the Fordham Graduate School of Business. He has appeared in Harvard University International Directory of Business and Management Scholars and Research and earned Fordham University Deans Award for Faculty Excellence on three occasions. Professor Glantz is a Board Member, International Standards Board, International Institute of Professional Education and Research (IIPER). The International Institute of Professional Education and Research (IIPER) is a global institute with partners and offices around the world including the United States, Switzerland, Hong Kong, Mexico, Portugal, Singapore, Nigeria, Malaysia, and others. Professor Glantz is widely published in financial journals and authored 6 books including Banker's Handbook on Credit Risk (Elsevier 2008), Credit Derivatives: Techniques to Manage Credit Risk for Financial Professionals, (with Erik Banks and Paul Siegel), (McGraw Hill 2006), Optimal Trading Strategies, with Robert Kissell (AMACOM 2003), Managing Bank Risk: An Introduction to Broad-Base Credit Engineering, Academic Press/Elsevier (2002) RISKBOOK.COM Award: Best Finance Books of 2003, Scientific Financial Management (AMACOM 2000); Loan Risk Management (McGraw Hill. 1995).

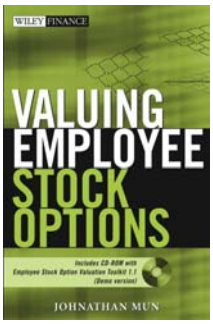
Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation software and others (some of these tools are showcased in this book), as well as the risk analysis Training DVD. He has authored ten books published by John Wiley & Sons and Elsevier Science, including The Banker's Handbook on Credit Risk (2008); Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond (2008); Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting (2006); Real Options Analysis: Tools and Techniques, First and Second Editions (2003 and 2005); Real Options Analysis Course: Business Cases (2003); Applied Risk Analysis: Moving Beyond Uncertainty (2003); and Valuing Employee Stock Options (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research. Dr. Mun received his PhD in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, Global Finance Journal, International Financial Review, Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, Financial Engineering News, and Journal of the Society of Petroleum Engineers.

PRAISES FOR *THE BANKER'S HANDBOOK*

What sets Dr. Johnathan Mun's work apart from other writers and practitioners of quantitative risk analysis, is its startling clarity and real practical application to both the real world of risk analysis, and the processes by which we must make decisions under uncertainty. At GECC, we use both Dr. Mun's Risk Simulator and his Real Options software. Every book he has ever written is lined up within easy reach on my office bookshelf. His latest book, written with Morton Glantz, a well-known scholar in International Banking and Risk Management, is another gem. Read "The Banker's Handbook on Credit Risk" to see what two of the most original thinkers in quantitative risk analysis in the world today have to say about credit risk.
Brian Watt, CRM, Chief Financial Officer and Chief Risk Officer, GECC

The Banker's Handbook on Credit Risk is an indispensable reference for bankers and others concerned with credit risk to understand how to fully and properly utilize models in the management of credit risk. The comprehensive combination of explanatory text and over 150 working models in the book and accompanying DVD make it a key reference book for bankers. Most importantly, use of this Handbook and its accompanying models will move us forward in achieving sorely needed improvement in the management and regulatory oversight of credit risk in the financial system."
George J. Vojta, Chairman and CEO, The Westchester Group

TABLE OF CONTENTS



Valuing Employee Stock Options:
Under 2004 FAS 123 Proposals
(CD-ROM Included)

Dr. Johnathan Mun

ISBN: 0471705128 (2004)
Hard Cover and Cloth
320 Pages

Available on www.amazon.com
Keyword search: JOHNATHAN MUN

Johnathan Mun, Ph.D., MBA, MS, FRM, CRA, CFC
JohnathanMun@cs.com
San Francisco, California

PREFACE

This book was written after FASB released its Proposed FAS 123 Revisions in March 2004. As one of the valuation consultants and FASB advisors on the FAS 123 initiative in 2003 and 2004, I would like to illustrate to the finance and accounting world that what FASB has proposed is actually pragmatic and applicable. I am neither for nor against the expensing of employee stock options and would recuse myself from the philosophical and sometimes emotional debate on whether employee stock options should be expensed (that they are a part of an employee's total compensation, paid in part for the exchange of services, and are an economic opportunity cost to the firm just like restricted stocks or other contingent claims issued by the company) or should not be expensed (that they simply dilute the holdings of existing shareholders, is a cashless expense, and if expensed, provides no additional valuable information to the general investor as to the financial health of the company but reduces the company's profitability and hence the ability to continue issuing more options to its employees). Rather, as an academic and valuation expert, my concern is with creating a universal standard of understanding on how FAS 123 can be uniformly applied to avoid ambiguity, and not whether employee stock options should be expensed. Therefore, let it not be said that the new ruling is abandoned because it is not pragmatic. This book is also my response to FASB board member Katherine Schipper's direct request to myself at the FASB public panel roundtable meeting (Palo Alto, California, June 2004) for assistance in providing more guidance on the overall valuation aspects of FAS 123.

Hopefully the contents of this book will subdue some of the criticisms on how binomial lattices can be used and applied in the real world. The results, tables, graphics, and sample cases illustrated throughout the book were calculated using customized binomial lattice software algorithms I developed to assist FASB in its deliberations, and were based on actual real-life consulting and advisory experience on applying FAS 123. Inexperienced critics will be surprised at some of the findings in the book. For instance, criticisms on the difficulty of finding the highly critical volatility may be unfounded because when real-life scenarios such as vesting, forfeitures, and suboptimal exercise behavior are added to the model, volatility plays a much smaller and less prominent role. In addition, the book illustrates how Monte Carlo simulation with correlations can be added (to simulate volatility, suboptimal exercise behavior multiple, forfeiture rates, as well as other variables for thousands and even hundreds of thousands of simulation scenarios and trials) to provide a precision of up to $0.01 at a 99.9 percent statistical confidence, coupled with a convergence test of the lattice steps, provides a highly robust modeling methodology. Future editions of this book will include any and all changes to the FAS 123 requirements since the March 2004 proposal. Parts One and Four are written specifically for the chief financial officer and finance directors, who are interested in understanding what are the impacts and implications of using a binomial lattice versus a Black-Scholes model. Parts Two and Three are targeted more toward the analysts, consultants, and accountants who require the technical knowledge and example cases to execute the analysis.

PRAISES FOR *REAL OPTIONS ANALYSIS*

"Veritas has modeled the valuation of its employee stock options for analytical purposes using a proprietary customized binomial lattice, developed by Dr. Johnathan Mun. The valuation based on the customized binomial lattice model allows us to take into account the impacts of multiple vesting periods, employee suboptimal exercise behavior, forfeiture rates, changing risk-free rates, and changing volatilities over the life of the option which are required under the 2004 FAS 123 issued by the Financial Accounting Standards Board. It is not possible to consider these factors in a valuation based on the traditional modified Black-Scholes model. Under the assumptions used by Veritas when modeling the valuation of employee stock option grants both based on the customized binomial lattice model as well as the traditional modified Black-Scholes model, the customized binomial lattice model resulted in a considerably lower expense, considering the expensing guidelines as included in the FAS 123 Proposed Statement."

Don Rath, Vice President of Tax and Stock Administration
Veritas Software Corporation

"This is one of those rare books written in anticipation of a major shift in the industry and economy. FAS 123 will throw a lot of public companies in a frantic, however the smart ones are identifying the opportunity to master the process and take over the driving seat. The methodology and the tools developed by Dr. Johnathan Mun are proven, pragmatic, and offer a great deal of value and benefit to those early adopters. IBCOL Consulting AG is using Dr. Mun's algorithms and methodology because of their applicability, accuracy, and the fair-market values that we have obtained for our clients are significantly less than traditional Black-Scholes models."

Dr. Markus Junginger
Managing Partner, IBCOL Consulting

"After extensive review of the FASB exposure draft and consideration of a variety of option valuation methodologies, E*TRADE FINANCIAL has decided to implement a binomial lattice model in Equity Edge, our stock plan management and reporting software, in consultation with Dr. Johnathan Mun. We found Dr. Mun's work on employee stock option pricing very valuable."

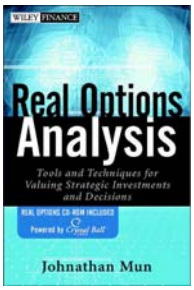
Naveen Agarwal
Director, Product Management, E*TRADE FINANCIAL Corporate Services

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including ***Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation*** software and others (some of these tools are showcased in this book), as well as the risk analysis Training DVD. He has authored ten books published by John Wiley & Sons and Elsevier Science, including ***The Banker's Handbook on Credit Risk*** (2008); ***Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond*** (2008); ***Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting*** (2006); ***Real Options Analysis: Tools and Techniques, First and Second Editions*** (2003 and 2005); ***Real Options Analysis Course: Business Cases*** (2003); ***Applied Risk Analysis: Moving Beyond Uncertainty*** (2003); and ***Valuing Employee Stock Options*** (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his Ph.D. in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

TABLE OF CONTENTS



Real Options Analysis:
Tools and Techniques for Valuing Strategic Investments & Decisions

Dr. Johnathan Mun
ISBN: 0-471-25696-X (2002)
Hard Cover and Cloth 416 Pages
Available on www.amazon.com
Keyword search: JOHNATHAN MUN

Real Options Analysis (Wiley Finance), is now available on the Wiley and Amazon web sites. The book follows the lecture seminars: "Real Options for Managers" and "Real Options for Analysts" that the author has held worldwide. A Japanese translation is currently underway and a follow-up book, "*Real Options Analysis: Business Cases and Software Applications"* is forthcoming (February 2003). The book includes a CD-ROM of the Real Options Analysis Toolkit demo software, Crystal Ball® Monte Carlo simulation trial software, OptQuest stochastic-optimization software, and a series of Excel worksheet models ranging from forecast simulation to resource optimization. The book and software are being adopted by the Wharton School's Executive MBA program (University of Pennsylvania), Boston University, Fordham University, and others. In addition, leading industries are in the process of adopting the methodologies outlined in the book and software, including Accenture, Timken, Schlumberger, etc.

PREFACE

Real Options Analysis provides a novel view of evaluating capital investment strategies by taking into consideration the strategic decision-making process. The book provides a qualitative and quantitative description of real options, the methods used in solving real options, why and when they are used, and the applicability of these methods in decision-making. In addition, multiple business cases and real-life applications are discussed. This discussion includes presenting and framing the problems, as well as introducing a stepwise quantitative process developed by the author for solving these problems using the different methodologies inherent in real options. Included are technical presentations of models and approaches used as well as their theoretical and mathematical justifications. The book is divided into two parts. The first part looks at the qualitative nature of real options, providing actual business cases and scenarios of real options in the industry, as well as the high-level explanations of how real options provide the much-needed insights in decision-making. The second part of the book looks at the quantitative analysis, complete with worked-out examples and mathematical formulae. This book is targeted at uninitiated professionals as well as those knowledgeable in real options applications. It is also applicable for use as a second-year M.B.A. level or introductory Ph.D. textbook. A comprehensive CD-ROM is included in the book. The CD-ROM consists of 69 Real Options Models, Crystal Ball® Monte Carlo simulation software, and a series of example options analysis spreadsheets.

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including ***Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation*** software and others (some of these tools are showcased in this book), as well as the risk analysis Training DVD. He has authored ten books published by John Wiley & Sons and Elsevier Science, including ***The Banker's Handbook on Credit Risk*** (2008); ***Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond*** (2008); ***Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting*** (2006); ***Real Options Analysis: Tools and Techniques, First and Second Editions*** (2003 and 2005); ***Real Options Analysis Course: Business Cases*** (2003); ***Applied Risk Analysis: Moving Beyond Uncertainty*** (2003); and ***Valuing Employee Stock Options*** (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his Ph.D. in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

PRAISES FOR *REAL OPTIONS ANALYSIS*

"…this book is a *must have* and *must read…* Dr. Mun's new book is a refreshing, cutting-edge look at a powerful new decision-making process… it isn't often you can truthfully say a book breaks new ground, but [this book] has certainly done that."
-Glenn G. Kautt, President, Monitor Group, Inc. (USA)

"Many books on real options can be intimidating. Dr. Mun offers a pragmatic, reliable and entertaining guide. Complex concepts and formulas are brilliantly interspersed with well chosen examples and step-by-step walk through from a variety of industries."
-Shota Hattori, President and CEO, Kozo Engineering, (Japan)

"Real Options Analysis is the clearest book on real options that we have read to date. It does an excellent job of demystifying a difficult and complex subject. It provides a solid basis for conceiving, assessing and evaluating real option investments, which will make it useful to practitioners and students alike."
-Ian C. MacMillan, Professor
The Wharton School of the University of Pennsylvania (USA)

"…the clarity and comprehensive coverage makes it the best guide for all practitioners… coupled with state-of-the-art financial tools CD-ROM."
-Michael Sim, Partner, Moores Rowland International (Hong Kong)

"Dr. Johnathan Mun certainly has earned the reputation of being an expert on the subject… consultants, analysts, decision-makers and engineers will be all over this book and its software."
-Phyllis Koessler, Managing Director, Koessler and Associates (Switzerland)

"…finally, a real options analysis book that is technically sophisticated enough to be useful, and practically written so that it can actually be used. It is destined to become the handbook of real options."
-Tracy Gomes, CEO, Intellectual Property Economics (USA)

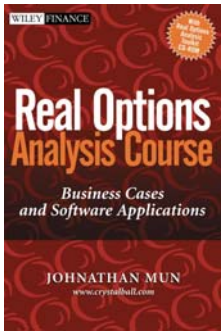
"Dr. Mun demystifies real options analysis and delivers a powerful, pragmatic guide for decision-makers and practitioners alike. Finally, there is a book that equips professionals to easily recognize, value, and seize real options in the world around them."
- Jim Schreckengast, Sr. Vice President, R&D Strategy – Gemplus International SA (France)

"...written from the viewpoint of an educator and a practitioner, his book offers a readable reference full of insightful decision-making tools to satisfy both the novice and the experienced veteran."
-Richard Kish, Ph.D., Associate Professor of Finance, Lehigh University

"Dr. Mun has converted his tacit financial knowledge into a digestible user-friendly book. He effectively leads the reader on a solid path starting from *discounted cash flow,* progressing through *Monte Carlo analysis* and evolving to *real options* to get even closer to the target of achieving confident corporate decisions. His ability to clearly explain the relationships of popular competing analysis methods will make this a must have reference book for today's decision makers."
-Ken English, Director of R&D, The Timken Company (USA)

"The book leads the field in real options analytics and is a must-read for anyone interested in performing such analyses. Dr. Mun has made a formidable subject crystal clear and exponentially easy for senior management to understand. *Monte Carlo simulation* and *real options* software alone is worth the book price many times over."
-Morton Glantz, Renowned educator in finance, author of several books, financial advisor to government (USA)

TABLE OF CONTENTS



Real Options Analysis Course: Business Cases and Software Applications

Dr. Johnathan Mun
ISBN: 0471430013 (2003)
Hard Cover and Cloth 360 Pages

Available on www.wiley.com *Keyword: JOHNATHAN MUN*

The *Real Options Analysis Course* (Wiley Finance March 2003) is now available on the Amazon web site. The book follows the lecture seminars: "Real Options for Managers" and "Real Options for Analysts" that the author has held worldwide. This is a follow-up to Mun's previous book, *"Real Options Analysis: Tools and Techniques for Valuing Strategic Investments and Decisions."* Read the book written by the same person who created the software and have taught, advised and consulted on the applications of real options at multiple firms worldwide. The book includes a CD-ROM of the Real Options Analysis Toolkit limited edition software, Crystal Ball® Monte Carlo simulation trial software, OptQuest stochastic-optimization software, and a series of Excel worksheet models ranging from chapter problems and cases to forecast simulation and resource optimization models. The book is written with the analyst and finance student in mind. The case studies and step-by-step problems (and associated answers for faculty download) coupled with the theories in the first book provide a comprehensive course in using Real Options in the real world, with the relevant software applications.

PREFACE

This book was written with the corporate financial analyst and finance student in mind. Real Options Course's business cases, exercises, step-by-step methodologies and applications have been adapted for and solved using the enclosed Real Options Analysis Toolkit software (limited edition) CD-ROM. It is assumed that the reader has familiarity with real options concepts as outlined in Mun's previous book, *Real Options Analysis* (Wiley Finance, 2002), as some of the more important concepts overlap between these books. As in the first book, the focus is on the ease of use and pragmatic applications of real options and forgoes many of the theoretical concepts. The idea is to demystify the black-box analytics in real options and to make transparent its concepts, methodologies and applications. Rather than relying on stochastic Ito calculus, variance reduction, numerical methods, differential equations or stochastic path-dependent simulations to solve real options problems, this book instead relies heavily on binomial lattices, which is shown time and again to be reliable and produce identical results, at the limit, to the former approaches. While it is extremely easy to modify binomial lattices depending on the real options or to more accurately mirror the intricacies of actual business cases, it is extremely difficult to do so using the more advanced techniques. In the end, the more flexible and mathematically manageable approach becomes the pragmatic approach. The flexibility in the modeling approach flows well with the overall theme of this book: "If you can think it, you can solve it!"

Finally, the author's intention is to reveal as much as possible in the realms of real options. A black box will remain a black box if no one can understand the concepts despite its power and applicability. It is only when the black box becomes transparent that analysts can understand, apply, and convince others of its results and applicability, that the approach will receive wide-spread influence. It took over two decades for discounted cash flow and net present value analysis to take hold in corporate finance – then again, that was during an era of slide-rules, little knowledge of corporate finance, and virtually no desktop computer software spreadsheet applications. The author is convinced that with the advent of his software, Real Options Analysis Toolkit, books such as this one (that demystifies real options, rather than collude it with academic jargon and unnecessary complexities), seminars and trainings like the ones the author has held worldwide, the learning curve will be traversed even more quickly and real options will be accepted as widely as discounted cash flow modeling within the next few decades.

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including ***Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation*** software and others (some of these tools are showcased in this book), as well as the risk analysis ***Training DVD***. He has authored ten books published by John Wiley & Sons and Elsevier Science, including ***The Banker's Handbook on Credit Risk*** (2008); ***Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond*** (2008); ***Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting*** (2006); ***Real Options Analysis: Tools and Techniques, First and Second Editions*** (2003 and 2005); ***Real Options Analysis Course: Business Cases*** (2003); ***Applied Risk Analysis: Moving Beyond Uncertainty*** (2003); and ***Valuing Employee Stock Options*** (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his Ph.D. in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

PRAISES FOR *REAL OPTIONS ANALYSIS COURSE*

"Finally, someone gets it! Pure theory without application is useless to the general practitioner! Dr. Mun has managed to remove the cloak of mystery from real options. While his first book dives into the theory and mathematics of the real options methodology, this book cuts to the chase and is chock full of real-life examples that the practitioner can use for framing and analyzing real-world problems. Dr. Mun has created what are destined to become *THE* "user's manuals" for anyone attempting to apply the exciting analytics of real options. Whether you need help with theory, application or simply explaining your results to management, Mun has got you covered."

Jaswant Singh Sihra, P.E., M.B.A.
Senior Strategic Planning Advisor, Halliburton Company

"Most of us come to real options from the perspective of our own areas of expertise. Mun's great skill with this book is in making real options analysis understandable, relevant and therefore immediately applicable to the field within which you are working."

Robert Fourt
Partner, Gerald Eve (UK)

"Dr. Mun's latest book is a logical extension of the theory and application presented in *Real Options Analysis*. More specifically, The *Real Options Analysis Course* presents numerous real options examples and provides the reader with step-by-step problem solving techniques. After having read the book, readers will better understand the underlying theory and the opportunities for applying real option theory in corporate decision-making."

Chris D. Treharne, M.B.A., A.S.A., M.C.B.A.
President – Gibraltar Business Appraisals, Inc.

"This text provides an excellent follow up to Dr. Mun's first book, *Real Options Analysis*. The cases in the *Real Options Analysis Course* provide numerous examples of how the use of real options and the Real Options Toolkit Software can assist in the valuation of strategic and managerial flexibility in a variety of arenas, with many practical and useful examples."

Charles T. Hardy, Ph.D., M.B.A.
Chief Financial Officer & Director of Business Development
Panorama Research, Inc.

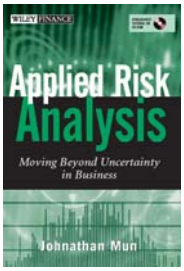
"Mun provides a very practical step-by-step guide to applying simulations and real option analysis—invaluable to those of us who are no longer satisfied with conventional valuation approaches alone."

Fred Kohli
Head of Portfolio Management
Syngenta Crop Protection Ltd. (Switzerland)

"The book on Real Options Analysis Course is an engaging hands-on reference for corporate financial engineers, and corporate controllers looking for robust state-of-the-art financial methodologies to tie corporate strategy with financial asset management with the objective to create shareholder value. It is highly recommended for strategists interested in the design of global value chain management. It is a must study for former MBAs who have the desire to keep up with new financial analytics."

Prof Thoi Truong
Oregon Graduate Institute of Technology

TABLE OF CONTENTS



Applied Risk Analysis:
Moving Beyond Uncertainty
Dr. Johnathan Mun

ISBN: 0-471-47885-7 (2003)

Hard Cover and Cloth
460 Pages *Available at* www.amazon.com
Keyword search: JOHNATHAN MUN

Applied Risk Analysis (Wiley Finance 2003), is now available on the Wiley and Amazon web sites. The book includes a CD-ROM with a series of Excel worksheet models ranging from stochastic simulations to resource optimization. The book and software are being adopted by various universities around the world in their MBA programs. In addition, leading industries are in the process of adopting the methodologies outlined in the book and software.

PREFACE

We live in an environment fraught with risk and operate our businesses in a risky world, as higher rewards only come with risks. It is unimaginable if the element of risk is not considered when corporate strategy is framed and when tactical projects are implemented. Applied Risk Analysis provides a novel view of evaluating business decisions, projects, and strategies by taking into consideration a unified strategic portfolio analytical process. The book provides a qualitative and quantitative description of risk, as well as introductions to the methods used in identifying, quantifying, applying, predicting, valuing, hedging, diversifying, and managing risk, through rigorous examples of the methods' applicability in the decision-making process. Pragmatic applications are emphasized in order to demystify the many elements inherent in risk analysis. A black box will remain a black box if no one can understand the concepts despite its power and applicability. It is only when the black box becomes transparent that analysts can understand, apply, and convince others of its results, value-add, and applicability, that the approach will receive wide-spread influence. This is done through step-by-step applications of risk analysis as well as presenting multiple business cases, and discussing real-life applications. This book is targeted at both the uninitiated professional as well as those verbose in risk analysis—there is always something for everyone. It is also applicable for use as a second-year M.B.A. level or introductory Ph.D. textbook. A CD-ROM is included in the book.

ABOUT THE AUTHOR

Dr. Johnathan C. Mun is the founder, chairman and CEO of Real Options Valuation, Inc. (ROV), a consulting, training, and software development firm specializing in strategic real options, financial valuation, Monte Carlo simulation, stochastic forecasting, optimization, and advanced analytics located in northern Silicon Valley, California. ROV has partners around the world including Beijing, Chicago, Colombia, Hong Kong, Mexico City, New York, Nigeria, Shanghai, Singapore, Spain, Zurich, and other locations. ROV also has a local office in Shanghai. He is also the chairman of the International Institute of Professional Education and Research (IIPER), an accredited global organization providing the Certified in Risk Management (CRM) designation, among others, staffed by professors from named universities from around the world. He is the creator of multiple software tools including ***Risk Simulator, Real Options SLS, Modeling Toolkit, Basel II Modeler, ROV Modeler, ROV Optimizer, ROV Valuator, ROV Extractor and Evaluator, ROV Compiler, ROV BizStats, ROV Dashboard, Employee Stock Options Valuation*** software and others (some of these tools are showcased in this book), as well as the risk analysis ***Training DVD***. He has authored ten books published by John Wiley & Sons and Elsevier Science, including ***The Banker's Handbook on Credit Risk*** (2008); ***Advanced Analytical Models: 250 Applications from Basel II Accord to Wall Street and Beyond*** (2008); ***Modeling Risk: Applying Monte Carlo Simulation, Real Options, Optimization, and Forecasting*** (2006); ***Real Options Analysis: Tools and Techniques, First and Second Editions*** (2003 and 2005); ***Real Options Analysis Course: Business Cases*** (2003); ***Applied Risk Analysis: Moving Beyond Uncertainty*** (2003); and ***Valuing Employee Stock Options*** (2004). His books and software are being used at top universities around the world. Dr. Mun is also currently a finance and economics professor and has taught courses in financial management, investments, real options, economics, and statistics at the undergraduate and the graduate MBA levels. He teaches and has taught at universities all over the world, from the U.S. Naval Postgraduate School (Monterey, California) and University of Applied Sciences (Switzerland and Germany) as full professor, to Golden Gate University (California) and San Francisco State University (California) as adjunct professor, and has chaired many graduate research MBA thesis and Ph.D. dissertation committees. He was formerly the Vice President of Analytics at Decisioneering, Inc. Before that, he was a Consulting Manager and Financial Economist in the Valuation Services and Global Financial Services practice of KPMG Consulting and a Manager with the Economic Consulting Services practice at KPMG LLP. He has taught and consulted for over 100 multinational firms (former clients include 3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, Timken, U.S. Department of Defense, State and Local Governments, Veritas, and many others). His experience prior to joining KPMG included being department head of financial planning and analysis at Viking Inc. of FedEx, performing financial forecasting, economic analysis, and market research.

Dr. Mun received his Ph.D. in Finance and Economics from Lehigh University, where his research and academic interests were in the areas of investment finance, econometric modeling, financial options, corporate finance, and microeconomic theory. He also has an MBA in business administration, an MS in management science, and a BS in Biology and Physics. He is Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM). He is a member of the American Mensa, Phi Beta Kappa Honor Society, and Golden Key Honor Society as well as several other professional organizations, including the Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. In addition, he has written many academic articles published in the Journal of the Advances in Quantitative Accounting and Finance, the Global Finance Journal, the International Financial Review, the Journal of Financial Analysis, the Journal of Applied Financial Economics, the Journal of International Financial Markets, Institutions and Money, the Financial Engineering News, and the Journal of the Society of Petroleum Engineers.

PRAISES FOR *REAL OPTIONS ANALYSIS*

Johnathan Mun's book is a sparkling jewel in my finance library. Mun demonstrates a deep understanding of the underlying mathematical theory in his ability to reduce complex concepts to lucid explanations and examples. For this reason, he's my favorite writer in this field. Experienced professionals will appreciate Mun's competence in boiling down complex math to a clear presentation of the essential solutions to financial risk, corporate finance, and forecasting.
Janet Tavakoli, President, Tavakoli Structured Finance

Every year the market of managerial books is flooded again and again. This book is different. It puts a valuable tool into the hands of corporate managers, who are willing to stand up against uncertainties and risks and are determined to deliver value to shareholder and society even in rough times. It is a book for the new generation of managers, for whom Corporate America is waiting.
Dr. Markus Götz Junginger
Managing Partner, IBCOL Consulting AG (Switzerland)

Dr. Mun breaks through the hyperbole and presents a clear step-by-step approach revealing to readers how quantitative methods and tools can truly make a difference. In short, he teaches you what's relevant and a must know. I highly recommend this book, especially if you want to effectively incorporate the latest technologies into your decision making process for your real world business.
Dr. Paul W. Finnegan, MD, MBA
Vice President, Commercial Operations and Development
Alexion Pharmaceuticals, Inc.

Johnathan Mun has previously published a number of very popular books dealing with different aspects of risk analysis, associated techniques and tools. This last publication puts all the pieces together. The book is really unavoidable for any professional who wants to address risk evaluation following a logical, concrete and conclusive approach.
Jean Louis Vaysse
Deputy Vice President Marketing, Airbus (France)

A must read for product portfolio managers... it captures the risk exposure of strategic investments, and provides management with estimates of potential outcomes and options for risk mitigation.
Rafael E. Gutierrez
Executive Director of Strategic Marketing and Planning, Seagate Technology

Mun has the uncanny ability to clarify the complex, distilling risk analysis concepts into a truly readable and practical guide for decision-makers. This book blazes a trail that connects abstract yet powerful theories with real-world applications and examples, leaving the reader enlightened and empowered.
Stephen Hoye, MBA, President, Hoye Consulting Group

Strategy development has fallen on hard times being judged not relevant for a rapidly changing world. With this book, Dr. Mun attacks this poor excuse head-on by presenting a clearly organized, tool supported, methodology that logically progresses from exploring uncertainty that bounds risk to the creation of options for constructing realistic business strategies.
Robert Mack
Vice President, Distinguished Analyst, Gartner Group

This book is a pleasure to read both for subject matter experts as well as for novices. It holds a high risk of addicting the readers. Dr. Mun leads the readers through step by step complex mathematical concepts with unmatched ease and clarity. Well chosen examples and pointers to pitfalls complement the splendidly written chapters. This book will be a bestseller in Risk Management and is a "must read" for all professionals.
Dr. Hans Weber
Syngenta AG (Switzerland), Product Development Project Leader

Once again, Dr. Johnathan Mun has attained his usual standard: excellence in making not-so-simple but very useful quantitative analytical techniques accessible to the interested reader who doesn't necessarily have an engineering or scientific training. This book presents a seriously comprehensive guide to everyday users of spreadsheet models, particularly those interested in Risk Analysis and Management, on how to move beyond simple statistical analysis. It is a "must have" to academicians searching for user-friendly bibliography, and to practitioners willing to get a first-hand experience on cutting-edge, high-productivity analytical tools.
Dr. Roberto J. Santillan-Salgado
Director of the M.S., EGADE-ITESM, Monterrey Campus (Mexico)

A fundamental principal in finance is the relationship between risk and reward, yet today empirical risk measurement, valuations, and deal structuring are still the norm. Business professionals, venture capitalists and other investors will all find Johnathan Mun's latest book on conceptualizing and quantitatively measuring risk in business of considerable value and a welcome addition to their libraries.
Dr. Charles T. Hardy
Principal, Hardy & Associates

TABLE OF CONTENTS

	功能列表	Risk Simulator	Crystal Ball	@Risk
蒙特卡罗仿真	24 个统计分布和 1 个定制的历史非参数分布	★	★	★
	Excel 全面集成 (动态链接, VBA 宏)	★	★	★
	传统 Monte Carlo 方法	★	★	★
	截取相关性仿真	★	★	★
	未定输入参数下多维度仿真	★	★	★
	高速仿真	★	★	★
	完整的仿真和分析报告	★	部分	部分
	高级相关性 copula 法	★	没有	没有
	用于情景分析的方针文档	★	没有	没有
预测	ARIMA 模型分析 (时间序列和面板分析)	★	没有	没有
	自动 ARIMA 模型分析 (时间序列和面板分析)	★	没有	没有
	自动计量经济学模型 (模型测试)	★	没有	没有
	基本计量经济学模型 (时间序列和面板分析)	★	没有	没有
	三次样条插值模型 (时间序列和面板分析)	★	没有	没有
	逻辑 S 曲线和指数 J 曲线 (时间序列)	★	没有	没有
	GARCH 使用广义自回归条件异方差模型计算波动率 (时间序列)	★	没有	没有
	马尔可夫链 (时间序列)	★	没有	没有
	最大似然估计模型 (相交)	★	没有	没有
	多元回归 (时间序列, 相交)	★	★	★
	非线性外插 (时间序列)	★	没有	没有
	随机过程预测(时间序列)	★	没有	没有
	时间序列分析预测 (时间序列)	★	★	★

优化	连续变量优化	★	★	★
	离散变量优化	★	★	★
	连续变量与离散变量结合优化	★	★	★
	线性优化	★	★	★
	非线性优化	★	★	★
	静态优化 (快速单点估计) 有效边际	★	★	★
	动态优化	★	★	★
	随机过程优化(决策变量分布的多重迭代)	★	没有	没有

分析工具	数据诊断(自动相关性，相关性，分布延迟，异方差，微缺性，非线性，非平稳性，普通性，异常值，随机参数估计)	★	没有	没有
	数据输出和预测输出	★	★	★
	分布分析 (PDF, CDF, ICDF)	★	没有	没有
	分布设计	★	★	★
	假设检验	★	没有	没有
	非参数拨靴检验	★	★	★
	重叠图	★	★	★
	情景分析	★	★	★
	分类聚集	★	没有	没有
	敏感性分析	★	★	★
	统计分析 (自动相关性，分布拟合，描述统计，假设检验，非线性外推，普通性，随机参数估计，时间序列预测)	★	没有	没有
	飓风图和蜘蛛图	★	★	★

Real Option Super Lattice Solver (SLS)	放弃期权，收缩期权，扩展期权，选择期权	★	没有	没有
	美式期权，百慕大期权，自定义期权，欧式期权	★	没有	没有
	变波动率期权	★	没有	没有
	高级 SLS 模型案例	★	没有	没有
	奇异单双障碍期权	★	没有	没有
	超过 300 个模型的奇异期权计算器	★	没有	没有
	金融期权，实物期权和员工股票期权	★	没有	没有
	Lattice 生成 (嵌入 Excel 中)	★	没有	没有
	多标的资产多阶段期权	★	没有	没有
	并发多阶段连续混合期权	★	没有	没有
	特殊期权 (均值回归，跳跃扩散，彩虹)	★	没有	没有
	Excel 嵌入功能独立软件(仿真和优化兼容)	★	没有	没有
	三叉树，四叉树，均值回复和跳跃扩散四叉树，结合多资产彩虹模型		没有	没有
	可视化公式波动率计算模型	★	没有	没有
	员工股票期权 ● 禁止期 ● 改变没收率 ● 改变无风险率 ● 改变波动率 ● 没收率 (前授予和后授予) ● 股票期权障碍要求 ● 次优行为 ● 授予期限 ● 其他奇异变量	★	没有	没有

Modeling Toolkit	模型工具集软件包括超过 800 个函数，模型，工具以及超过 300 个基于 EXCEL 和 SLS 的模型范例.模型工具集软件具有高级的分析功能: ● 信用分析 ● 负债分析 ● 决策分析 ● 预测 ● 行业应用 ● 期权分析 ● 违约率 ● 项目管理 ● 风险对冲 ● 六西格玛和质量分析 ● 统计工具 ● 评估模型 ● 收益率曲线	★	没有	没有

培训服务	注册风险管理师 (CRM)	★	没有	没有
	针对 Basel II 的信用风险和市场风险分析 (提供现场研讨会)	★	没有	没有
	风险分析课程: • 分析工具 Analytical Tools • 基本实物期权(SLS) • 预测(Risk Simulator) • 蒙特卡罗仿真(Risk Simulator) • 优化 (Risk Simulator)	★	★	★
	实物期权分析 • 高级实物期权分析 • 理解 SLS 软件 • 拟定期权	★	没有	没有
	管理人员实物期权 • 基本实物期权概念 • 实物期权中制定战略决策 • 拟定战略期权 • 解释期权结果	★	没有	没有
	评估员工股票期权 • 用 ESO 内的二叉网格在对基于 2004 年修改的 FAS123 条款下进行评估员工股票期权评估	★	没有	没有
	客户定制研讨会 • 为客户定制课程	★	★	★

咨询服务	高级模型服务	★	没有	没有
	基本模型构建服务	★	★	★
	员工股票期权评估	★	没有	没有
	奇异衍生金融工具的评估(涡轮，可转债，互换，担保债权凭证，抵押支持债权)	★	没有	没有
	保险和精算分析	★	没有	没有
	实物期权评估	★	没有	没有
	风险分析和战略品评估	★	没有	没有
	评估服务	★	没有	没有

New Software Products	ROV Risk Simulator	★	★	★
	ROV BizStats	★	None	★
	ROV Compiler	★	None	None
	ROV Modeler, ROV Optimizer, ROV Valuator	★	None	None
	ROV Extractor and Evaluator	★	None	None
	ROV Dashboard	★	None	None
	ROV Web Models	★	None	None
	ROV Modeling Toolkit	★	None	None
	ROV Real Options SLS	★	None	None
	ROV Employee Stock Options Toolkit	★	None	None

MODELING TOOLKIT

Real Options Valuation, Inc. is proud to present its latest innovation, the **Modeling Toolkit (Premium Edition)**. This toolkit comprises over 800 analytical models, functions and tools, and about 300 analytical model Excel/SLS templates and example spreadsheets covering the areas of risk analysis, simulation, forecasting, Basel II risk analysis, credit and default risk, statistical models, and much more! This toolkit is a set of mathematically sophisticated models written in C++ and linked into Excel spreadsheets. There are over 1100 models, functions, with spreadsheet and SLS templates in this toolkit and the analytical areas covered include:

Analytics

1. Central Limit Theorem
2. Central Limit Theorem (Lottery Analysis)
3. Flaw of Averages
4. Mathematical Integration
5. Parametric and Nonparametric Hypothesis Tests
6. Projectile Motion
7. Regression Diagnostics
8. Ships in the Night
9. Statistical Analysis
10. Weighting of Ratios

Banking Models

11. Audit of Construction Lending
12. Banker's Construction Budget
13. Classified Breakeven Loan
14. Classified Loan Borrowing Base
15. Classified Loan Cash Budget and Overdraft
16. Federal Reserve Camels Rating
17. Firm in Financial Distress
18. Project Finance Risk Rating
19. Queuing Models
20. Reconciling Enron's Cash Flow
21. Risk Rating Model
22. Sample Cash Flows
23. Sensitivity Projections
24. Stochastic Loan Pricing Model
25. Valuation and Appraisal

Credit Analysis

26. Credit Default Swaps/Credit Spread Options
27. Credit Default Swaps Correlated Counterparty Defaults
28. Credit Premium
29. Credit Risk and Price Effects
30. External Debt Rating Spreads
31. Internal Credit Risk Rating
32. Profit-Cost of New Credit

Debt Analysis

33. Asset Equity Parity Model
34. Cox Model on Price and Yield of Risky Debt with Mean Reverting Rates
35. Debt Repayment and Amortization
36. Debt Sensitivity Models
37. Merton Price of Risky Debt Stochastic Asset and Interest
38. Vasicek Debt Option Valuation
39. Vasicek Price/Yield Risky Debt

Decision Analysis

40. Decision Tree Basics
41. Decision Tree, EVPI, Minimax, Bayes Theorem
42. Economic Order Quantity and Inventory Reorder Point
43. Economic Order Quantity and Optimal Manufacturing
44. Expected Utility Analysis
45. Inventory Control
46. Queuing Models

Exotic Options

47. American, Bermudan and European Options
48. Asian Arithmetic
49. Asian Geometric
50. Asset or Nothing
51. Barrier Options
52. Binary Digital Options
53. Cash or Nothing
54. Commodity Options
55. Complex Chooser
56. Credit Spread Options
57. Currency Options
58. Double Barriers
59. Exchange Assets
60. Extreme Spread
61. Foreign Equity Linked Forex
62. Foreign Equity Domestic Currency
63. Foreign Equity Fixed Forex
64. Foreign Takeover Options
65. Forward Start
66. Futures and Forward Options
67. Gap Options
68. Graduated Barriers
69. Index Options
70. Inverse Gamma Out-of-the-money Options
71. Jump Diffusion
72. Leptokurtic and Skewed Options
73. Lookback Fixed Strike Partial Time
74. Lookback Fixed Strike
75. Lookback Floating Strike Partial Time
76. Lookback Floating Strike
77. Min and Max of Two Assets
78. Option Collar
79. Options on Options
80. Perpetual Options
81. Simple Chooser
82. Spread on Futures
83. Supershares
84. Time Switch
85. Trading Day Corrections
86. Two Assets Barrier
87. Two Assets Cash
88. Two Assets Correlated
89. Uneven Dividends
90. Writer Extendible

Forecasting

91. Brownian Motion Stochastic Process
92. Data Diagnostics
93. Econometric, Correlations and Multiple Regression
94. Exponential J-Growth Curves
95. Forecasting Manual Computations
96. Jump-Diffusion Stochastic Process
97. Linear Interpolation
98. Logistic S-Growth Curves
99. Markov Chains and Market Share
100. Mean-Reverting Stochastic Process
101. Multiple Regression
102. Nonlinear Extrapolation
103. Stochastic Processes and Yield Curves
104. Stock Distribution at Horizon
105. Time-Series Analysis
106. Time-Series ARIMA

Industry Applications

107. Asset Liability Management ALM
108. Biotech – Manufacturing Strategy
109. Biotech – In-licensing and Deal Structuring
110. Biotech – Investment Valuation
111. Electric Utility – Efficient Frontier Generation
112. Electric Utility – Electricity Contract Risk
113. Information Technology – Forecasting Use

114. Information Technology – Decision Analysis
115. Pensions – Closed Group Portfolio Matching
116. Pensions – Accounting Modeling and Optimization
117. Real Estate – Commercial ROI

Optimization

118. Capital Investments (Part A)
119. Capital Investments (Part B)
120. Continuous Portfolio Allocation
121. Discrete Project Selection
122. Inventory Optimization
123. Investment Portfolio Allocation
124. Military Portfolio and Efficient Frontier
125. Optimal Pricing with Elasticity
126. Optimization of a Harvest Model
127. Optimizing Ordinary Least Squares
128. Stochastic Portfolio Allocation

Options Analysis

129. Binary Digital Instruments
130. Inverse Floater Bond Lattice Maker
131. Options Adjusted Spreads on Debt
132. Options on Debt
133. Options Trading Strategies

Probability of Default

134. Empirical (Individuals)
135. External Options Model (Public Company)
136. Merton Internal Model (Private Company)
137. Merton Market Options Model (Industry Comparable)
138. Yields and Spreads (Market Comparable)

Project Management

139. Cost Estimation Model
140. Critical Path Analysis (CPM PERT GANTT)
141. Project Timing

Real Options SLS

142. Employee Stock Options - Simple American Call
143. Employee Stock Options - Simple Bermudan Call with Vesting
144. Employee Stock Options - Simple European Call
145. Employee Stock Options - Suboptimal Exercise
146. Employee Stock Options - Vesting and Suboptimal Exercise
147. Employee Stock Options - Vesting, Blackout, Suboptimal, Forfeiture
148. Exotic Options - American Call Option with Dividends
149. Exotic Options - Accruals on Basket of Assets
150. Exotic Options - American Call Option on Foreign Exchange
151. Exotic Options - American Call Option on Index Futures
152. Exotic Options - Barrier Option - Down and In Lower Barrier
153. Exotic Options - Barrier Option - Down and Out Lower Barrier
154. Exotic Options - Barrier Option - Up and In Upper Barrier Call
155. Exotic Options - Barrier Option - Up and In, Down and In Double Barrier Call
156. Exotic Options - Barrier Option - Up and Out Upper Barrier
157. Exotic Options - Barrier Option - Up and Out, Down and Out Double Barrier
158. Exotic Options - Basic American, European, versus Bermudan Call Options
159. Exotic Options - Chooser Option
160. Exotic Options - Equity Linked Notes
161. Exotic Options - European Call Option with Dividends
162. Exotic Options - Range Accruals
163. Options Analysis - Plain Vanilla Call I
164. Options Analysis - Plain Vanilla Call II
165. Options Analysis - Plain Vanilla Call III
166. Options Analysis - Plain Vanilla Call IV
167. Options Analysis - Plain Vanilla Put
168. Real Options - Abandonment American Option
169. Real Options - Abandonment Bermudan Option
170. Real Options - Abandonment Customized Option
171. Real Options - Abandonment European Option
172. Real Options - Contraction American and European Option
173. Real Options - Contraction Bermudan Option
174. Real Options - Contraction Customized Option
175. Real Options - Dual-Asset Rainbow Pentanomial Lattice
176. Real Options – Excel-based Options Models
177. Real Options - Exotic Complex Floating American Chooser
178. Real Options - Exotic Complex Floating European Chooser
179. Real Options - Expand Contract Abandon American and European Option
180. Real Options - Expand Contract Abandon Bermudan Option
181. Real Options - Expand Contract Abandon Customized I
182. Real Options - Expand Contract Abandon Customized II
183. Real Options - Expansion American and European Option
184. Real Options - Expansion Bermudan Option
185. Real Options - Expansion Customized Option
186. Real Options - Jump Diffusion Calls and Puts using Quadranomial Lattices
187. Real Options - Mean Reverting Calls and Puts using Trinomial Lattices
188. Real Options - Multiple Asset Competing Options (3D Binomial)
189. Real Options - Multiple Phased Complex Sequential Compound Option
190. Real Options - Multiple Phased Sequential Compound
191. Real Options - Multiple Phased Simultaneous Compound
192. Real Options - Simple Calls and Puts (Trinomial Lattices)
193. Real Options - Simple Two Phased Sequential Compound
194. Real Options - Simple Two Phased Simultaneous Compound
195. Real Options - Strategic Cases - High-Tech Manufacturing Strategy A
196. Real Options - Strategic Cases - High-Tech Manufacturing Strategy B
197. Real Options - Strategic Cases - High-Tech Manufacturing Strategy C
198. Real Options - Strategic Cases - Oil and Gas - Strategy A
199. Real Options - Strategic Cases - Oil and Gas - Strategy B
200. Real Options - Strategic Cases - R&D Stage-Gate Process A
201. Real Options - Strategic Cases - R&D Stage-Gate Process B
202. Real Options - Strategic Cases - Switching Option Strategy I
203. Real Options - Strategic Cases - Switching Option Strategy II
204. Trinomial Lattices - American Call
205. Trinomial Lattices - American Put
206. Trinomial Lattices - European Call
207. Trinomial Lattices - European Put

208. Trinomial Lattices - Mean Reverting American Call Option
209. Trinomial Lattices - Mean Reverting American Put Option
210. Trinomial Lattices - Mean Reverting European Call Option
211. Trinomial Lattices - Mean Reverting European Put Option
212. Trinomial Lattices - Mean Reverting American Abandonment
213. Trinomial Lattices - Mean Reverting American Contraction
214. Trinomial Lattices - Mean Reverting American Expansion
215. Trinomial Lattices - Mean Reverting American Abandonment, Contraction, Expansion
216. Trinomial Lattices - Mean Reverting Bermudan Abandonment, Contraction, Expansion
217. Trinomial Lattices - Mean Reverting Abandonment, Contraction, Expansion
218. Trinomial Lattices - Mean Reverting European Abandonment, Contraction, Expansion
219. Quadranomial Lattices - Jump Diffusion American Call
220. Quadranomial Lattices - Jump Diffusion American Put
221. Quadranomial Lattices - Jump Diffusion European Call
222. Quadranomial Lattices - Jump Diffusion European Put
223. Pentanomial Lattices - American Rainbow Call Option
224. Pentanomial Lattices - American Rainbow Put Option
225. Pentanomial Lattices - Dual Reverse Strike American Call (3D Binomial)
226. Pentanomial Lattices - Dual Reverse Strike American Put (3D Binomial)
227. Pentanomial Lattices - Dual Strike American Call (3D Binomial)
228. Pentanomial Lattices - Dual Strike American Put (3D Binomial)
229. Pentanomial Lattices - European Rainbow Call Option
230. Pentanomial Lattices - European Rainbow Put Option
231. Pentanomial Lattices - Exchange of Two Assets American Put (3D Binomial)
232. Pentanomial Lattices - Maximum of Two Assets American Call (3D Binomial)
233. Pentanomial Lattices - Maximum of Two Assets American Put (3D Binomial)
234. Pentanomial Lattices - Minimum of Two Assets American Call (3D Binomial)
235. Pentanomial Lattices - Minimum of Two Assets American Put (3D Binomial)
236. Pentanomial Lattices - Portfolio American Call (3D Binomial)
237. Pentanomial Lattices - Portfolio American Put (3D Binomial)
238. Pentanomial Lattices - Spread of Two Assets American Call (3D Binomial)
239. Pentanomial Lattices - Spread of Two Assets American Put (3D Binomial)

Risk Analysis

240. Integrated Risk Analysis
241. Interest Rate Risk
242. Portfolio Risk and Return Profile

Risk Hedging

243. Delta Gamma Hedge
244. Delta Hedge
245. Effects of Fixed versus Floating Rates
246. Foreign Exchange Cash Flow Model
247. Foreign Exchange Exposure Hedging

Sensitivity

248. Greeks
249. Tornado and Sensitivity Charts Linear
250. Tornado and Sensitivity Nonlinear

Simulation

251. Basic Simulation Model
252. Best Surgical Team
253. Correlated Simulation
254. Correlation Effects Model
255. Data Fitting
256. DCF, ROI and Volatility
257. Debt Repayment and Amortization
258. Demand Curve and Elasticity Estimation
259. Infectious Diseases
260. Recruitment Budget (Negative Binomial and Multidimensional Simulation)
261. Retirement Funding with VBA Macros
262. Roulette Wheel
263. Time Value of Money

Six Sigma

264. Confidence Intervals with Hypothesis Testing
265. Control Charts (c, n, p, u, X, XmR, R)
266. Delta Precision
267. Design of Experiments and Combinatorics
268. Hypothesis Testing and Bootstrap Simulation
269. Sample Size Correlation
270. Sample Size DPU
271. Sample Size Mean
272. Sample Size Proportion
273. Sample Size Sigma
274. Statistical Analysis (CDF, PDF, ICDF) Hypothesis Testing
275. Statistical Capability Measures
276. Unit Capability Measures

Valuation

277. APT, BETA and CAPM
278. Buy versus Lease
279. Caps and Floors
280. Convertible Bonds
281. Financial Ratios Analysis
282. Financial Statements Analysis
283. Valuation Model
284. Valuation - Warrant - Combined
285. Valuation - Warrant - Put Only
286. Valuation - Warrant - Warrant

Value at Risk

287. Optimized and Simulated Portfolio VaR
288. Options Delta Portfolio
289. Portfolio Operational and Capital Adequacy
290. Right Tail Capital Requirements
291. Static Covariance Method

Volatility

292. EWMA Volatility Models
293. GARCH Volatility Models
294. Implied Volatility
295. Log Asset Returns Approach
296. Log Cash Flow Returns Approach Probability to Volatility

Yield Curve

297. CIR Model
298. Curve Interpolation BIM
299. Curve Interpolation NS
300. Forward Rates from Spot Rates
301. Spline Interpolation and Extrapolation.xls
302. Term Structure of Volatility
303. US Treasury Risk Free Rate
304. Vasicek Model

List of Functions

Below is a comprehensive list of the functions in Modeling Toolkit that can be accessed either through the analytical DLL libraries or in Excel. Please keep checking back at the website for a more updated list. The software is continually evolving and newer applications and models are constantly added. Finally, the applicable Risk Simulator tools applicable when using the Modeling Toolkit are also listed at the end.

1. B2AEPMarketValueAsset
   Market Value of Asset using the Asset-Equity Parity Model.
2. B2AEPMarketValueDebt
   Market Value of Debt using the Asset-Equity Parity Model.
3. B2AEPRequiredReturnDebt
   Required Return on Risky Debt using the Asset-Equity Parity Model.
4. B2AltDistributionCallOption
   Computes the European Call option for an underlying asset returns distribution with skew and kurtosis, and is not perfectly normal. May return an error for unsolvable inputs.
5. B2AltDistributionPutOption
   Computes the European Put option for an underlying asset returns distribution with skew and kurtosis, and is not perfectly normal. May return an error for unsolvable inputs.
6. B2AnnuityRate
   Returns the percentage equivalent of the required periodic payment on an annuity (e.g., mortgage payments, loan repayment). Returns the percentage of the total principal at initiation.
7. B2AsianCallwithArithmeticAverageRate
   An average rate option is a cash-settled option whose payoff is based on the difference between the arithmetic average value of the underlying during the life of the option and a fixed strike.
8. B2AsianCallwithGeometricAverageRate
   An average rate option is a cash-settled option whose payoff is based on the difference between the geometric average value of the underlying during the life of the option and a fixed strike.
9. B2AsianPutwithArithmeticAverageRate
   An average rate option is a cash-settled option whose payoff is based on the difference between a fixed strike and the arithmetic average value of the underlying during the life of the option.
10. B2AsianPutwithGeometricAverageRate
    An average rate option is a cash-settled option whose payoff is based on the difference between a fixed strike and the geometric average value of the underlying during its life.
11. B2AssetExchangeAmericanOption
    Option holder has the right at up to and including expiration to swap out Asset 2 and receive Asset 1, with predetermined quantities.
12. B2AssetExchangeEuropeanOption
    Option holder has the right at expiration to swap out Asset 2 and receive Asset 1, with predetermined quantities.
13. B2AssetOrNothingCall
    At expiration, if in the money, the option holder receives the stock or asset. For a call option, as long as the stock or asset price exceeds the strike at expiration, the stock is received.
14. B2AssetOrNothingPut
    At expiration, if in the money, the option holder receives the stock or asset. For a put option, stock is received only if the stock or asset value falls below the strike price.
15. B2BarrierDoubleUpInDownInCall
    Valuable or knocked in-the-money only if either barrier (upper or lower) is breached, i.e., asset value is above the upper or below the lower barriers, and the payout is in the form of a call option on the underlying asset.
16. B2BarrierDoubleUpInDownInPut
    Valuable or knocked in-the-money only if either barrier (upper or lower) is breached, i.e., asset value is above the upper or below the lower barriers, and the payout is in the form of a put option on the underlying asset.
17. B2BarrierDoubleUpOutDownOutCall
    Valuable or stays in-the-money only if either barrier (upper or lower barrier) is not breached, and the payout is in the form of a call option on the underlying asset.
18. B2BarrierDoubleUpOutDownOutPut
    Valuable or stays in-the-money only if either barrier (upper or lower barrier) is not breached, and the payout is in the form of a put option on the underlying asset.
19. B2BarrierDownandInCall
    Becomes valuable or knocked in-the-money if the lower barrier is breached, and the payout is the call option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked in.
20. B2BarrierDownandInPut
    Becomes valuable or knocked in-the-money if the lower barrier is breached, and the payout is the put option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked in.
21. B2BarrierDownandOutCall
    Valuable or in-the-money only if the lower barrier is not breached, and the payout is the call option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked out.
22. B2BarrierDownandOutPut
    Valuable or in-the-money only if the lower barrier is not breached, and the payout is the put option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked out.
23. B2BarrierUpandInCall
    Becomes valuable or knocked in-the-money if the upper barrier is breached, and the payout is the call option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked in.
24. B2BarrierUpandInPut
    Becomes valuable or knocked in-the-money if the upper barrier is breached, and the payout is the put option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked in.
25. B2BarrierUpandOutCall
    Valuable or in-the-money only if the upper barrier is not breached, and the payout is the call option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked out.
26. B2BarrierUpandOutPut
    Valuable or in-the-money only if the upper barrier is not breached, and the payout is the put option on the underlying asset. Sometimes, cash is paid at maturity assuming that the option has not been knocked out.
27. B2BDTAmericanCallonDebtLattice
    Computes the American Call option on interest-based

instruments and debt or bonds, and creates the entire pricing lattice.

28. B2BDTAmericanCallonDebtValue
Computes the American Call option value on interest-based instruments and debt or bonds, and returns only one value instead of the entire lattice.
29. B2BDTAmericanPutonDebtLattice
Computes the American Put option on interest-based instruments and debt or bonds, and creates the entire pricing lattice.
30. B2BDTAmericanPutonDebtValue
Computes the American Put option value on interest-based instruments and debt or bonds, and returns only one value instead of the entire lattice.
31. B2BDTCallableDebtPriceLattice
Computes the revised price lattice of a callable debt such that the options adjusted spread can be imputed. Allows for changing interest and interest volatilities over time.
32. B2BDTCallableDebtPriceValue
Computes the present value of a coupon bond/debt that is callable, to see the differences in value from a non-callable debt. The lattice can be computed using the function call: B2BDTCallableDebtPriceLattice.
33. B2BDTCallableSpreadValue
Computes the option adjusted spread, i.e., the additional premium that should be charged on the callable option provision.
34. B2BDTEuropeanCallonDebtLattice
Computes the European Call option on interest-based instruments and debt or bonds, and creates the entire pricing lattice.
35. B2BDTEuropeanCallonDebtValue
Computes the European Call option value on interest-based instruments and debt or bonds, and returns only one value instead of the entire lattice.
36. B2BDTEuropeanPutonDebtLattice
Computes the European Put option on interest-based instruments and debt or bonds, and creates the entire pricing lattice.
37. B2BDTEuropeanPutonDebtValue
Computes the European Put option value on interest-based instruments and debt or bonds, and returns only one value instead of the entire lattice.
38. B2BDTFloatingCouponPriceLattice
Value of the floater bond's lattice (coupon rate is floating and can be directly or inversely related to interest rates; e.g., rates drop, coupon increases, the bond appreciates in price and the yield increases).
39. B2BDTFloatingCouponPriceValue
Value of the floater bond (coupon rate is floating and can be directly or inversely related to interest rates; e.g., rates drop, coupon increases, the bond appreciates in price and the yield increases).
40. B2BDTNoncallableDebtPriceLattice
Computes the pricing lattice of a coupon bond/debt that is not callable, to see the differences in value from a callable debt.
41. B2BDTNoncallableDebtPriceValue
Computes the present value of a coupon bond/debt that is not callable, to see the differences from a callable debt.
42. B2BDTInterestRateLattice
Computes the short rate interest lattice based on a term structure of interest rates and changing interest volatilities, as a means to compute option values.
43. B2BDTNonCallableSpreadValue
Computes the straight spread on a bond that is non-callable in order to compare it with the option provision of an option adjusted spread model.
44. B2BDTZeroPriceLattice
Computes the straight price lattice of zero bonds based on a term structure of interest rates and changing interest volatilities, as a means to compute interest-based option values.
45. B2BDTZeroPriceLattice2
Computes the straight price lattice of zero bonds based on a term structure of interest rates and changing interest volatilities, as a means to compute interest-based option values. Returns the same results as the B2BDTZeroPriceLattice function but requires interest rates and interest volatilities as inputs, rather than the entire interest rate lattice.
46. B2BDTZeroPriceValue
Computes the straight price of zero bonds at time zero, based on a term structure of interest rates and changing interest volatilities, as a means to compute interest-based option values.
47. B2BinaryDownAndInAssetAtExpirationOrNothing
Binary digital instrument receiving the asset at expiration, only if a corresponding asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
48. B2BinaryDownAndInAssetAtExpirationOrNothingCall
Binary digital call option receiving the asset at expiration if the asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
49. B2BinaryDownAndInAssetAtExpirationOrNothingPut
Binary digital put option receiving the asset at expiration if the asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
50. B2BinaryDownAndInAssetAtHitOrNothing
Binary digital instrument receiving the asset when it hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
51. B2BinaryDownAndInCashAtExpirationOrNothing
Binary digital instrument receiving a cash amount at expiration, only if a corresponding asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
52. B2BinaryDownAndInCashAtExpirationOrNothingCall
Binary digital call option receiving the cash at expiration if the asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
53. B2BinaryDownAndInCashAtExpirationOrNothingPut
Binary digital put option receiving the cash at expiration if the asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
54. B2BinaryDownAndInCashAtHitOrNothing
Binary digital instrument receiving a cash amount when a corresponding asset hits a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
55. B2BinaryDownAndOutAssetAtExpirationOrNothing
Binary digital instrument receiving the asset at expiration, only if a corresponding asset does not hit a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
56. B2BinaryDownAndOutAssetAtExpirationOrNothingCall
Binary digital call options receiving the asset at expiration, only if a corresponding asset does not hit a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
57. B2BinaryDownAndOutAssetAtExpirationOrNothingPut

Binary digital put options receiving the asset at expiration, only if a corresponding asset does not hit a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously

58. B2BinaryDownAndOutCashAtExpirationOrNothing
Binary digital instrument receiving a cash amount at expiration, only if a corresponding asset does not hit a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
59. B2BinaryDownAndOutCashAtExpirationOrNothingCall
Binary digital call option receiving a cash amount at expiration, only if a corresponding asset does not hit a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
60. B2BinaryDownAndOutCashAtExpirationOrNothingPut
Binary digital put option receiving a cash amount at expiration, only if a corresponding asset does not hit a lower barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
61. B2BinaryUpAndInAssetAtExpirationOrNothing
Binary digital instrument receiving the asset at expiration, only if a corresponding asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
62. B2BinaryUpAndInAssetAtExpirationOrNothingCall
Binary digital call option receiving the asset at expiration if the asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
63. B2BinaryUpAndInAssetAtExpirationOrNothingPut
Binary digital put option receiving the asset at expiration if the asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
64. B2BinaryUpAndInAssetAtHitOrNothing
Binary digital instrument receiving the asset when it hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
65. B2BinaryUpAndInCashAtExpirationOrNothing
Binary digital instrument receiving a cash amount at expiration, only if a corresponding asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
66. B2BinaryUpAndInCashAtExpirationOrNothingCall
Binary digital call option receiving the cash at expiration if the asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
67. B2BinaryUpAndInCashAtExpirationOrNothingPut
Binary digital put option receiving the cash at expiration if the asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
68. B2BinaryUpAndInCashAtHitOrNothing
Binary digital instrument receiving a cash amount when a corresponding asset hits an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
69. B2BinaryUpAndOutAssetAtExpirationOrNothing
Binary digital instrument receiving the asset at expiration, only if a corresponding asset does not hit an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
70. B2BinaryUpAndOutAssetAtExpirationOrNothingCall
Binary digital call options receiving the asset at expiration, only if a corresponding asset does not hit an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
71. B2BinaryUpAndOutAssetAtExpirationOrNothingPut
Binary digital put options receiving the asset at expiration, only if a corresponding asset does not hit an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
72. B2BinaryUpAndOutCashAtExpirationOrNothing
Binary digital instrument receiving a cash amount at expiration, only if a corresponding asset does not hit an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
73. B2BinaryUpAndOutCashAtExpirationOrNothingCall
Binary digital call option receiving a cash amount at expiration, only if a corresponding asset does not hit an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously
74. B2BinaryUpAndOutCashAtExpirationOrNothingPut
Binary digital put option receiving a cash amount at expiration, only if a corresponding asset does not hit an upper barrier or receives nothing otherwise. DT is monitoring steps: 1/12 monthly, 1/52 weekly, 1/250 daily, 0 continuously.
75. B2Binomial3DAmericanDualStrikeCallOption
Returns the American option with the payoff [Max(Q2S2-X2,Q1S1-X1)] and valued using a 3D binomial lattice model.
76. B2Binomial3DAmericanDualStrikePutOption
Returns the American option with the payoff [Max(X2-Q2S2,X1-Q1S1)] and valued using a 3D binomial lattice model.
77. B2Binomial3DEuropeanDualStrikeCallOption
Returns the European option with the payoff [Max(Q2S2-X2,Q1S1-X1)] and valued using a 3D binomial lattice model.
78. B2Binomial3DEuropeanDualStrikePutOption
Returns the European option with the payoff [Max(X2-Q2S2,X1-Q1S1)] and valued using a 3D binomial lattice model.
79. B2Binomial3DAmericanExchangeOption
Returns the American and European call and put option (same values exist for all types) with the payoff [Q2S2-Q1S1] and valued using a 3D binomial lattice model.
80. B2Binomial3DAmericanMaximumTwoAssetsCallOption
Returns the American option with the payoff [Max(Q2S2,Q1S1)-X] and valued using a 3D binomial lattice model.
81. B2Binomial3DAmericanMaximumTwoAssetsPutOption
Returns the American option with the payoff [X-Max(Q2S2,Q1S1)] and valued using a 3D binomial lattice model.
82. B2Binomial3DEuropeanMaximumTwoAssetsCallOption
Returns the European option with the payoff [Max(Q2S2,Q1S1)-X] and valued using a 3D binomial lattice model.
83. B2Binomial3DEuropeanMaximumTwoAssetsPutOption
Returns the European option with the payoff [X-Max(Q2S2,Q1S1)] and valued using a 3D binomial lattice model.
84. B2Binomial3DAmericanMinimumTwoAssetsCallOption
Returns the American option with the payoff [Min(Q2S2,Q1S1)-X] and valued using a 3D binomial lattice model.
85. B2Binomial3DAmericanMinimumTwoAssetsPutOption
Returns the American option with the payoff [X-Min(Q2S2,Q1S1)] and valued using a 3D binomial lattice model.
86. B2Binomial3DEuropeanMinimumTwoAssetsCallOption
Returns the European option with the payoff [Min(Q2S2,Q1S1)-X] and valued using a 3D binomial lattice model.
87. B2Binomial3DEuropeanMinimumTwoAssetsPutOption
Returns the European option with the payoff [X-

Min(Q2S2,Q1S1)] and valued using a 3D binomial lattice model.

88. B2Binomial3DAmericanPortfolioCallOption
Returns the American option with the payoff [Q2S2+Q1S1-X] and valued using a 3D binomial lattice model.
89. B2Binomial3DAmericanPortfolioPutOption
Returns the American option with the payoff [X-Q2S2+Q1S1] and valued using a 3D binomial lattice model.
90. B2Binomial3DEuropeanPortfolioCallOption
Returns the European option with the payoff [Q2S2+Q1S1-X] and valued using a 3D binomial lattice model.
91. B2Binomial3DEuropeanPortfolioPutOption
Returns the European option with the payoff [X-Q2S2+Q1S1] and valued using a 3D binomial lattice model.
92. B2Binomial3DAmericanReverseDualStrikeCallOption
Returns the American option with the payoff [Max(X2-Q2S2,Q1S1-X1)] and valued using a 3D binomial lattice model.
93. B2Binomial3DAmericanReverseDualStrikePutOption
Returns the American option with the payoff [Max(Q2S2-X2,X1-Q1S1)] and valued using a 3D binomial lattice model.
94. B2Binomial3DEuropeanReverseDualStrikeCallOption
Returns the European option with the payoff [Max(X2-Q2S2,Q1S1-X1)] and valued using a 3D binomial lattice model.
95. B2Binomial3DEuropeanReverseDualStrikePutOption
Returns the American option with the payoff [Max(Q2S2-X2,X1-Q1S1)] and valued using a 3D binomial lattice model.
96. B2Binomial3DAmericanSpreadCallOption
Returns the American option with the payoff [Q1S1-Q2S2-X] and valued using a 3D binomial lattice model.
97. B2Binomial3DAmericanSpreadPutOption
Returns the American option with the payoff [X+Q2S2-Q1S1] and valued using a 3D binomial lattice model.
98. B2Binomial3DEuropeanSpreadCallOption
Returns the European option with the payoff [Q1S1-Q2S2-X] and valued using a 3D binomial lattice model.
99. B2Binomial3DEuropeanSpreadPutOption
Returns the European option with the payoff [X+Q2S2-Q1S1] and valued using a 3D binomial lattice model.
100. B2BinomialAdjustedBarrierSteps
Computes the correct binomial lattice steps to use for convergence and barrier matching when running a barrier option.
101. B2BinomialAmericanCall
Returns the American call option with a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to and including maturity.
102. B2BinomialAmericanPut
Returns the American put option with a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to and including maturity.
103. B2BinomialBermudanCall
Returns the American call option with a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to and including maturity except during the vesting period.
104. B2BinomialBermudanPut
Returns the American put option with a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to and including maturity except during the vesting period.
105. B2BinomialEuropeanCall
Returns the European call option with a continuous dividend yield using a binomial lattice, where the option can be exercised only at maturity.
106. B2BinomialEuropeanPut
Returns the European put option with a continuous dividend yield using a binomial lattice, where the option can be exercised only at maturity.
107. B2BlackCallOptionModel
Returns the Black model (modified Black-Scholes-Merton) for forward contracts and interest-based call options.
108. B2BlackPutOptionModel
Returns the Black model (modified Black-Scholes-Merton) for forward contracts and interest-based put options.
109. B2BlackFuturesCallOption
Computes the value of commodities futures call option given the value of the futures contract.
110. B2BlackFuturesPutOption
Computes the value of commodities futures put option given the value of the futures contract.
111. B2BlackScholesCall
European Call Option using Black-Scholes-Merton Model.
112. B2BlackScholesProbabilityAbove
Computes the expected probability the stock price will rise above the strike price under a Black-Scholes paradigm.
113. B2BlackScholesPut
European Put Option using Black-Scholes-Merton Model.
114. B2BondCIRBondDiscountFactor
Returns the discount factor on a bond or risky debt using the Cox-Ingersoll-Ross model, accounting for mean-reverting interest rates.
115. B2BondCIRBondPrice
Cox-Ross model on Zero Coupon Bond Pricing assuming no arbitrage and mean-reverting interest rates.
116. B2BondCIRBondYield
Cox-Ross model on Zero Coupon Bond Yield assuming no arbitrage and mean-reverting interest rates.
117. B2BondConvexityContinuous
Returns the debt's Convexity of second order sensitivity using a series of cash flows and current interest rate, with continuous discounting.
118. B2BondConvexityDiscrete
Returns the debt's Convexity of second order sensitivity using a series of cash flows and current interest rate, with discrete discounting.
119. B2BondConvexityYTMContinuous
Returns debt's Convexity or second order sensitivity using an internal Yield to Maturity of the cash flows, with continuous discounting.
120. B2BondConvexityYTMDiscrete
Returns debt's Convexity or second order sensitivity using an internal Yield to Maturity of the cash flows, with discrete discounting.
121. B2BondDurationContinuous
Returns the debt's first order sensitivity Duration measure using continuous discounting.
122. B2BondDurationDiscrete
Returns the debt's first order sensitivity Duration measure using discrete discounting.
123. B2BondHullWhiteBondCallOption
Values a European call option on a bond where the interest rates are stochastic and mean-reverting. Make sure Bond Maturity > Option Maturity.
124. B2BondHullWhiteBondPutOption
Values a European put option on a bond where the interest rates are stochastic and mean-reverting. Make sure Bond Maturity > Option Maturity.
125. B2BondMacaulayDuration
Returns the debt's first order sensitivity Macaulay's Duration measure.
126. B2BondMertonBondPrice
Bond Price using Merton Stochastic Interest and Stochastic Asset Model.
127. B2BondModifiedDuration

Returns the debt's first order sensitivity Modified Duration measure.

128. B2BondPriceContinuous
Returns the Bond Price of a cash flow series given the time and discount rate, using Continuous discounting.

129. B2BondPriceDiscrete
Returns the Bond Price of a cash flow series given the time and discount rate, using discrete discounting.

130. B2BondVasicekBondCallOption
Values a European call option on a bond where the interest rates are stochastic and mean-reverting to a long-term rate. Make sure Bond Maturity > Option Maturity.

131. B2BondVasicekBondPrice
Vasicek Zero Coupon Price assuming no arbitrage and mean-reverting interest rates.

132. B2BondVasicekBondPutOption
Values a European put option on a bond where the interest rates are stochastic and mean-reverting to a long-term rate. Make sure Bond Maturity > Option Maturity.

133. B2BondVasicekBondYield
Vasicek Zero Coupon Yield assuming no arbitrage and mean-reverting interest rates.

134. B2BondYTMContinuous
Returns Bond's Yield to Maturity assuming Continuous discounting.

135. B2BondYTMDiscrete
Returns Bond's Yield to Maturity assuming discrete discounting.

136. B2CallDelta
Returns the option valuation sensitivity Delta (a call option value's sensitivity to changes in the asset value).

137. B2CallGamma
Returns the option valuation sensitivity Gamma (a call option value's sensitivity to changes in the delta value).

138. B2CallOptionOnTheMax
The maximum values at expiration of both assets are used in option exercise, where the call option payoff at expiration is the maximum price between Asset 1 and Asset 2 against the strike price.

139. B2CallOptionOnTheMin
The minimum values at expiration of both assets are used in option exercise, where the call option payoff at expiration is the minimum price between Asset 1 and Asset 2 against the strike price.

140. B2CallRho
Returns the option valuation sensitivity Rho (a call option value's sensitivity to changes in the interest rate).

141. B2CallTheta
Returns the option valuation sensitivity Theta (a call option value's sensitivity to changes in the maturity).

142. B2CallVega
Returns the option valuation sensitivity Vega (a call option value's sensitivity to changes in the volatility).

143. B2CashOrNothingCall
At expiration, if the option is in the money, the option holder receives a predetermined cash payment. For a call option, as long as the stock or asset price exceeds the strike at expiration, cash is received.

144. B2CashOrNothingPut
At expiration, if the option is in the money, the option holder receives a predetermined cash payment. For a put option, cash is received only if the stock or asset value falls below the strike price.

145. B2ChooserBasicOption
Holder chooses if the option is a call or a put by the chooser time, with the same strike price and maturity. Typically cheaper than buying a call and a put together while providing the same level of hedge.

146. B2ChooserComplexOption
Holder gets to choose if the option is a call or a put within the Chooser Time, with different strike prices and maturities. Typically cheaper than buying a call and a put, while providing the same level of hedge.

147. B2ClosedFormAmericanCall
Returns the American option approximation model with a continuous dividend yield call option.

148. B2ClosedFormAmericanPut
Returns the American option approximation model with a continuous dividend yield put option.

149. B2CoefficientofVariationPopulation
Computes the population coefficient of variation (standard deviation of the sample divided by the mean), to obtain a relative measure of risk and dispersion

150. B2CoefficientofVariationSample
Computes the sample coefficient of variation (standard deviation of the sample divided by the mean), to obtain a relative measure of risk and dispersion

151. B2CommodityCallOptionModel
Computes the value of a commodity-based call option based on spot and futures market, and accounting for volatility of the forward rate.

152. B2CommodityPutOptionModel
Computes the value of a commodity-based put option based on spot and futures market, and accounting for volatility of the forward rate.

153. B2CompoundOptionsCallonCall
A compound option allowing the holder to buy (call) a call option with some maturity, in the future within the option maturity period, for a specified strike price on the option.

154. B2CompoundOptionsCallonPut
A compound option allowing the holder to buy (call) a put option with some maturity, in the future within the option maturity period, for a specified strike price on the option.

155. B2CompoundOptionsPutonCall
A compound option allowing the holder to sell (put) a call option with some maturity, in the future within the option maturity period, for a specified strike price on the option.

156. B2CompoundOptionsPutonPut
A compound option allowing the holder to sell (put) a call option with some maturity, in the future within the option maturity period, for a specified strike price on the option.

157. B2ConvenienceYield
The convenience yield is simply the rate differential between a non-arbitrage futures and spot price and a real-life fair market value of the futures price.

158. B2ConvertibleBondAmerican
Computes the value of a convertible bond using binomial lattices, and accounting for the stock's volatility and dividend yield, as well as the bond's credit spread above risk-free.

159. B2ConvertibleBondEuropean
Computes the value of a convertible bond using binomial lattices, and accounting for the stock's volatility and dividend yield, as well as the bond's credit spread above risk-free.

160. B2CreditAcceptanceCost
Computes the risk-adjusted cost of accepting a new credit line with a probability of default.

161. B2CreditAssetSpreadCallOption
Provides protection from an increase in spread but ceases to exist if the underlying asset defaults and is based on the price of the asset.

162. B2CreditAssetSpreadPutOption
Provides protection from an decrease in spread but ceases to exist if the underlying asset defaults and is based on the price of the asset.

163. B2CreditDefaultSwapSpread
Returns the valuation of a credit default swap CDS spread,

allowing the holder to sell a bond/debt at par value when a credit event occurs.

164. B2CreditDefaultSwapCorrelatedBondandSwapPrice
Computes the valuation of a bond with a credit default swap where both parties are correlated and each has a probability of default and possible recovery rates. At default, the holder receives the notional principal or par value of the bond.

165. B2CreditDefaultSwapCorrelatedBondPrice
Computes the valuation of a bond without any credit default swap where the bond or debt has a probability of default and possible recovery rate.

166. B2CreditDefaultSwapCorrelatedSwapPrice
Computes the price of a credit default swap where both parties are correlated and each has a probability of default and possible recovery rates. At default, the holder receives the notional principal or par value of the bond.

167. B2CreditRatingWidth
Computes the credit ratings width to generate the credit ratings table.

168. B2CreditRejectionCost
Computes the risk-adjusted cost of rejecting a new credit line with a probability of default.

169. B2CreditRiskShortfall
Returns the Credit Risk Shortfall given probability of default and recovery rates.

170. B2CreditSpreadCallOption
Provides protection from an increase in spread but ceases to exist if the underlying asset defaults. Only credit default swaps can cover default events (CSOs are sometimes combined with CDSs).

171. B2CreditSpreadPutOption
Provides protection from an decrease in spread but ceases to exist if the underlying asset defaults. Only credit default swaps can cover default events (CSOs are sometimes combined with CDSs).

172. B2CubicSpline
Interpolates and extrapolates the unknown Y values (based on the required X value) given some series of known X and Y values, and can be used to interpolate inside the data sample or extrapolate outside the known sample.

173. B2CurrencyCallOption
Option to exchange foreign currency into domestic currency by buying domestic currency (selling foreign currency) at a set exchange rate on a specified date. Exchange rate is foreign currency to domestic currency.

174. B2CurrencyForwardCallOption
Computes the value of a currency forward call option.

175. B2CurrencyForwardPutOption
Computes the value of a currency forward put option.

176. B2CurrencyPutOption
Option to exchange domestic currency into foreign currency by selling domestic currency (buying foreign currency) at a set exchange rate on a specified date. Exchange rate is foreign currency to domestic currency.

177. B2DeltaGammaHedgeCallBought
Computes the total amount of call values that has to be bought to perform a Delta-Gamma neutral hedge. Returns a negative value indicating cash outflow.

178. B2DeltaGammaHedgeCallSold
Computes the single unit of call value that has to be sold to perform a Delta-Gamma neutral hedge. Returns a positive value indicating cash inflow.

179. B2DeltaGammaHedgeMoneyBorrowed
Computes the amount of money that has to be borrowed to perform a Delta-Gamma neutral hedge. Returns a positive value indicating cash inflow.

180. B2DeltaGammaHedgeSharesBought
Computes the total value of stocks that has to be bought to perform a Delta-Gamma neutral hedge. Returns a negative value indicating cash outflow.

181. B2DeltaHedgeCallSold
Computes the single unit of call value that has to be sold to perform a Delta-neutral hedge. Returns a positive value indicating cash inflow.

182. B2DeltaHedgeMoneyBorrowed
Computes the amount of money that has to be borrowed to perform a Delta-neutral hedge. Returns a positive value indicating cash inflow.

183. B2DeltaHedgeSharesBought
Computes the total value of stocks that has to be bought to perform a Delta-neutral hedge. Returns a negative value indicating cash outflow.

184. B2DistributionBernoulliKurtosis
Returns the Bernoulli distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

185. B2DistributionBernoulliMean
Returns the Bernoulli distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

186. B2DistributionBernoulliSkew
Returns the Bernoulli distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

187. B2DistributionBernoulliStdev
Returns the Bernoulli distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

188. B2DistributionBetaKurtosis
Returns the Beta distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

189. B2DistributionBetaMean
Returns the Beta distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

190. B2DistributionBetaSkew
Returns the Beta distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

191. B2DistributionBetaStdev
Returns the Beta distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

192. B2DistributionBinomialKurtosis
Returns the Binomial distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

193. B2DistributionBinomialMean
Returns the Binomial distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

194. B2DistributionBinomialSkew
Returns the Binomial distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

195. B2DistributionBinomialStdev
Returns the Binomial distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

196. B2DistributionCauchyKurtosis
Returns the Cauchy distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

197. B2DistributionCauchyMean
Returns the Cauchy distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

198. B2DistributionCauchySkew
Returns the Cauchy distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

199. B2DistributionCauchyStdev
Returns the Cauchy distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

200. B2DistributionChiSquareKurtosis
Returns the Chi-Square distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

201. B2DistributionChiSquareMean
Returns the Chi-Square distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

202. B2DistributionChiSquareSkew
Returns the Chi-Square distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

203. B2DistributionChiSquareStdev
Returns the Chi-Square distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

204. B2DistributionDiscreteUniformKurtosis
Returns the Discrete Uniform distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

205. B2DistributionDiscreteUniformMean
Returns the Discrete Uniform distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

206. B2DistributionDiscreteUniformSkew
Returns the Discrete Uniform distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

207. B2DistributionDiscreteUniformStdev
Returns the Discrete Uniform distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

208. B2DistributionExponentialKurtosis
Returns the Exponential distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

209. B2DistributionExponentialMean
Returns the Exponential distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

210. B2DistributionExponentialSkew
Returns the Exponential distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

211. B2DistributionExponentialStdev
Returns the Exponential distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

212. B2DistributionFKurtosis
Returns the F distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

213. B2DistributionFMean
Returns the F distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

214. B2DistributionFSkew
Returns the F distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

215. B2DistributionFStdev
Returns the F distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

216. B2DistributionGammaKurtosis
Returns the Gamma distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

217. B2DistributionGammaMean
Returns the Gamma distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

218. B2DistributionGammaSkew
Returns the Gamma distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

219. B2DistributionGammaStdev
Returns the Gamma distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

220. B2DistributionGeometricKurtosis
Returns the Geometric distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

221. B2DistributionGeometricMean
Returns the Geometric distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

222. B2DistributionGeometricSkew
Returns the Geometric distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

223. B2DistributionGeometricStdev
Returns the Geometric distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

224. B2DistributionGumbelMaxKurtosis
Returns the Gumbel Max distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

225. B2DistributionGumbelMaxMean
Returns the Gumbel Max distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

226. B2DistributionGumbelMaxSkew

Returns the Gumbel Max distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

227. B2DistributionGumbelMaxStdev
Returns the Gumbel Max distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

228. B2DistributionGumbelMinKurtosis
Returns the Gumbel Min distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

229. B2DistributionGumbelMinMean
Returns the Gumbel Min distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

230. B2DistributionGumbelMinSkew
Returns the Gumbel Min distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

231. B2DistributionGumbelMinStdev
Returns the Gumbel Min distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

232. B2DistributionHypergeometricKurtosis
Returns the Hypergeometric distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

233. B2DistributionHypergeometricMean
Returns the Hypergeometric distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

234. B2DistributionHypergeometricSkew
Returns the Hypergeometric distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

235. B2DistributionHypergeometricStdev
Returns the Hypergeometric distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

236. B2DistributionLogisticKurtosis
Returns the Logistic distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

237. B2DistributionLogisticMean
Returns the Logistic distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

238. B2DistributionLogisticSkew
Returns the Logistic distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

239. B2DistributionLogisticStdev
Returns the Logistic distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

240. B2DistributionLognormalKurtosis
Returns the Lognormal distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

241. B2DistributionLognormalMean
Returns the Lognormal distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

242. B2DistributionLognormalSkew
Returns the Lognormal distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

243. B2DistributionLognormalStdev
Returns the Lognormal distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

244. B2DistributionNegativeBinomialKurtosis
Returns the Negative Binomial distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

245. B2DistributionNegativeBinomialMean
Returns the Negative Binomial distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

246. B2DistributionNegativeBinomialSkew
Returns the Negative Binomial distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

247. B2DistributionNegativeBinomialStdev
Returns the Negative Binomial distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

248. B2DistributionNormalKurtosis
Returns the Normal distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

249. B2DistributionNormalMean
Returns the Normal distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

250. B2DistributionNormalSkew
Returns the Normal distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

251. B2DistributionNormalStdev
Returns the Normal distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

252. B2DistributionParetoKurtosis
Returns the Pareto distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

253. B2DistributionParetoMean
Returns the Pareto distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

254. B2DistributionParetoSkew
Returns the Pareto distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

255. B2DistributionParetoStdev
Returns the Pareto distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

256. B2DistributionPoissonKurtosis
Returns the Poisson distribution's theoretical excess kurtosis

(fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

257. B2DistributionPoissonMean
Returns the Poisson distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

258. B2DistributionPoissonSkew
Returns the Poisson distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

259. B2DistributionPoissonStdev
Returns the Poisson distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

260. B2DistributionRayleighKurtosis
Returns the Rayleigh distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

261. B2DistributionRayleighMean
Returns the Rayleigh distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

262. B2DistributionRayleighSkew
Returns the Rayleigh distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

263. B2DistributionRayleighStdev
Returns the Rayleigh distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

264. B2DistributionTKurtosis
Returns the Student's T distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

265. B2DistributionTMean
Returns the Student's T distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

266. B2DistributionTSkew
Returns the Student's T distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

267. B2DistributionTStdev
Returns the Student's T distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

268. B2DistributionTriangularKurtosis
Returns the Triangular distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

269. B2DistributionTriangularMean
Returns the Triangular distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

270. B2DistributionTriangularSkew
Returns the Triangular distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

271. B2DistributionTriangularStdev
Returns the Triangular distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

272. B2DistributionUniformKurtosis
Returns the Uniform distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

273. B2DistributionUniformMean
Returns the Uniform distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

274. B2DistributionUniformSkew
Returns the Uniform distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

275. B2DistributionUniformStdev
Returns the Uniform distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

276. B2DistributionWeibullKurtosis
Returns the Weibull distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution and its extreme tail events. An excess kurtosis of 0 implies a normal tail.

277. B2DistributionWeibullMean
Returns the Weibull distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.

278. B2DistributionWeibullSkew
Returns the Weibull distribution's theoretical skew (third moment), measuring the direction of the distribution's tail. Positive (negative) skew means mean exceeds (is less than) median and the tail points to the right (left).

279. B2DistributionWeibullStdev
Returns the Weibull distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.

280. B2DistributionCDFBernoulli
Computes the Bernoulli distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution less than or equal to X.

281. B2DistributionCDFBeta
Computes the Beta distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

282. B2DistributionCDFBinomial
Computes the Binomial distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

283. B2DistributionCDFChiSquare
Computes the Chi-Square distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

284. B2DistributionCDFDiscreteUniform
Computes the Discrete Uniform distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

285. B2DistributionCDFExponential
Computes the Exponential distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

286. B2DistributionCDFFDist

Computes the F distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

287. B2DistributionCDFGamma
Computes the Gamma distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

288. B2DistributionCDFGeometric
Computes the Geometric distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

289. B2DistributionCDFGumbelMax
Computes the Gumbel Max distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

290. B2DistributionCDFGumbelMin
Computes the Gumbel Min distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

291. B2DistributionCDFLogistic
Computes the Logistic distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

292. B2DistributionCDFLognormal
Computes the Lognormal distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

293. B2DistributionCDFNormal
Computes the Normal distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

294. B2DistributionCDFPareto
Computes the Pareto distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

295. B2DistributionCDFPoisson
Computes the Poisson distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

296. B2DistributionCDFRayleigh
Computes the Rayleigh distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

297. B2DistributionCDFStandardNormal
Computes the Standard Normal distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

298. B2DistributionCDFTDist
Computes the Student's T distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

299. B2DistributionCDFTriangular
Computes the Triangular distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

300. B2DistributionCDFUniform
Computes the Uniform distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

301. B2DistributionCDFWeibull
Computes the Weibull distribution's theoretical Cumulative Distribution Function (CDF), that is, the cumulative probability of the distribution at all points less than or equal to X.

302. B2DistributionICDFBernoulli
Computes the Bernoulli distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

303. B2DistributionICDFBeta
Computes the Beta distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

304. B2DistributionICDFBinomial
Computes the Binomial distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

305. B2DistributionICDFChiSquare
Computes the Chi-Square distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

306. B2DistributionICDFDiscreteUniform
Computes the Discrete Uniform distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

307. B2DistributionICDFExponential
Computes the Exponential distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

308. B2DistributionICDFFDist
Computes the F distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

309. B2DistributionICDFGamma
Computes the Gamma distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

310. B2DistributionICDFGeometric
Computes the Geometric distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

311. B2DistributionICDFGumbelMax
Computes the Gumbel Max distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the

distribution's parameters, the function returns the relevant X value.

312. B2DistributionICDFGumbelMin
Computes the Gumbel Min distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

313. B2DistributionICDFLogistic
Computes the Logistic distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

314. B2DistributionICDFLognormal
Computes the Lognormal distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

315. B2DistributionICDFNormal
Computes the Normal distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

316. B2DistributionICDFPareto
Computes the Pareto distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

317. B2DistributionICDFPoisson
Computes the Poisson distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

318. B2DistributionICDFRayleigh
Computes the Rayleigh distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

319. B2DistributionICDFStandardNormal
Computes the Standard Normal distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

320. B2DistributionICDFTDist
Computes the Student's T distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

321. B2DistributionICDFTriangular
Computes the Triangular distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

322. B2DistributionICDFUniform
Computes the Uniform distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

323. B2DistributionICDFWeibull
Computes the Weibull distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

324. B2DistributionPDFBernoulli
Computes the Bernoulli distribution's theoretical Inverse Cumulative Distribution Function (ICDF), that is, given the cumulative probability between 0 and 1, and the distribution's parameters, the function returns the relevant X value.

325. B2DistributionPDFBeta
Computes the Beta distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

326. B2DistributionPDFBinomial
Computes the Binomial distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

327. B2DistributionPDFChiSquare
Computes the Chi-Square distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

328. B2DistributionPDFDiscreteUniform
Computes the Discrete Uniform distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

329. B2DistributionPDFExponential
Computes the Exponential distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

330. B2DistributionPDFFDist
Computes the F distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

331. B2DistributionPDFGamma
Computes the Gamma distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

332. B2DistributionPDFGeometric
Computes the Geometric distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

333. B2DistributionPDFGumbelMax
Computes the Gumbel Max distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or

probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

334. B2DistributionPDFGumbelMin
Computes the Gumbel Min distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

335. B2DistributionPDFLogistic
Computes the Logistic distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

336. B2DistributionPDFLognormal
Computes the Lognormal distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical and not exact probabilities.

337. B2DistributionPDFNormal
Computes the Normal distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

338. B2DistributionPDFPareto
Computes the Pareto distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

339. B2DistributionPDFPoisson
Computes the Poisson distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

340. B2DistributionPDFRayleigh
Computes the Rayleigh distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

341. B2DistributionPDFStandardNormal
Computes the Standard Normal distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

342. B2DistributionPDFTDist
Computes the Student's T distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

343. B2DistributionPDFTriangular
Computes the Triangular distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

344. B2DistributionPDFUniform
Computes the Uniform distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

345. B2DistributionPDFWeibull
Computes the Weibull distribution's theoretical Probability Density Function (PDF). The PDF of a discrete distribution returns the exact probability mass function or probability of occurrence but the PDF of continuous distributions are only theoretical values and not exact probabilities.

346. B2EquityLinkedFXCallOptionDomesticValue
Call options whose underlying asset is in a foreign equity market, and the fluctuations of the foreign exchange risk is hedged by having a strike price on the foreign exchange rate. Resulting valuation is in the domestic currency.

347. B2EquityLinkedFXPutOptionDomesticValue
Put options whose underlying asset is in a foreign equity market, and the fluctuations of the foreign exchange risk is hedged by having a strike price on the foreign exchange rate. Resulting valuation is in the domestic currency.

348. B2EWMAVolatilityForecastGivenPastPrices
Computes the annualized volatility forecast of the next period given a series of historical prices and the corresponding weights placed on the previous volatility estimate.

349. B2EWMAVolatilityForecastGivenPastVolatility
Computes the annualized volatility forecast of the next period given the previous period's volatility and changes in stock returns in the previous period.

350. B2ExtremeSpreadCallOption
Maturities are divided into two segments, and the call option pays the difference between the max assets from segment two and max of segment one.

351. B2ExtremeSpreadPutOption
Maturities are divided into two segments, and the put option pays the difference between the min of segment two's asset value and the min of segment one's asset value.

352. B2ExtremeSpreadReverseCallOption
Maturities are divided into two segments, and a reverse call pays the min from segment one less the min of segment two.

353. B2ExtremeSpreadReversePutOption
Maturities are divided into two segments, and a reverse put pays the max of segment one less the max of the segment two.

354. B2FiniteDifferenceAmericanCall
Computes the American call option using finite differencing methods, as an alternative to simulation, closed-form approximation models, and lattices.

355. B2FiniteDifferenceAmericanPut
Computes the American put option using finite differencing methods, as an alternative to simulation, closed-form approximation models, and lattices.

356. B2FiniteDifferenceEuropeanCall
Computes the European call option using finite differencing methods, as an alternative to simulation, closed-form approximation models, and lattices.

357. B2FiniteDifferenceEuropeanPut
Computes the European put option using finite differencing methods, as an alternative to simulation, closed-form approximation models, and lattices.

358. B2FixedStrikeLookbackCall
Strike price is fixed, while at expiration, the payoff is the difference between the maximum asset price less the strike price, during the lifetime of the option.

359. B2FixedStrikeLookbackPut
Strike price is fixed, while at expiration, the payoff is the maximum difference between the lowest observed asset price less the strike price, during the lifetime of the option.

360. B2FixedStrikePartialLookbackCall
Strike price is fixed, while at expiration, the payoff is the difference between the maximum asset price less the strike, during the starting period of the lookback to the maturity of the option.
361. B2FixedStrikePartialLookbackPut
Strike price is fixed, while at expiration, the payoff is the maximum difference between the lowest observed asset price less the strike, during the starting period of the lookback to the maturity of the option.
362. B2FloatingStrikeLookbackCallonMin
Strike price is floating, while at expiration, the payoff on the call option is being able to purchase the underlying asset at the minimum observed price during the life of the option.
363. B2FloatingStrikeLookbackPutonMax
Strike price is floating, while at expiration, the payoff on the put option is being able to sell the underlying asset at the maximum observed asset price during the life of the option.
364. B2FloatingStrikePartialLookbackCallonMin
Strike price is floating, while at expiration, the payoff on the call option is being able to purchase the underlying at the minimum observed asset price from inception to the end of the lookback time.
365. B2FloatingStrikePartialLookbackPutonMax
Strike price is floating, while at expiration, the payoff on the put option is being able to sell the underlying at the maximum observed asset price from inception to the end of the lookback time.
366. B2ForecastBrownianMotionSimulatedSeries
Computes the entire time-series of Brownian motion stochastic process forecast values.
367. B2ForecastDistributionValue
Computes the forecast price of an asset in the future, assuming the asset follows a Brownian motion random walk and returns the forecast price given the cumulative probability level.
368. B2ForecastDistributionValuePercentile
Computes the cumulative probability or percentile of an asset in the future, assuming the asset follows a Brownian motion random walk and returns the forecast cumulative percentile given the future price.
369. B2ForecastDistributionReturns
Computes the forecast return of an asset in the future, assuming the asset follows a Brownian motion random walk and returns the forecast percent return given the cumulative probability level.
370. B2ForecastDistributionReturnsPercentile
Computes the cumulative probability or percentile of an asset's returns in the future, assuming the asset follows a Brownian motion random walk and returns the forecast cumulative percentile given the return.
371. B2ForecastJumpDiffusionSimulatedSeries
Computes the entire time-series of a jump-diffusion stochastic process forecast values.
372. B2ForecastMeanReversionSimulatedSeries
Computes the entire time-series of a mean-reverting stochastic process forecast values.
373. B2ForecastIncrementalFinancialNeeds
Computes the incremental funds required to cover the projected organic sales growth of the company based on the projected year's financials.
374. B2ForecastIncrementalPercentSalesGrowthFinancedExternal
Computes the incremental funds as a percent of sales growth that is required from external funding to cover the projected organic sales growth of the company.
375. B2ForeignEquityDomesticCurrencyCall
Computes the value of a foreign-based equity call option struck in a domestic currency and accounting for the exchange rate volatility.
376. B2ForeignEquityDomesticCurrencyPut
Computes the value of a foreign-based equity put option struck in a domestic currency and accounting for the exchange rate volatility.
377. B2ForeignEquityFixedFXRateDomesticValueQuantoCall
Quanto call options are denominated in another currency than the underlying asset, with expanding or contracting protection coverage of the foreign exchange rates.
378. B2ForeignEquityFixedFXRateDomesticValueQuantoPut
Quanto put options are denominated in another currency than the underlying asset, with an expanding or contracting protection coverage of the foreign exchange rates.
379. B2ForwardRate
Computes the Forward Interest Rate given two Spot Rates
380. B2ForwardStartCallOption
Starts proportionally in or out of the money in the future. Alpha<1: call starts (1-A)% in the money, put starts (1-A)% out of the money. Alpha>1: call (A-1) % out of the money, puts (A-1)% in the money.
381. B2ForwardStartPutOption
Starts proportionally in or out of the money in the future. Alpha<1: call starts (1-A)% in the money, put starts (1-A)% out of the money. Alpha>1: call (A-1) % out of the money, puts (A-1)% in the money.
382. B2FuturesForwardsCallOption
Similar to a regular option but the underlying asset is a futures of forward contract. A call option is the option to buy a futures contract, with the specified futures strike price at which the futures is traded if the option is exercised.
383. B2FuturesForwardsPutOption
Similar to a regular option but the underlying asset is a futures of forward contract. A put option is the option to sell a futures contract, with the specified futures strike price at which the futures is traded if the option is exercised.
384. B2FuturesSpreadCall
The payoff of a spread option is the difference between the two futures' values at expiration. The spread is Futures 1 - Futures 2, and the call payoff is Spread - Strike value.
385. B2FuturesSpreadPut
The payoff of a spread option is the difference between the two futures' values at expiration. The spread is Futures 1 - Futures 2, and the put payoff is Strike - Spread.
386. B2GARCH
Computes the forward-looking volatility forecast using the generalized autoregressive conditional heteroskedasticity (p, q) model where future volatilities are forecast based on historical price levels and information.
387. B2GapCallOption
The call option is knocked in if the asset exceeds the reference Strike 1, and the option payoff is the asset price less Strike 2 for the underlying.
388. B2GapPutOption
The put option is knocked in only if the underlying asset is less than the reference Strike 1, providing a payoff of Strike Price 2 less the underlying asset value.
389. B2GeneralizedBlackScholesCall
Returns the Black-Scholes Model with a continuous dividend yield call option.
390. B2GeneralizedBlackScholesCallCashDividends
Modification of the Generalized Black-Scholes model to solve European call options assuming a series of dividend cash flows that may be even or uneven. A series of dividend payments and time are required.
391. B2GeneralizedBlackScholesPut
Returns the Black-Scholes Model with a continuous dividend yield put option.
392. B2GeneralizedBlackScholesPutCashDividends

Modification of the Generalized Black-Scholes model to solve European put options assuming a series of dividend cash flows that may be even or uneven. A series of dividend payments and time are required.

393. B2GraduatedBarrierDownandInCall
Barriers are graduated ranges between lower and upper values. The option is knocked in the money proportionally depending on how low the asset value is in the range.

394. B2GraduatedBarrierDownandOutCall
Barriers are graduated ranges between lower and upper values. The option is knocked out of the money proportionally depending on how low the asset value is in the range.

395. B2GraduatedBarrierUpandInPut
Barriers are graduated ranges between lower and upper values. The option is knocked in the money proportionally depending on how high the asset value is in the range.

396. B2GraduatedBarrierUpandOutPut
Barriers are graduated ranges between lower and upper values. The option is knocked out of the money proportionally depending on how high the asset value is in the range.

397. B2ImpliedVolatilityBestCase
Computes the implied volatility given an expected value of an asset, and an alternative best case scenario value and its corresponding percentile (must be above 50%).

398. B2ImpliedVolatilityCall
Computes the implied volatility in a European call option given all the inputs parameters and option value.

399. B2ImpliedVolatilityPut
Computes the implied volatility in a European put option given all the inputs parameters and option value.

400. B2ImpliedVolatilityWorstCase
Computes the implied volatility given an expected value of an asset, and an alternative worst case scenario value and its corresponding percentile (must be below 50%).

401. B2InterestAnnualtoPeriodic
Computes the periodic compounding rate based on the annualized compounding interest rate per year.

402. B2InterestCaplet
Computes the interest rate caplet (sum all the caplets into the total value of the interest rate cap) and acts like an interest rate call option.

403. B2InterestContinuousToDiscrete
Returns the corresponding discrete compounding interest rate given the continuous compounding rate.

404. B2InterestContinuousToPeriodic
Computes the periodic compounding interest rate based on a continuous compounding rate.

405. B2InterestDiscreteToContinuous
Returns the corresponding continuous compounding interest rate given the discrete compounding rate.

406. B2InterestFloorlet
Computes the interest rate floorlet (sum all the floorlets into the total value of the interest rate floor) and acts like an interest rate put option.

407. B2InterestPeriodictoAnnual
Computes the annualized compounding interest rate per year based on a periodic compounding rate.

408. B2InterestPeriodictoContinuous
Computes the continuous compounding rate based on the periodic compounding interest rate.

409. B2InverseGammaCallOption
Computes the European Call option assuming an inverse Gamma distribution, rather than a normal distribution, and is important for deep out-of-the-money options.

410. B2InverseGammaPutOption
Computes the European Put option assuming an inverse Gamma distribution, rather than a normal distribution, and is important for deep out-of-the-money options.

411. B2IRRContinuous
Returns the continuously discounted Internal Rate of Return for a cash flow series with its respective cash flow times in years.

412. B2IRRDiscrete
Returns the discretely discounted Internal Rate of Return for a cash flow series with its respective cash flow times in years.

413. B2LinearInterpolation
Interpolates and fills in the missing values of a time series.

414. B2MarketPriceRisk
Computes the market price of risk used in a variety of options analysis, using market return, risk-free return, volatility of the market and correlation between the market and the asset.

415. B2MathIncompleteGammaQ
Returns the result from an incomplete Gamma Q function.

416. B2MathIncompleteGammaP
Returns the result from an incomplete Gamma P function.

417. B2MathIncompleteBeta
Returns the result from an incomplete Beta function.

418. B2MathGammaLog
Returns the result from a log gamma function.

419. B2MatrixMultiplyAxB
Multiplies two compatible matrices, such as MxN with NxM to create an MxM matrix. Copy and paste function and use Ctrl+Shift Enter to obtain the matrix.

420. B2MatrixMultiplyAxTransposeB
Multiplies the first matrix with the transpose of the second matrix (multiplies MxN with MxN matrix by transposing the second matrix to NxM, generating an MxM matrix). Copy and paste function and use Ctrl+Shift Enter to obtain the matrix.

421. B2MatrixMultiplyTransposeAxB
Multiplies the transpose of the first matrix with the second matrix (multiplies MxN with MxN matrix by transposing the first matrix to NxM, generating an NxN matrix). Copy and paste function and use Ctrl+Shift Enter to obtain the matrix.

422. B2MatrixTranspose
Transposes a matrix, from MxN to NxM. Copy and paste function and use Ctrl+Shift Enter to obtain the matrix.

423. B2MertonJumpDiffusionCall
Call value of an underlying whose asset returns are assumed to follow a Poisson Jump Diffusion process, i.e., prices jump several times a year, and cumulatively, these jumps explain a percentage of the total asset volatility.

424. B2MertonJumpDiffusionPut
Put value of an underlying whose asset returns are assumed to follow a Poisson Jump Diffusion process, i.e., prices jump several times a year, and cumulatively, these jumps explain a percentage of the total asset volatility.

425. B2NormalTransform
Converts values into a normalized distribution.

426. B2NPVContinuous
Returns the Net Present Value of a cash flow series given the time and discount rate, using Continuous discounting.

427. B2NPVDiscrete
Returns the Net Present Value of a cash flow series given the time and discount rate, using discrete discounting.

428. B2OptionStrategyLongBearCreditSpread
Returns the matrix [stock price, buy put, sell put, profit] of a long bearish crebit spread (buying a higher strike put with a high price and selling a lower strike put with a low price).

429. B2OptionStrategyLongBullCreditSpread
Returns the matrix [stock price, buy put, sell put, profit] of a bullish credit spread (buying a low strike put at low price and selling a high strike put at high price).

430. B2OptionStrategyLongBearDebitSpread
Returns the matrix [stock price, buy call, sell call, profit] of a

long bearish debit spread (buying a high strike call with a low price and selling a lower strike call with a high price).

431. B2OptionStrategyLongBullDebitSpread
Returns the matrix [stock price, buy call, sell call, profit] of a bullish debit spread (buying a low strike call at high price and selling a further out-of-the-money high strike call at low price).

432. B2OptionStrategyLongCoveredCall
Returns the matrix [stock price, buy stock, sell call, profit] of a long covered call position (buying the stock and selling a call of the same asset).

433. B2OptionStrategyLongProtectivePut
Returns the matrix [stock price, buy stock, buy put, profit] of a long protective put position (buying the stock and buying a put of the same asset).

434. B2OptionStrategyLongStraddle
Returns the matrix [stock price, buy call, buy put, profit] of a long straddle position (buy an equal number of puts and calls with identical strike price and expiration) to profit from high volatility.

435. B2OptionStrategyLongStrangle
Returns the matrix [stock price, buy call, buy put, profit] of a long strangle (buy high strike call at low price and buy low strike put at low price (close expirations), profits from high volatility.

436. B2OptionStrategyWriteCoveredCall
Returns the matrix [stock price, sell stock, buy call, profit] of writing a covered call (selling the stock and buying a call of the same asset).

437. B2OptionStrategyWriteProtectivePut
Returns the matrix [stock price, sell stock, sell put, profit] of a long protective put position (buying the stock and buying a put of the same asset).

438. B2OptionStrategyWriteStraddle
Returns the matrix [stock price, sell call, sell put, profit] of writing a straddle position (sell an equal number of puts and calls with identical strike price and expiration) to profit from low volatility.

439. B2OptionStrategyWriteStrangle
Returns the matrix [stock price, sell call, sell put, profit] of writing a strangle (sell high strike call at low price and sell low strike put at low price (close expirations), profits from low volatility.

440. B2Payback
Computes the payback in years given some initial investment and subsequent cash flows.

441. B2PerpetualCallOption
Computes the American perpetual call option. Note that it returns an error if dividend is 0% (this is because the American option reverts to European and a perpetual European has no value).

442. B2PerpetualPutOption
Computes the American perpetual put option. Note that it returns an error if dividend is 0% (this is because the American option reverts to European and a perpetual European has no value).

443. B2PortfolioReturns
Computes the portfolio weighted average expected returns given individual asset returns and allocations.

444. B2PortfolioRisk
Computes the portfolio risk given individual asset allocations and variance-covariance matrix.

445. B2PortfolioVariance
Computes the portfolio variance given individual asset allocations and variance-covariance matrix. Take the square root of the result to obtain the portfolio risk.

446. B2ProbabilityDefaultAdjustedBondYield
Computes the required risk-adjusted yield (premium spread plus risk-free) to charge given the cumulative probability of default.

447. B2ProbabilityDefaultAverageDefaults
Credit Risk Plus' average number of credit defaults per period using total portfolio credit exposures, average cum probability of default, and percentile Value at Risk for the portfolio.

448. B2ProbabilityDefaultCorrelation
Computes the correlations of default probabilities given the probabilities of default of each asset and the correlation between their equity prices. The result is typically much smaller than the equity correlation.

449. B2ProbabilityDefaultCumulativeBondYieldApproach
Computes the cumulative probability of default from Year 0 to Maturity using a comparable zero bond yield versus a zero risk-free yield and accounting for a recovery rate.

450. B2ProbabilityDefaultCumulativeSpreadApproach
Computes the cumulative probability of default from Year 0 to Maturity using a comparable risky debt's spread (premium)versus the risk-free rate and accounting for a recovery rate.

451. B2ProbabilityDefaultHazardRate
Computes the hazard rate for a specific year (in survival analysis) using a comparable zero bond yield versus a zero risk-free yield and accounting for a recovery rate.

452. B2ProbabilityDefaultMertonDefaultDistance
Distance to Default (does not require market returns and correlations but requires the internal growth rates).

453. B2ProbabilityDefaultMertonI
Probability of Default (without regard to Equity Value or Equity Volatility, but requires Asset, Debt, and market values).

454. B2ProbabilityDefaultMertonII
Probability of Default (does not require market returns and correlations but requires the internal growth rates).

455. B2ProbabilityDefaultMertonImputedAssetValue
Returns the imputed market value of asset given external equity value, equity volatility, and other option inputs. Used in the Merton probability of default model.

456. B2ProbabilityDefaultMertonImputedAssetVolatility
Returns the imputed volatility of asset given external equity value, equity volatility, and other option inputs. Used in the Merton probability of default model.

457. B2ProbabilityDefaultMertonMVDebt
Computes the market value of debt (for risky debt) in the Merton-based simultaneous options model.

458. B2ProbabilityDefaultMertonRecoveryRate
Computes the rate of recovery in percent, for risky debt in the Merton-based simultaneous options model.

459. B2ProbabilityDefaultPercentileDefaults
Credit Risk Plus method to compute the percentile given some estimated average number of defaults per period.

460. B2PropertyDepreciation
Value of the periodic depreciation allowed on a commercial real estate project given the percent of price going to improvement and the allowed recovery period.

461. B2PropertyEquityRequired
Value of the required equity down payment on a commercial real estate project given the valuation of the project.

462. B2PropertyLoanAmount
Value of the required mortgage amount on a commercial real estate project given the value of the project and the loan required (loan to value ratio or the percentage of the value a loan is required).

463. B2PropertyValuation
Value of a commercial real estate property assuming Gross Rent, Vacancy, Operating Expenses, and the Cap Rate at Purchase Date (Net Operating Income/Sale Price).

464. B2PutCallParityCalltoPut
Computes the European put option value given the value of a corresponding European call option with identical input assumptions.
465. B2PutCallParityCalltoPutCurrencyOptions
Computes the European currency put option value given the value of a corresponding European currency call option on futures and forwards with identical input assumptions.
466. B2PutCallParityCalltoPutFutures
Computes the European put option on futures and forwards value given the value of a corresponding European call option on futures and forwards with identical input assumptions.
467. B2PutCallParityPuttoCall
Computes the European call option value given the value of a corresponding European put option with identical input assumptions.
468. B2PutCallParityPuttoCallCurrencyOptions
Computes the European currency call option value given the value of a corresponding European currency put option on futures and forwards with identical input assumptions.
469. B2PutCallParityPuttoCallFutures
Computes the European call option on futures and forwards value given the value of a corresponding European put option on futures and forwards with identical input assumptions.
470. B2PutDelta
Returns the option valuation sensitivity Delta (a put option value's sensitivity to changes in the asset value).
471. B2PutGamma
Returns the option valuation sensitivity Gamma (a put option value's sensitivity to changes in the delta value).
472. B2PutOptionOnTheMax
The maximum values at expiration of both assets are used in option exercise, where the call option payoff at expiration is the strike price against the maximum price between Asset 1 and Asset 2.
473. B2PutOptionOnTheMin
The minimum values at expiration of both assets are used in option exercise, where the call option payoff at expiration is the strike price against the minimum price between Asset 1 and Asset 2.
474. B2PutRho
Returns the option valuation sensitivity Rho (a put option value's sensitivity to changes in the interest rate).
475. B2PutTheta
Returns the option valuation sensitivity Theta (a put option value's sensitivity to changes in the maturity).
476. B2PutVega
Returns the option valuation sensitivity Vega (a put option value's sensitivity to changes in the volatility).
477. B2QueuingMCAveCustomersinSystem
Average number of customers in the system using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.
478. B2QueuingMCAveCustomersWaiting
Average number of customers in the waiting line using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.
479. B2QueuingMCAveTimeinSystem
Average time a customer spends in the system using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.
480. B2QueuingMCAveTimeWaiting
Average time a customer spends in the waiting line using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.
481. B2QueuingMCProbHaveToWait
Probability an arriving customer has to wait using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.
482. B2QueuingMCProbNoCustomer
Probability that no customers are in the system using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.
483. B2QueuingMGKAveCustomersinSystem
Average number of customers in the system using a multiple channel queuing model assuming a Poisson arrival rate with unknown distribution of service times.
484. B2QueuingMGKCostPerPeriod
Total cost per time period using a multiple channel queuing model assuming a Poisson arrival rate with unknown distribution of service times.
485. B2QueuingMGKProbBusy
Probability a channel will be busy using a multiple channel queuing model assuming a Poisson arrival rate with unknown distribution of service times.
486. B2QueuingSCAAveCustomersinSystem
Average number of customers in the system using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate with unknown distribution of service times.
487. B2QueuingSCAAveCustomersWaiting
Average number of customers in the waiting line using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate with unknown distribution of service times.
488. B2QueuingSCAAveTimeinSystem
Average time a customer spends in the system using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate with unknown distribution of service times.
489. B2QueuingSCAAveTimeWaiting
Average time a customer spends in the waiting line using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate with unknown distribution of service times.
490. B2QueuingSCAProbHaveToWait
Probability an arriving customer has to wait using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate with unknown distribution of service times.
491. B2QueuingSCAProbNoCustomer
Probability that no customers are in the system using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate with unknown distribution of service times.
492. B2QueuingSCAveCustomersinSystem
Average number of customers in the system using a single channel queuing model.
493. B2QueuingSCAveCustomersWaiting
Returns the average number of customers in the waiting line using a single channel queuing model.
494. B2QueuingSCAveTimeinSystem
Average time a customer spends in the system using a single channel queuing model.
495. B2QueuingSCAveTimeWaiting
Average time a customer spends in the waiting line using a single channel queuing model.
496. B2QueuingSCProbHaveToWait
Probability an arriving customer has to wait using a single channel queuing model.
497. B2QueuingSCProbNoCustomer
Returns the probability that no customers are in the system using a single channel queuing model.
498. B2RatiosBasicEarningPower
Computes the basic earning power (BEP) by accounting for earnings before interest and taxes (EBIT) and the amount of total assets employed.
499. B2RatiosBetaLevered

Computes the levered beta from an unlevered beta level after accounting for the tax rate, total debt and equity values.

500. B2RatiosBetaUnlevered
Computes the unlevered beta from a levered beta level after accounting for the tax rate, total debt and equity values.

501. B2RatiosBookValuePerShare
Computes the book value per share (BV) by accounting for the total common equity amount and number of shares outstanding.

502. B2RatiosCapitalCharge
Computes the capital charge value (typically used to compute the economic profit of a project).

503. B2RatiosCAPM
Computes the capital asset pricing model's required rate of return in percent, given some benchmark market return, beta risk coefficient, and risk-free rate.

504. B2RatiosCashFlowtoEquityLeveredFirm
Cash flow to equity for a levered firm (accounting for operating expenses, taxes, depreciation, amortization, capital expenditures, change in working capital, preferred dividends, principal repaid and new debt issues).

505. B2RatiosCashFlowtoEquityUnleveredFirm
Cash flow to equity for an unlevered firm (accounting for operating expenses, taxes, depreciation, amortization, capital expenditures, change in working capital and taxes).

506. B2RatiosCashFlowtoFirm
Cash flow to the firm (accounting for earnings before interest and taxes EBIT, tax rate, depreciation, capital expenditures and change in working capital).

507. B2RatiosCashFlowtoFirm2
Cash flow to the firm (accounting for net operating profit after taxes (NOPAT), depreciation, capital expenditures and change in working capital).

508. B2RatiosContinuingValue1
Computes the continuing value based on a constant growth rate of free cash flows to perpetuity using a Gordon Growth Model.

509. B2RatiosContinuingValue2
Computes the continuing value based on a constant growth rate of free cash flows to perpetuity using net operating profit after taxes (NOPAT), return on invested capital (ROIC), growth rate and current free cash flow.

510. B2RatiosCostEquity
Computes the cost of equity (as used in a CAPM model) using the dividend rate, growth rate of dividends, and current equity price.

511. B2RatiosCurrentRatio
Computes the current ratio by accounting for the individual asset and liabilities.

512. B2RatiosDaysSalesOutstanding
Computes the days sales outstanding by looking at the accounts receivables value, total annual sales, and number of days per year.

513. B2RatiosDebtAssetRatio
Computes the debt to asset ratio by accounting for the total debt and total asset values.

514. B2RatiosDebtEquityRatio
Computes the debt to equity ratio by accounting for the total debt and total common equity levels.

515. B2RatiosDebtRatio1
Computes the debt ratio by accounting for the total debt and total asset values.

516. B2RatiosDebtRatio2
Computes the debt ratio by accounting for the total equity and total asset values.

517. B2RatiosDividendsPerShare
Computes the dividends per share (DPS) by accounting for the dividend payment amount and number of shares outstanding.

518. B2RatiosEarningsPerShare
Computes the earnings per share (EPS) by accounting for the net income amount and number of shares outstanding.

519. B2RatiosEconomicProfit1
Computes the economic profit using invested capital, return on invested capital (ROIC) and weighted average cost of capital (WACC).

520. B2RatiosEconomicProfit2
Computes the economic profit using net operating profit after tax (NOPAT), return on invested capital (ROIC) and weighted average cost of capital (WACC).

521. B2RatiosEconomicProfit3
Computes the economic profit using net operating profit after tax (NOPAT) and capital charge.

522. B2RatiosEconomicValueAdded
Computes the economic value added using earnings before interest and taxes (EBIT), total capital employed, tax rate, and weighted average cost of capital (WACC).

523. B2RatiosEquityMultiplier
Computes the equity multiplier (the ratio of total assets to total equity).

524. B2RatiosFixedAssetTurnover
Computes the fixed asset turnover by accounting for the annual sales levels and net fixed assets.

525. B2RatiosInventoryTurnover
Computes the inventory turnover using sales and inventory levels.

526. B2RatiosMarketBookRatio1
Computes the market to book value per share by accounting for the share price and the book value (BV) per share.

527. B2RatiosMarketBookRatio2
Computes the market to book value per share by accounting for the share price, total common equity value, and the number of shares outstanding.

528. B2RatiosMarketValueAdded
Computes the market value added by accounting for the stock price, total common equity, and number of shares outstanding.

529. B2RatiosNominalCashFlow
Computes the nominal cash flow amount assuming some inflation rate, real cash flow, and the number of years in the future.

530. B2RatiosNominalDiscountRate
Computes the nominal discount rate assuming some inflation rate and real discount rate.

531. B2RatiosPERatio1
Computes the price to earnings ratio (PE) using stock price and earnings per share (EPS).

532. B2RatiosPERatio2
Computes the price to earnings ratio (PE) using stock price, net income, and number of shares outstanding.

533. B2RatiosPERatio3
Computes the price to earnings ratio (PE) using growth rates, rate of return, and discount rate.

534. B2RatiosProfitMargin
Computes the profit margin by taking the ratio of net income to annual sales.

535. B2RatiosQuickRatio
Computes the quick ratio by accounting for the individual asset and liabilities.

536. B2RatiosRealCashFlow
Computes the real cash flow amount assuming some inflation rate, nominal cash flow (Nominal CF), and the number of years in the future.

537. B2RatiosRealDiscountRate
Computes the real discount rate assuming some inflation rate and nominal discount rate.

538. B2RatiosReturnonAsset1
Computes the return in asset using net income amount and total assets employed.
539. B2RatiosReturnonAsset2
Computes the return in asset using net profit margin percentage and total asset turnover ratio.
540. B2RatiosReturnonEquity1
Computes return on equity using net income and total common equity values.
541. B2RatiosReturnonEquity2
Computes return on equity using return on asset (ROA), total asset, and total equity values.
542. B2RatiosReturnonEquity3
Computes return on equity using net income, total sales, total asset, and total common equity values.
543. B2RatiosReturnonEquity4
Computes return on equity using net profit margin, total asset turnover, and equity multiplier values.
544. B2RatiosROIC
Computes the return on invested capital (typically used for computing economic profit) accounting for change in working capital, property, plant equipment (PPE).
545. B2RatiosShareholderEquity
Computes the common shareholder's equity after accounting for total assets, total liabilities and preferred stocks.
546. B2SimulatedEuropeanCall
Returns the Monte Carlo simulated European call option (only European options can be approximated well with simulation). This function is volatile.
547. B2SimulatedEuropeanPut
Returns the Monte Carlo simulated European put option (only European options can be approximated well with simulation). This function is volatile.
548. B2RatiosTimesInterestEarned
Computes the times interest earned ratio by accounting for earnings before interest and taxes (EBIT) and the amount of interest payment.
549. B2RatiosTotalAssetTurnover
Computes the total asset turnover by accounting for the annual sales levels and total assets.
550. B2RatiosWACC1
Computes the weighted average cost of capital (WACC) using market values of debt, preferred equity, and common equity, as well as their respective costs.
551. B2RatiosWACC2
Computes the weighted average cost of capital (WACC) using market values of debt, market values of common equity, as well as their respective costs.
552. B2ROBinomialAmericanAbandonContract
Returns the American option to abandon and contract using a binomial lattice model.
553. B2ROBinomialAmericanAbandonContractExpand
Returns the American option to abandon, contract and expand using a binomial lattice model.
554. B2ROBinomialAmericanAbandonExpand
Returns the American option to abandon and expand using a binomial lattice model.
555. B2ROBinomialAmericanAbandonment
Returns the American option to abandon using a binomial lattice model.
556. B2ROBinomialAmericanCall
Returns the American call option with dividends using a binomial lattice model.
557. B2ROBinomialAmericanChangingRiskFree
Returns the American call option with dividends and assuming the risk-free rate changes over time, using a binomial lattice model.
558. B2ROBinomialAmericanChangingVolatility
Returns the American call option with dividends and assuming the volatility changes over time, using a binomial lattice model. Use small number of steps or it will take a long time to compute!
559. B2ROBinomialAmericanContractExpand
Returns the American option to contract and expand using a binomial lattice model.
560. B2ROBinomialAmericanContraction
Returns the American option to contract using a binomial lattice model.
561. B2ROBinomialAmericanCustomCall
Returns the American option call option with changing inputs, vesting periods, and suboptimal exercise multiple using a binomial lattice model.
562. B2ROBinomialAmericanExpansion
Returns the American option to expand using a binomial lattice model.
563. B2ROBinomialAmericanPut
Returns the American put option with dividends using a binomial lattice model.
564. B2ROBinomialBermudanAbandonContract
Returns the Bermudan option to abandon and contract using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
565. B2ROBinomialBermudanAbandonContractExpand
Returns the Bermudan option to abandon, contract and expand, using a binomial lattice model, where there is a vesting/blackout period the option cannot be executed.
566. B2ROBinomialBermudanAbandonExpand
Returns the Bermudan option to abandon and expand using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
567. B2ROBinomialBermudanAbandonment
Returns the Bermudan option to abandon using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
568. B2ROBinomialBermudanCall
Returns the Bermudan call option with dividends, where there is a vesting/blackout period where the option cannot be executed.
569. B2ROBinomialBermudanContractExpand
Returns the Bermudan option to contract and expand, using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
570. B2ROBinomialBermudanContraction
Returns the Bermudan option to contract using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
571. B2ROBinomialBermudanExpansion
Returns the Bermudan option to expand using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
572. B2ROBinomialBermudanPut
Returns the Bermudan put option with dividends, where there is a vesting/blackout period where the option cannot be executed.
573. B2ROBinomialEuropeanAbandonContract
Returns the European option to abandon and contract, using a binomial lattice model, where the option can only be executed at expiration.
574. B2ROBinomialEuropeanAbandonContractExpand
Returns the European option to abandon, contract and expand, using a binomial lattice model, where the option can only be executed at expiration.
575. B2ROBinomialEuropeanAbandonExpand
Returns the European option to abandon and expand, using a binomial lattice model, where the option can only be executed at expiration.

576. B2ROBinomialEuropeanAbandonment
Returns the European option to abandon using a binomial lattice model, where the option can only be executed at expiration.
577. B2ROBinomialEuropeanCall
Returns the European call option with dividends, where the option can only be executed at expiration.
578. B2ROBinomialEuropeanContractExpand
Returns the European option to contract and expand, using a binomial lattice model, where the option can only be executed at expiration.
579. B2ROBinomialEuropeanContraction
Returns the European option to contract using a binomial lattice model, where the option can only be executed at expiration.
580. B2ROBinomialEuropeanExpansion
Returns the European option to expand using a binomial lattice model, where the option can only be executed at expiration.
581. B2ROBinomialEuropeanPut
Returns the European put option with dividends, where the option can only be executed at expiration.
582. B2ROJumpDiffusionCall
Returns the closed-form model for a European call option whose underlying asset follows a Poisson jump-diffusion process.
583. B2ROJumpDiffusionPut
Returns the closed-form model for a European put option whose underlying asset follows a Poisson jump-diffusion process.
584. B2ROMeanRevertingCall
Returns the closed-form model for a European call option whose underlying asset follows a mean-reversion process.
585. B2ROMeanRevertingPut
Returns the closed-form model for a European put option whose underlying asset follows a mean-reversion process.
586. B2ROPentanomialAmericanCall
Returns the Rainbow American call option with two underlying assets (these are typically price and quantity, and are multiplied together to form a new combinatorial pentanomial lattice).
587. B2ROPentanomialAmericanPut
Returns the Rainbow American put option with two underlying assets (these are typically price and quantity, and are multiplied together to form a new combinatorial pentanomial lattice).
588. B2ROPentanomialEuropeanCall
Returns the Rainbow European call option with two underlying assets (these are typically price and quantity, and are multiplied together to form a new combinatorial pentanomial lattice).
589. B2ROPentanomialEuropeanPut
Returns the Rainbow European put option with two underlying assets (these are typically price and quantity, and are multiplied together to form a new combinatorial pentanomial lattice).
590. B2ROQuadranomialJumpDiffusionAmericanCall
Returns the American call option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadranomial lattice.
591. B2ROQuadranomialJumpDiffusionAmericanPut
Returns the American put option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadranomial lattice.
592. B2ROQuadranomialJumpDiffusionEuropeanCall
Returns the European call option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadranomial lattice.
593. B2ROQuadranomialJumpDiffusionEuropeanPut
Returns the European put option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadranomial lattice.
594. B2ROStateAmericanCall
Returns the American call option using a state jump function, where the up and down states can be asymmetrical, solved in a lattice model.
595. B2ROStateAmericanPut
Returns the American put option using a state jump function, where the up and down states can be asymmetrical, solved in a lattice model.
596. B2ROStateBermudanCall
Returns the Bermudan call option using a state jump function, where the up and down states can be asymmetrical, solved in a lattice model, and where the option cannot be exercised at certain vesting/blackout periods.
597. B2ROStateBermudanPut
Returns the Bermudan put option using a state jump function, where the up and down states can be asymmetrical, solved in a lattice model, and where the option cannot be exercised at certain vesting/blackout periods.
598. B2ROStateEuropeanCall
Returns the Bermudan call option using a state jump function, where the up and down states can be asymmetrical, solved in a lattice model, and where the option can only be exercised at maturity.
599. B2ROStateEuropeanPut
Returns the Bermudan put option using a state jump function, where the up and down states can be asymmetrical, solved in a lattice model, and where the option can only be exercised at maturity.
600. B2ROTrinomialAmericanCall
Returns the American call option with dividend, solved using a trinomial lattice.
601. B2ROTrinomialAmericanMeanRevertingCall
Returns the American call option with dividend, assuming the underlying asset is mean-reverting, and solved using a trinomial lattice.
602. B2ROTrinomialAmericanMeanRevertingPut
Returns the American call option with dividend, assuming the underlying asset is mean-reverting, and solved using a trinomial lattice.
603. B2ROTrinomialAmericanPut
Returns the American put option with dividend, solved using a trinomial lattice.
604. B2ROTrinomialBermudanCall
Returns the Bermudan call option with dividend, solved using a trinomial lattice, where during certain vesting/blackout periods, the option cannot be exercised.
605. B2ROTrinomialBermudanPut
Returns the Bermudan put option with dividend, solved using a trinomial lattice, where during certain vesting/blackout periods, the option cannot be exercised.
606. B2ROTrinomialEuropeanCall
Returns the European call option with dividend, solved using a trinomial lattice, where the option can only be exercised at maturity.
607. B2ROTrinomialEuropeanMeanRevertingCall
Returns the European call option with dividend, solved using a trinomial lattice, assuming the underlying asset is mean-reverting, and where the option can only be exercised at maturity.
608. B2ROTrinomialEuropeanMeanRevertingPut
Returns the European put option with dividend, solved using a trinomial lattice, assuming the underlying asset is mean-

reverting, and where the option can only be exercised at maturity.

609. B2ROTrinomialEuropeanPut
Returns the European put option with dividend, solved using a trinomial lattice, where the option can only be exercised at maturity.

610. B2TrinomialImpliedArrowDebreuLattice
Computes the complete set of implied Arrow-Debreu prices in an implied trinomial lattice using actual observed data. Copy and paste the function and use Ctrl+Shift+Enter to obtain the matrix.

611. B2TrinomialImpliedArrowDebreuValue
Computes the single value of implied Arrow-Debreu price (for a specific step/column and up-down event/row) in an implied trinomial lattice using actual observed data.

612. B2TrinomialImpliedCallOptionValue
Computes the European Call Option using an implied trinomial lattice approach, taking into account actual observed inputs.

613. B2TrinomialImpliedDownProbabilityLattice
Computes the complete set of implied DOWN probabilities in an implied trinomial lattice using actual observed data. Copy and paste the function and use Ctrl+Shift+Enter to obtain the matrix.

614. B2TrinomialImpliedDownProbabilityValue
Computes the single value of implied DOWN probability (for a specific step/column and up-down event/row) in an implied trinomial lattice using actual observed data.

615. B2TrinomialImpliedLocalVolatilityLattice
Computes the complete set of implied local probabilities in an implied trinomial lattice using actual observed data. Copy and paste the function and use Ctrl+Shift+Enter to obtain the matrix.

616. B2TrinomialImpliedLocalVolatilityValue
Computes the single value of localized volatility (for a specific step/column and up-down event/row) in an implied trinomial lattice using actual observed data.

617. B2TrinomialImpliedUpProbabilityLattice
Computes the complete set of implied UP probabilities in an implied trinomial lattice using actual observed data. Copy and paste the function and use Ctrl+Shift+Enter to obtain the matrix.

618. B2TrinomialImpliedUpProbabilityValue
Computes the single value of implied UP probability (for a specific step/column and up-down event/row) in an implied trinomial lattice using actual observed data.

619. B2TrinomialImpliedPutOptionValue
Computes the European Put Option using an implied trinomial lattice approach, taking into account actual observed inputs.

620. B2SharpeRatio
Computes the Sharpe Ratio (returns to risk ratio) based on a series of stock prices of an asset and a market benchmark series of prices.

621. B2SCurveValue
Computes the S-Curve extrapolation's next forecast value based on previous value, growth rate and maximum capacity levels.

622. B2SCurveValueSaturation
Computes the S-Curve extrapolation's saturation level based on previous value, growth rate and maximum capacity levels.

623. B2SemiStandardDeviationPopulation
Computes the semi-standard deviation of the population, that is, only the values below the mean are used to compute an adjusted population standard deviation, a more appropriate measure of downside risk.

624. B2SemiStandardDeviationSample
Computes the semi-standard deviation of the sample, that is, only the values below the mean are used to compute an adjusted sample standard deviation, a more appropriate measure of downside risk.

625. B2SimulateBernoulli
Returns simulated random numbers from the Bernoulli distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

626. B2SimulateBeta
Returns simulated random numbers from the Beta distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

627. B2SimulateBinomial
Returns simulated random numbers from the Binomial distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

628. B2SimulateChiSquare
Returns simulated random numbers from the Chi-Square distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

629. B2SimulateDiscreteUniform
Returns simulated random numbers from the Discrete Uniform distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

630. B2SimulateExponential
Returns simulated random numbers from the Exponential distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

631. B2SimulateFDist
Returns simulated random numbers from the F distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

632. B2SimulateGamma
Returns simulated random numbers from the Gamma distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

633. B2SimulateGeometric
Returns simulated random numbers from the Geometric distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

634. B2SimulateGumbelMax
Returns simulated random numbers from the Gumbel Max distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

635. B2SimulateGumbelMin
Returns simulated random numbers from the Gumbel Min distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

636. B2SimulateLogistic
Returns simulated random numbers from the Logistic distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

637. B2SimulateLognormal
Returns simulated random numbers from the Lognormal distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

638. B2SimulateNormal
Returns simulated random numbers from the Normal distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

639. B2SimulatePareto
Returns simulated random numbers from the Pareto distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

640. B2SimulatePoisson
Returns simulated random numbers from the Poisson distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.

641. B2SimulateRayleigh
Returns simulated random numbers from the Rayleigh distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.
642. B2SimulateStamndardNormal
Returns simulated random numbers from the Standard Normal distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.
643. B2SimulateTDist
Returns simulated random numbers from the Student's T distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.
644. B2SimulateTriangular
Returns simulated random numbers from the Triangular distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.
645. B2SimulateUniform
Returns simulated random numbers from the Uniform distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.
646. B2SimulateWeibull
Returns simulated random numbers from the Weibull distribution. Type in RAND() as the random input parameter to generate volatile random values from this distribution.
647. B2SixSigmaControlCChartCL
Computes the center line in a control c-chart. C-charts are applicable when only the number of defects are important.
648. B2SixSigmaControlCChartDown1Sigma
Computes the lower 1 sigma limit in a control c-chart. C-charts are applicable when only the number of defects are important.
649. B2SixSigmaControlCChartDown2Sigma
Computes the lower 2 sigma limit in a control c-chart. C-charts are applicable when only the number of defects are important.
650. B2SixSigmaControlCChartLCL
Computes the lower control limit in a control c-chart. C-charts are applicable when only the number of defects are important.
651. B2SixSigmaControlCChartUCL
Computes the upper control limit in a control c-chart. C-charts are applicable when only the number of defects are important.
652. B2SixSigmaControlCChartUp1Sigma
Computes the upper 1 sigma limit in a control c-chart. C-charts are applicable when only the number of defects are important.
653. B2SixSigmaControlCChartUp2Sigma
Computes the upper 2 sigma limit in a control c-chart. C-charts are applicable when only the number of defects are important.
654. B2SixSigmaControlNPChartCL
Computes the center line in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
655. B2SixSigmaControlNPChartDown1Sigma
Computes the lower 1 sigma limit in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
656. B2SixSigmaControlNPChartDown2Sigma
Computes the lower 2 sigma limit in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
657. B2SixSigmaControlNPChartLCL
Computes the lower control limit in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
658. B2SixSigmaControlNPChartUCL
Computes the upper control limit in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
659. B2SixSigmaControlNPChartUp1Sigma
Computes the upper 1 sigma limit in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
660. B2SixSigmaControlNPChartUp2Sigma
Computes the upper 2 sigma limit in a control np-chart. NP-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size is constant.
661. B2SixSigmaControlPChartCL
Computes the center line in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
662. B2SixSigmaControlPChartDown1Sigma
Computes the lower 1 sigma limit in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
663. B2SixSigmaControlPChartDown2Sigma
Computes the lower 2 sigma limit in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
664. B2SixSigmaControlPChartLCL
Computes the lower control limit in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
665. B2SixSigmaControlPChartUCL
Computes the upper control limit in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
666. B2SixSigmaControlPChartUp1Sigma
Computes the upper 1 sigma limit in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
667. B2SixSigmaControlPChartUp2Sigma
Computes the upper 2 sigma limit in a control p-chart. P-charts are applicable when proportions of defects are important, and where in each experimental subgroup, the number of sample size might be different.
668. B2SixSigmaControlRChartCL
Computes the center line in a control R-chart. X-charts are used when the number of defects are important, in each subgroup experiment multiple measurements are taken, and the range of the measurements is the variable plotted.
669. B2SixSigmaControlRChartLCL
Computes the lower control limit in a control R-chart. X-charts are used when the number of defects are important, in each subgroup experiment multiple measurements are taken, and the range of the measurements is the variable plotted.
670. B2SixSigmaControlRChartUCL
Computes the upper control limit in a control R-chart. X-charts are used when the number of defects are important,

in each subgroup experiment multiple measurements are taken, and the range of the measurements is the variable plotted.

671. B2SixSigmaControlUChartCL
Computes the center line in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

672. B2SixSigmaControlUChartDown1Sigma
Computes the lower 1 sigma limit in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

673. B2SixSigmaControlUChartDown2Sigma
Computes the lower 2 sigma limit in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

674. B2SixSigmaControlUChartLCL
Computes the lower control limit in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

675. B2SixSigmaControlUChartUCL
Computes the upper control limit in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

676. B2SixSigmaControlUChartUp1Sigma
Computes the upper 1 sigma limit in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

677. B2SixSigmaControlUChartUp2Sigma
Computes the upper 2 sigma limit in a control u-chart. U-charts are applicable when number of defects are important, and where in each experimental subgroup, the number of sample sizes are the same.

678. B2SixSigmaControlXChartCL
Computes the center line in a control X-chart. X-charts are used when the number of defects are important, in each subgroup experiment multiple measurements are taken, and the average of the measurements is the variable plotted.

679. B2SixSigmaControlXChartLCL
Computes the lower control limit in a control X-chart. X-charts are used when the number of defects are important, in each subgroup experiment multiple measurements are taken, and the average of the measurements is the variable plotted.

680. B2SixSigmaControlXChartUCL
Computes the upper control limit in a control X-chart. X-charts are used when the number of defects are important, in each subgroup experiment multiple measurements are taken, and the average of the measurements is the variable plotted.

681. B2SixSigmaControlXMRChartCL
Computes the center line in a control XmR-chart. XmR-are used when the number of defects are important with only a single measurement for each sample and a time-series of moving ranges is the variable plotted.

682. B2SixSigmaControlXMRChartLCL
Computes the lower control limit in a control XmR-chart. XmR-are used when the number of defects are important with only a single measurement for each sample and a time-series of moving ranges is the variable plotted.

683. B2SixSigmaControlXMRChartUCL
Computes the upper control limit in a control XmR-chart. XmR-are used when the number of defects are important with only a single measurement for each sample and a time-series of moving ranges is the variable plotted.

684. B2SixSigmaDeltaPrecision
Computes the error precision given specific levels of Type I and Type II errors, as well as the sample size and variance.

685. B2SixSigmaSampleSize
Computes the required minimum sample size given Type I and Type II errors, as well as the required precision of the mean and the error tolerances.

686. B2SixSigmaSampleSizeDPU
Computes the required minimum sample size given Type I and Type II errors, as well as the required precision of the defects per unit and the error tolerances.

687. B2SixSigmaSampleSizeProportion
Computes the required minimum sample size given Type I and Type II errors, as well as the required precision of the proportion of defects and the error tolerances.

688. B2SixSigmaSampleSizeStdev
Computes the required minimum sample size given Type I and Type II errors, as well as the required precision of the standard deviation and the error tolerances.

689. B2SixSigmaSampleSizeZeroCorrelTest
Computes the required minimum sample size to test if a correlation is statistically significant at an alpha of 0.05 and beta of 0.10.

690. B2SixSigmaStatCP
Computes the potential process capability index Cp given the actual mean and sigma of the process, including the upper and lower specification limits.

691. B2SixSigmaStatCPK
Computes the process capability index Cpk given the actual mean and sigma of the process, including the upper and lower specification limits.

692. B2SixSigmaStatDPMO
Computes the defects per million opportunities (DPMO) given the actual mean and sigma of the process, including the upper and lower specification limits.

693. B2SixSigmaStatDPU
Computes the proportion of defective units (DPU) given the actual mean and sigma of the process, including the upper and lower specification limits.

694. B2SixSigmaStatProcessSigma
Computes the process sigma level given the actual mean and sigma of the process, including the upper and lower specification limits.

695. B2SixSigmaStatYield
Computes the nondefective parts or the yield of the process given the actual mean and sigma of the process, including the upper and lower specification limits.

696. B2SixSigmaUnitCPK
Computes the process capability index Cpk given the actual counts of defective parts and the total opportunities in the population.

697. B2SixSigmaUnitDPMO
Computes the defects per million opportunities (DPMO) given the actual counts of defective parts and the total opportunities in the population.

698. B2SixSigmaUnitDPU
Computes the proportion of defective units (DPU) given the actual counts of defective parts and the total opportunities in the population.

699. B2SixSigmaUnitProcessSigma
Computes the process sigma level given the actual counts of defective parts and the total opportunities in the population.

700. B2SixSigmaUnitYield
Computes the nondefective parts or the yield of the process given the actual counts of defective parts and the total opportunities in the population.

701. B2StandardNormalBivariateCDF
Given the two Z-scores and correlation, returns the value of the bivariate standard normal (means of zero, variances of 1) cumulative distribution function.

702. B2StandardNormalCDF
Given the Z-score, returns the value of the standard normal (mean of zero, variance of 1) cumulative distribution function.

703. B2StandardNormalInverseCDF
Computes the inverse cumulative distribution function of a standard normal distribution (mean of 0 and variance of 1)

704. B2StandardNormalPDF
Given the Z-score, returns the value of the standard normal (mean of zero, variance of 1) probability density function.

705. B2StockIndexCallOption
Similar to a regular call option but the underlying asset is a reference stock index such as the Standard and Poors 500. The analysis can be solved using a Generalized Black-Scholes-Merton Model as well.

706. B2StockIndexPutOption
Similar to a regular put option but the underlying asset is a reference stock index such as the Standard and Poors 500. The analysis can be solved using a Generalized Black-Scholes-Merton Model as well.

707. B2SuperShareOptions
The option has value only if the stock or asset price is between the upper and lower barriers, and at expiration, provides a payoff equivalent to the stock or asset price divided by the lower strike price (S/X Lower).

708. B2SwaptionEuropeanPayer
European Call Interest Swaption.

709. B2SwaptionEuropeanReceiver
European Put Interest Swaption.

710. B2TakeoverFXOption
At a successful takeover (foreign firm value in foreign currency is less than the foreign currency units), option holder can purchase the foreign units at a predetermined strike price (in exchange rates of the domestic to foreign currency).

711. B2TimeSwitchOptionCall
Holder gets AccumAmount x TimeSteps each time asset > strike for a call. TimeSteps is frequency asset price is checked if strike is breached (e.g., for 252 trading days, set DT as 1/252).

712. B2TimeSwitchOptionPut
Holder gets AccumAmount x TimeSteps each time asset < strike for a put. TimeSteps is frequency asset price is checked if strike is breached (e.g., for 252 trading days, set DT as 1/252).

713. B2TradingDayAdjustedCall
Call option corrected for varying volatilities (higher on trading days than on non-trading days). Trading Days Ratio is the number of trading days left until maturity divided by total trading days per year (between 250 and 252).

714. B2TradingDayAdjustedPut
Put option corrected for varying volatilities (higher on trading days than on non-trading days). Trading Days Ratio is the number of trading days left until maturity divided by total trading days per year (between 250 and 252).

715. B2TwoAssetBarrierDownandInCall
Valuable or knocked in-the-money only if the lower barrier is breached (reference Asset 2 goes below the barrier), and the payout is in the option on Asset 1 less the strike price.

716. B2TwoAssetBarrierDownandInPut
Valuable or knocked in-the-money only if the lower barrier is breached (reference Asset 2 goes below the barrier), and the payout is in the option on the strike price less the Asset 1 value.

717. B2TwoAssetBarrierDownandOutCall
Valuable or stays in-the-money only if the lower barrier is not breached (reference Asset 2 does not go below the barrier), and the payout is in the option on Asset 1 less the strike price.

718. B2TwoAssetBarrierDownandOutPut
Valuable or stays in-the-money only if the lower barrier is not breached (reference Asset 2 does not go below the barrier), and the payout is in the option on the strike price less the Asset 1 value.

719. B2TwoAssetBarrierUpandInCall
Valuable or knocked in-the-money only if the upper barrier is breached (reference Asset 2 goes above the barrier), and the payout is in the option on Asset 1 less the strike price.

720. B2TwoAssetBarrierUpandInPut
Valuable or knocked in-the-money only if the upper barrier is breached (reference Asset 2 goes above the barrier), and the payout is in the option on the strike price less the Asset 1 value.

721. B2TwoAssetBarrierUpandOutCall
Valuable or stays in-the-money only if the upper barrier is not breached (reference Asset 2 does not go above the barrier), and the payout is in the option on Asset 1 less the strike price.

722. B2TwoAssetBarrierUpandOutPut
Valuable or stays in-the-money only if the upper barrier is not breached (reference Asset 2 does not go above the barrier), and the payout is in the option on the strike price less the Asset 1 value.

723. B2TwoAssetCashOrNothingCall
Pays cash at expiration as long as both assets are in the money. For call options, both asset values must be above their respective strike prices.

724. B2TwoAssetCashOrNothingDownUp
Cash will only be paid if at expiration, the first asset is below the first strike, and the second asset is above the second strike.

725. B2TwoAssetCashOrNothingPut
Pays cash at expiration as long as both assets are in the money. For put options, both assets must be below their respective strike prices).

726. B2TwoAssetCashOrNothingUpDown
Cash will only be paid if the first asset is above the first strike price, and the second asset is below the second strike price at maturity.

727. B2TwoAssetCorrelationCall
Asset 1 is the benchmark asset, whereby if at expiration Asset 1's values exceed Strike 1's value, then the option is knocked in the money, and the payoff on the option is Asset 2 - Strike 2, otherwise the option becomes worthless.

728. B2TwoAssetCorrelationPut
Asset 1 is the benchmark asset, whereby if at expiration Asset 1's value is below Strike 1's value, then the put option is knocked in the money, and the payoff on the option is Strike 2 - Asset 2, otherwise the option becomes worthless.

729. B2VaRCorrelationMethod
Computes the Value at Risk using the Variance-Covariance and Correlation method, accounting for a specific VaR percentile and holding period.

730. B2VarOptions
Computes the Value at Risk of a portfolio of correlated options.

731. B2Volatility
Returns the Annualized Volatility of time-series cash flows. Enter in the number of periods in a cycle to annualize the volatility (1=annual, 4=quarter, 12=monthly data.

732. B2VolatilityImpliedforDefaultRisk
Only used when computing the implied volatility required for

optimizing an option model to compute the probability of default.

733. B2WarrantsDilutedValue
Returns the value of a warrant (like an option) that is convertible to stock while accounting for dilution effects based on the number of shares and warrants outstanding.
734. B2WriterExtendibleCallOption
The call option is extended beyond the initial maturity to an extended date with a new extended strike if at maturity the option is out of the money, providing a safety net of time for the option holder.
735. B2WriterExtendiblePutOption
The put option is extended beyond the initial maturity to an extended date with a new extended strike if at maturity the option is out of the money, providing a safety net of time for the option holder.
736. B2YieldCurveBIM
Returns the Yield Curve at various points in time using the Bliss model.
737. B2YieldCurveNS
Returns the Yield Curve at various points in time using the Nelson-Siegel approach.
738. B2ZEOB
Returns the Economic Order Batch or the optimal quantity to be manufactured on each production batch.
739. B2ZEOBBatch
Returns the Economic Order Batch analysis' optimal number of batches to be manufactured per year.
740. B2ZEOBHoldingCost
Returns the Economic Order Batch analysis' cost of holding excess units per year if manufactured at the optimal level.
741. B2ZEOBProductionCost
Returns the Economic Order Batch analysis' total cost of setting up production per year if manufactured at the optimal level.
742. B2ZEOBTotalCost
Returns the Economic Order Batch analysis' total cost of production and holding costs per year if manufactured at the optimal level.
743. B2ZEOQ
Economic Order Quantity's order size on each order.
744. B2ZEOQExcess
Economic Order Quantity's excess safety stock level
745. B2ZEOQOrders
Economic Order Quantity's number of orders per year
746. B2ZEOQProbability
Economic Order Quantity's probability of out of stock
747. B2ZEOQReorderPoint
Economic Order Quantity's reorder point

The following lists the statistical and analytical tools in the Modeling Toolkit:

748. Statistical Tool: Chi-Square Goodness of Fit Test
749. Statistical Tool: Chi-Square Independence Test
750. Statistical Tool: Chi-Square Population Variance Test
751. Statistical Tool: Dependent Means (T)
752. Statistical Tool: Friedman's Test
753. Statistical Tool: Independent and Equal Variances (T)
754. Statistical Tool: Independent and Unequal Variances (T)
755. Statistical Tool: Independent Means (Z)
756. Statistical Tool: Independent Proportions (Z)
757. Statistical Tool: Independent Variances (F)
758. Statistical Tool: Kruskal-Wallis Test
759. Statistical Tool: Lilliefors Test
760. Statistical Tool: Principal Component Analysis
761. Statistical Tool: Randomized Block Multiple Treatments
762. Statistical Tool: Runs Test
763. Statistical Tool: Single Factor Multiple Treatments
764. Statistical Tool: Testing Means (T)
765. Statistical Tool: Testing Means (Z)
766. Statistical Tool: Testing Proportions (Z)
767. Statistical Tool: Two-Way ANOVA
768. Statistical Tool: variance-Covariance Matrix
769. Statistical Tool: Wilcoxon Signed-Rank Test (One Variable)
770. Statistical Tool: Wilcoxon Signed-Rank Test (Two Variables)
771. Valuation Tool: Lattice Maker for Debt
772. Valuation Tool: Lattice Maker for Yield

The following lists Risk Simulator tools/applications that are used in the Modeling Toolkit:

773. Monte Carlo Simulation using 25 statistical distributions
774. Monte Carlo Simulation: Simulations with Correlations
775. Monte Carlo Simulation: Simulations with Precision Control
776. Monte Carlo Simulation: Simulations with Truncation
777. Stochastic Forecasting: Box-Jenkins ARIMA
778. Stochastic Forecasting: Maximum Likelihood
779. Stochastic Forecasting: Nonlinear Extrapolation
780. Stochastic Forecasting: Regression Analysis
781. Stochastic Forecasting: Stochastic Processes
782. Stochastic Forecasting: Time-Series Analysis
783. Portfolio Optimization: Discrete Binary Decision Variables
784. Portfolio Optimization: Discrete Decision Variables
785. Portfolio Optimization: Discrete Continuous Decision Variables
786. Portfolio Optimization: Static Optimization
787. Portfolio Optimization: Dynamic Optimization
788. Portfolio Optimization: Stochastic Optimization
789. Simulation Tools: Bootstrap Simulation
790. Simulation Tools: Custom Historical Simulation
791. Simulation Tools: Data Diagnostics
792. Simulation Tools: Distributional Analysis
793. Simulation Tools: Multiple Correlated Data Fitting
794. Simulation Tools: Scenario Analysis
795. Simulation Tools: Sensitivity Analysis
796. Simulation Tools: Single Data Fitting
797. Simulation Tools: Statistical Analysis
798. Simulation Tools: Tornado Analysis

The following lists Real Options SLS tools/applications used in the Modeling Toolkit:

799. Audit Sheet Functions
800. Changing Volatility and Risk-free Rates Model
801. Lattice Maker
802. SLS Single Asset and Single Phase: American Options
803. SLS Single Asset and Single Phase: Bermudan Options
804. SLS Single Asset and Single Phase: Customized Options
805. SLS Single Asset and Single Phase: European Options
806. SLS Multiple Asset and Multiple Phases
807. SLS Multinomial Lattices: Trinomials
808. SLS Multinomial Lattices: Trinomial Mean-Reversion
809. SLS Multinomial Lattices: Quadranomials
810. SLS Multinomial Lattices: Pentanomials