

RO Real Options
Valuation, Inc.

- 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. Products & Services Brochure

R I S K
R I S K

Contenido

Listado de productos de software ROV`s

Risk Simulator (Simulador de Riesgo)

Real Options SLS (Opciones Reales SLS)

Employee Stock Options Valuation Toolkit

Modeling Toolkit (Modelo de Herramientas)

ROV Modeler, Optimizer, Valuator, Schedule, Charter

(Modelo ROV, Optimizacion, Valuator, Calendario, Carta)

ROV BizStats

ROV Compiler (Compilador ROV)

ROV Extractor and Evaluator (Extractor y Evaluador ROV)

ROV Dashboard

ROV Web Models(Modelos Web ROV)

Training Seminars

Certified in Risk Management (Certificacion en Gestion de Riesgo)

Senior Credit Risk Management Certification

(Certificacion de Manejo de Riesgo Crediticio Senior)

Client References and Quotes (Referencias de los Clients y Preguntas)

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Sample Client List (Ejemplo en la lista de Clientes)

Risk Analysis Training DVD (Análisis de Riesgo de Formacion DVD)

Sample Books and Supporting Publications

(Muestra de Libros y Publicaciones de Apoyo)

Detailed Competitive Comparisons (Products and Services)

(Comparasion Detallada de Competencia: Productos y Servicios)

Details of 300 Models and 800 Functions in Modeling Toolkit and ROV Valuator

(Los detalles de 300 Modelos y 800 Funciones en Modeling Toolkit/ROV Valuator)

Version 5.0 Ingles, Español, Japonés, Chino, Portugués, Francés, Italiano, Alemán, Ruso trabaja con Windows XP Vista, y en otros ambientes escrito en la C++ , con más de 125 ejemplos de modelos y conjuntos de datos

capaz de extraer millones de datos de la copilacion de la base de datos del ODBC, CSV, archivos de excel, archivos de texto o bases de datos OFDM en ORACLE, para correr análisis avanzados incluyendo simulación de Riesgo, Pronóstico estocástico, Optimización de portafolios, analisis avanzados, manipulacion de datos (limpieza de datos, clasificacion, SQL, comandos SQL, búsqueda y otros)

corre el Modelo de Basilea II (riesgo de Mercado y de Crédito que es compatible con el Modeling Toolkit), analisis de simulación y análisis de Opciones (compatibles con muchas funcionalidades del Risk Simulator y de Real Options SLS)

corre fuera e independiente de Excel, para que los analistas corran con una rapidez extremadamente alta y puede manejar un millón de puntos de datos, puede ser Programada para correr a tiempos específicos, y que los reportes puedan ser creados en Excel y Word, con la Habilidad de generar archivos XML usados en ROV Dashboard

Version 1.1 Ingles, Español, Japonés, Chino, Portugués, Francés, Italiano, Alemán, Ruso trabaja con Windows XP y Vista, Excel 2007 escrito en la plataforma C# Microsoft .NET 3.5

Extrae cualquier modelo de excel en archivos autoejecutables EXE que son encriptados, por lo tanto la propiedad intelectual de los modelos está protegida así como el modelo de Excel original, Usted puede LICENCIAR el EXE (la lógica del negocio está protegido y el modelo no puede ser alterado, por lo tanto Ud. puede dar un trial o licencias permanentes), convierte los modelos complejos en codigos binarios y cuando el último usuario abre el archivo, lo deja en un ambiente de excel excepto que el negocio lógico está protegido... otra alternativa, el EXE puede correrse en una consola de comando para computación rápida o OEM en la propiedad de su propia aplicación de software (en vez de escribir largos y complejos códigos, use excel como una plataforma de desarrollo para crear el EXE requerido, componente lógico para la modelación)

Version 1.1 gles, Español, Japon, China, Portuges, Frances, Italiano, Aleman, Ruso trabaja con Windows XP y Vista, Excel XP 2003 y 2007 y sistema MAC Parallels o Windows Emulator

Hace cualquier modelo de creación en excel al programador, con la habilidad de proteger las licencias y las ventas de sus propios modelos

extracts any Excel model into EXE self-executable files that are encrypted so that the intellectual property of the model is protected and as the Excel model creator, you can now LICENSE the EXE (the business logic is protected and the model cannot be tampered with and you can create timed trial or permanent licenses), and converts the complex model into binary code and when the end-user opens the file, it will launch Excel and look and feel exactly like Excel except the business logic are all protected... Alternatively, the EXE can be run in console command mode for quick computations or OEM into your own proprietary software applications (instead of writing long and complex codes, use Excel as the development platform to create the required EXE logic in component based modeling)!

Version 1.0 Ingles, Español, Japonés, Chino, Portugués, Francés, Italiano, Alemán, Ruso escrito en Java y que puede correrse en el Internet Explorer, Netscape o Firefox

Soporta más de 30 tipos de gráficos y tablas, tiene capacidad para leer el ROV Modeler con archivos de salida en XML, usando múltiples claves (administrador versus usuarios regulares). Asignación de los derechos para ver determinados reportes y mucho más

Version 1.2 ingles trabaja con Windows XP y Vista, Excel Xp 2003 y 2007 y sistema MAC Parallels or Windows Emulator, escrita en Visual Basic 6 y VBA Excel

Corre como un add-in dentro de excel y calcula los siguientes tipos de estadísticas: Modelo de Elección (ayuda al usuario a elegir correctamente la herramienta estadística y de análisis a correr). Analisis de varianza (ANOVA de factor único , tratamiento multiple de bloque aleatorio, ANOVA de 2 vías), Estadísticas básicas (estadísticas descriptivas, matriz de correlacion, matriz de covarianza y varianza), pruebas de hipótesis (una y dos variables incluyendo pruebas t y Z para las medias y proporciones con varianzas dependientes e independientes), Simulación Monte Carlo (corre 7 distribuciones de simulación simple... uso del Risk Simulator para tipos más avanzados de simulación), no paramétricos (Pruebas de bondad Chi cuadrado para el ajuste y pruebas de independencia y varianzas, pruebas de Friedman, pruebas Kruskal-Wallis, pruebas Lilliefors, pruebas Wilcoxon Signed-Rank para una y más variables), Probabilidades (crea tablas de probabilidades exactas para 18 tipos de distribuciones), Pronóstico Estocástico (jump difusión., reversión a la media y caminatas aleatorias), análisis de series de tiempo (ARIMA, Auto ARIMA automático y 8 modelos de descomposición de series de tiempo), Analisis de Regresión (regresión múltiple y componentes principales de análisis)

Version 1.0 BETA Inglés, escrito en Java y PHP que pueden correrse en Explorador de Internet, Netscape o Firefox

Corre sobre 800 funciones y modelos, se basa en un sistema por suscripcion para un límite de tiempo y número de usos, compatible con funciones y modelos del Modeling Toolkit

ROV Modeler, Optimizer, Valuator
Simulation, Forecasting, Optimization and Advanced Analytics on a Desktop and Server Environment with Large Datasets

ROV Extractor and Evaluator
ROV Extractor y Evaluator que extrae modelos de excel en códigos de matemática pura para protección IP y simulaciones y cálculos Hyperspeed

ROV Compiler
Extrae y Convierte Modelos de Excel en Software Licenciado, Protegido y Ejecutable

ROV Dashboard
Gestión y Manejo de Graficas y Tablas online

ROV BizStats
Basico estadístico excel adición de herramientas

ROV Web Calculators
Calculador ROV WEB sobre 800 funciones y modelos online así como calculadoras WEB

Risk Simulator
Monte Carlo Simulation, Pronóstico Estocástico, Optimización de Portafolio, Herramientas Analíticas

Real Options SLS
Real Options SLS soluciona multiples tipos de Opciones Reales, Opciones Exóticas, Opciones Financieras, y Stock Options para empleados

Modeling Toolkit
800 funciones y 300 modelos

ESO Valuation Toolkit
Values Regular and Customized Employee Stock Options

Version 5.0 Ingles, Español, Japonés, Chino, Trabajando con windows XP y Vista, Excel XP, 2003 y 2007, y MAC sistema que corre en paralelo con o Emulador Windows, escritos en C-# plataforma de Microsoft NET 2.0

24 Distribuciones, Reportes detallado, Simulaciones correlacionadas con Cópulas, distribuciones truncadas, simulación histórica con distribuciones personalizadas Delphi, simulación Bootstrap no- paramétrica, gráficas interactivas, gráficas superpuestas, simulación de ecuaciones dentro de Excel y mucho más

ARIMA, Arima Automático, Econometría Automática, Econometría Basica, Cubic Spline Cúbicos, GARCH, Curvas J, Estimadores de Máxima Verosimilitud, Regresión Multivariada, Extrapolación No lineal, Curvas S, Procesos estocásticos, Descomposición de Series de tiempo, Lineas de Tendencia

Optimización Lineal, No lineal, Estática, dinámica y estocástica, optimización con variables de decisión binarias, enteras y continuas, análisis de frontera eficiente y resultados analíticos detallados. (Matrices Hessianas y gradientes)

Diagnóstico de datos, extracción de datos, análisis detallado estadístico, reportes detallados, ajuste de distribución, gráficas superpuestas, análisis de escenarios, analisis de segmentación, analisis de sensibilidad, perfil de simulación, gráficas Spider (araña), analisis de tornado y pruebas avanzadas incluyendo heterocedasticidad, micronumerosidad, outliers, no linealidad, autocorrelación, normalidad, esfericidad, no estacionalidad, multicolinealidad y significancia estadística en las correlaciones

Version 5.0 Ingles, Español, Japonés, Chino, Portugués, trabajando en Windows XP y Vista, Excel XP, 2003 y 2007 y Sistema MAC que corre con paralelos o con emulador de windows, escrito en la plataforma C# Microsoft .NET 2.0

Corre redes binomiales, trinomiales, cuadrantomiales, pentantomiales, modelos de forma cerradas, metodos analíticos (reduccion de varianza), Precios de estado, y muchos modelos que son creados por usted mismo como modelos de opciones con ecuaciones visibles y con herramientas que son compatibles con Risk Simulator y que pueden ser creados tanto en formato excel como en aplicaciones de software autónomo, capaz de resolver innumerables tipos de opciones con un completo modo de personalizarlo

Más de 300 modelos en forma cerrada y funciones que cubren todo tipo de opciones exóticas y modelos afines con las opciones (opciones de bonos, volatilidad, cambios de volatilidad, hedge ratios y mucho más)

Opciones Reales como Opciones compuestas secuenciales, Opciones phased stage-gate y opciones de activos multiples, con combinaciones de opciones de abandono, barrera, expansión, contracción intercambio, espera y aplazamiento, y cualquier opción real definida por el usuario, con la capacidad para mezclar y ajustar opciones (mutuamente excluyentes y opciones anidadas)

Las Opciones financieras incluyen todo tipo de mezcla de activos multiples y opciones benchmark, de garantía, convertibles, vehículos financieros estructurados, para Opciones Americanas, Europeas, Bermuda y opciones Asiaticas, así como para cualquier opción elaborada por Usted

Stock Options para empleados y las que usted diseñe a gusto personal

Version 1.2, en Inglés, con más de 300 ejemplos y 800 funciones en Excel escritas en Visual Basic 6 y VBA excel, donde los modelos y funciones de Excel son todas accesibles en Excel para ser usadas dentro de sus propios diseños ya existentes

Análisis de crédito (análisis primas de crédito, crédito externo y analisis de credito de Mercado y modelos de clasificación de crédito interno), análisis de deuda (modelos de paridad de activo-patrimonio, Modelos Cox, Modelos estocásticos Merton, modelos estructurales de Vasicek para determinar el valor del riesgo de la deuda, rendimientos y comportamientos de reversión a la media de las tasas de interés, así como la aplicación del análisis de Opciones Reales para determinar el Valor en Riesgo de deuda y los requerimientos de rentabilidad), Pronósticos (Modelo econométrico de Box-Jenkins ARIMA, Series de Tiempo, extrapolación no lineal y regresiones multivariadas, Estos modelos usan el software Risk Simulator que es parte de la edición de Premium), Riesgo Operacional (modelos Queueing y análisis plantillas de riesgo operacional), Optimización (Modelos de Optimización Estocástica discreta, continua y dinámica que son usados para determinar la más eficiente y efectiva cuota de asignación del riesgo para portafolios de crédito, Determinación del Valor en Riesgo, asset allocation, oportunidades de inversión, y simulaciones de Merton para el riesgo de crédito externo al perfil de la compañía), Probabilidad de impago (la herramienta incluye Mercado interno y externo y modelos de crédito empiricos de impago. Aplicamos modelos de opciones para determinar riesgo de crédito de impago, Riesgo de impago estocástico, probabilidad empírica de impago y el distanciamiento del mismo), Risk Hedging (Modelos de Cobertura Delta, Modelos de hedging Delta Gamma, modelos de hedging de cambio extranjero y otras herramientas que provee el toolkit), Analisis de sensibilidad (Las Griegas de las Opciones así como el cálculo de Duraciones y Convexidades para el mercado de Bonos, Valoración (de moneda extranjera, foreign-based equity, opciones sobre commodities y cálculo de forwards para determinar el Valor en Riesgo de la cobertura. Otros modelos como el de Derivados perpetuos y opciones exóticas están incluidas), Valor en Riesgo (la herramienta incluye modelos de valoración de riesgo determinados por Basilea II), Modelo de curvas de rendimiento (modelos de interpolación, extrapolación, revertimientos, Modelos Bin y Vasicek. Con el Risk Simulator se puede simular reversión a la media, jump diffusion, y caminatas aleatorias para la valoración de precios y tasas de interés), El ESO Valuation Toolkit valora Stock Options para empleados

Version 1.2 ingles, trabaja con windows XO y Vista, Excel XP 2003 y 2007 y el sistema MAC Parallels or Windows Emulator, escrita en Visual Basic 6 y Excel VBA

Completa funcionalidad en Excel como un add-in de complemento, tiene funciones ESO y modelos de plantillas de ejemplos, para resolver Opciones Americanas, Europeas y Bermuda...La parte Analítica es compatible con el REAL OPTION SLS (uso del SLS para Opciones personalizadas y más avanzadas)

RISK SIMULATOR

RISK SIMULATOR 5.0

Simulación de Monte Carlo

25 distribuciones de probabilidad con una interfase fácil de usar, posee un módulo de simulación Super Rápida (miles de iteraciones en pocos segundos) con reporte de estadísticas, distribución de correlaciones con Cópulas, truncamiento, simulaciones multidimensionales y funciones del Risk Simulator en Excel

Herramientas Analíticas

Bootstrapping, Segmentación de grupos, Reportes completos, Extracción e importación de datos, Diagnóstico de datos, Ajuste de Distribuciones, Distribución de Probabilidades (PDF, CDF, ICDF), Pruebas de Hipótesis, Gráficos Superpuestos, Análisis de Sensibilidad, Análisis de escenarios, Análisis Estadístico, Gráficos de Tornado y Araña.

Pronostico

ARIMA Box-Jenkins, ARIMA Automático, Econometría Básica, Econometría Automática, Spline Cúbicos, Distribuciones personalizadas, Modelos GARCH, Curvas J y S, Cadenas de Markov, Máxima Verosimilitud, Regresión Múltiple, Extrapolación No lineal, Procesos Estocásticos, Descomposición de Series de Tiempo, Tendencias

Optimización

Optimización Estática, Dinámica y Estocástica con Variables De Decisión continuas, discretas y enteras, Frontera Eficiente, Optimización Lineal y No Lineal



QUE ES EL ANALISIS DE RIESGO?

Cómo toma decisiones críticas en los negocios? Ud. considera los Riesgos de Sus proyectos y Decisiones o está más enfocado únicamente a la rentabilidad? Le toma tiempo entender qué es el Riesgo, y cómo cuantificarlo? Pues bien, nuestro Software RISK SIMULATOR le ayudará a identificar, cuantificar y valorar el Riesgo en sus proyectos y Decisiones.

RISK SIMULATOR es un poderoso software que funciona como un add-in de Excel para aplicar la Simulación, Pronóstico, Análisis Estadístico y Optimización de sus modelos existentes en hojas de cálculo en Excel. El software fué desarrollado específicamente para ser muy fácil de usar. Por ejemplo corriendo una simulación es tan simple como 1-2-3: coloque una entrada, coloque una salida y córralo. La realización del pronóstico puede ser tan simple como 2 o 3 clicks con el mouse y el software hace todo por Ud. automáticamente, con reportes en detalle, gráficos y resultados numéricos. Se ha desarrollado en Inglés, Español, Chino, y Japonés, próximamente en otros lenguajes.

Si tenemos la tecnología para enviar naves espaciales a través del sistema solar, porqué no podemos gastar un poco más de tiempo cuantificando el Riesgo? Tal tecnología ya existe y el RISK SIMULATOR encapsula estas metodologías avanzadas en una herramienta simple y amigable de usar. Tenemos libros, entrenamiento en tiempo real (Certificado en Gestión de Riesgo), seminarios, DVDs de entrenamiento, consultoría y muestras gratis de videos para empezar en el análisis y modelaje del Riesgo en nuestra página web.

RISK SIMULATOR está también integrado con nuestro otro software el cual incluye: Real Options Super Lattice Solver, Employee Stock Options Valuation Toolkit, Modeling Toolkit (800 Funciones y 300 Modelos), ROV Modeler, ROV Optimizer, ROV Valuator, ROV Basel II Modeler, ROV Compiler, ROV Extractor and Evaluator, and ROV Dashboard. Por favor visite nuestra página web para más detalles.

DETALLE DE LOS MODULOS

SIMULACION DE RIESGO CON MONTECARLO

25 Distribuciones de Probabilidad con una interfase muy fácil de usar, corriendo (miles de iteraciones en pocos segundos) con reporte de estadísticas, distribución de correlaciones con Cópulas, truncamiento, simulaciones multidimensionales y funciones del Risk Simulator en Excel.

HERRAMIENTAS ANALITICAS

Bootstrapping, Segmentación de grupos, Reportes completos, Extracción e importación de datos, Diagnóstico de datos, Ajuste de Distribuciones, Distribución de Probabilidades (PDF, CDF, ICDF), Pruebas de Hipótesis, Gráficos Superpuestos, Análisis de Sensibilidad, Análisis de escenarios, Análisis Estadístico, Gráficos de Tornado y Araña.

PRONOSTICOS

ARIMA Box-Jenkins, ARIMA Automático, Econometría Básica, Econometría Automática, Spline Cúbicos, Distribuciones personalizadas, Modelos GARCH, Curvas J y S, Cadenas de Markov, Máxima Verosimilitud, Regresión Múltiple, Extrapolación No lineal, Procesos Estocásticos, Descomposición de Series de Tiempo, Tendencias y más! Estamos trabajando para ofrecer técnicas más avanzadas en futuras versiones.

OPTIMIZACION

Optimización Estática, Dinámica y Estocástica con Variables De Decisión continuas, discretas y enteras, Frontera Eficiente, Optimización Lineal y No Lineal con altos niveles de precisión.

MATERIAL DE SOPORTE

- 5 LIBROS en análisis de Riesgo, simulación, pronóstico, Optimización, Opciones Reales y valoración de Opciones escritos por el creador del software.
- DVD de entrenamiento en análisis de Riesgo (simulación, pronóstico, Optimización, Opciones Reales y estadísticas aplicadas a los negocios).
- Entrenamiento en vivo y certificación en cursos sobre Manejo General de Riesgo, Simulación de Riesgo, Pronóstico, Optimización, y análisis de Opciones Reales.
- Manual detallado, archivo de ayuda y una extensa biblioteca de archivos con ejemplos.
- Consultores de Proyecto con grados académicos avanzados y años de consultoría así como experiencia en la industria.

TRIAL Y VERSIONES ACADEMICAS

RISK SIMULATOR puede ser descargado inmediatamente desde nuestra página web con una licencia para 10 días. Nuestra filosofía es que Ud. lo pruebe antes de comprarlo. Una vez Ud. lo usa Ud. se enamorará con la simpleza de uso y lo poderoso de la herramienta convirtiéndose en una parte indispensable para Ud. Tenemos también licencias académicas para profesores de tiempo completo que enseñen análisis de riesgo o para otros cursos asociados usando el RISK SIMULATOR u otro de nuestros de Software. Contáctenos en admin@realoptionsvaluation.com para más detalles.

ENTRENAMIENTO Y CONSULTORIA

Las herramientas de Análisis avanzado como el software RISK SIMULATOR fueron construidas para ser fáciles de usar pero pueden generar problemas si son usadas de manera inapropiada. La comprensión teórica combinada con la experiencia pragmática es vital, por lo tanto el entrenamiento es crítico.

Nuestro curso de **Análisis de Riesgo** es un seminario de 2 días que está enfocado en el uso del software con tópicos que cubren la parte básica del riesgo y la incertidumbre, usando simulación de Montecarlo y todos los métodos detallados en pronóstico y optimización.

Tenemos también un curso sobre **Opciones Reales para Analistas** que deseen empezar a aplicar Opciones Reales en su trabajo pero que no tienen la experiencia con la parte analítica de las Opciones Reales ni su modelaje. Este es un curso de 2 días que trata sobre como establecer los modelos de Opciones Reales, solucionando problemas de Opciones reales usando simulación, redes binomiales y multinomiales usando el software Real Options SLS.

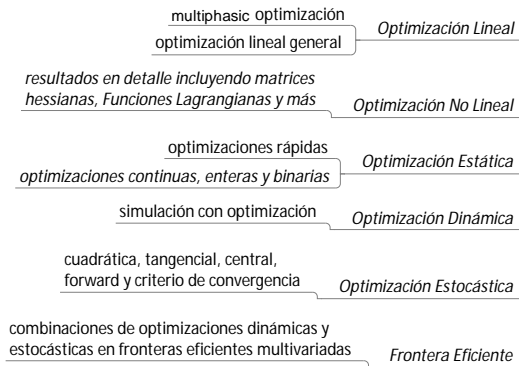
El **Certificado en Gestión de Riesgo (CRM)** es un seminario de 4 días que cubre el material en nuestro curso de Análisis de Riesgo y el curso de Opciones Reales para analistas orientados hacia la certificación que otorga el International Institute of Professional Education and Research.

Nuestro curso de **Análisis de Riesgo para Gerentes Senior** es un seminario de 1 día especialmente diseñado para ejecutivos senior donde por medio de análisis de casos se revisarán experiencias en Gestión de Riesgos en compañías como 3M, Airbus, Boeing, GE entre otras. En él se ofrece a los ejecutivos una visión general de análisis de Riesgo, Opciones reales, Optimización de Portafolio, pronóstico y conceptos de Riesgo sin detalles técnicos.

También están disponibles cursos de análisis de Riesgo y Valoración hechos a la medida de su empresa y sus necesidades. Están disponibles Servicios de consultoría incluyendo la formulación de problemas y análisis de Riesgo, Simulación, Pronóstico, Opciones Reales, Construcción de modelos y diseño de software hecho a la medida.

EXPERIENCIA

El creador de este software es el **Dr. Johnathan Mun**. Profesor de Análisis de Riesgo y **Opciones Reales para Analistas, Análisis de Riesgo para Gerentes** y para el **Certificado de Gestión de Riesgos**, entre otros cursos. Ha sido consultor para muchas empresas del Fortune 500 (3M, Airbus, Boeing, General Electric, Motorola entre otras) y del Gobierno de los Estados Unidos (Departamento de Defensa, Agencias Estatales y federales) en Análisis de Riesgo, Valoración y Opciones Reales. El Dr. Mun ha escrito diversos libros sobre el tema como: *Real Options Analysis: Tools and Techniques, 1st and 2nd Edition (Wiley Finance, 2005, 2002)*; *Real Options Analysis Course: Business Cases (Wiley Finance, 2003)*; *Applied Risk Analysis: Moving Beyond Uncertainty in Business (Wiley, 2003)*; *Valuing Employee Stock Options Under 2004 FAS 123 (Wiley Finance, 2004)*; *Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Forecasting and Optimization (Wiley, 2006)*; *Advanced Analytical Models: 800 Functions and 300 Models from Basel II to Wall Street and Beyond (Wiley 2008)*; *The Banker's Handbook on Credit Risk: Implementing Basel II (Elsevier Academic Press 2008)*; El Dr. Mun es el fundador y CEO de REAL OPTIONS VALUATION INC. Y es el responsable del desarrollo de productos de Software para análisis, consultoría y entrenamiento. Anteriormente fué Vicepresidente de Análisis en Decisioneering, Inc (ORACLE), fué Gerente de Consultoría de KPMG, también fué Jefe de Pronósticos Financieros para Viking, Inc (Compañía de FedEx). El Dr. Mun también es Profesor en the U.S. Naval Postgraduate School y the University of Applied Sciences and Swiss School of Management (Zurich y Frankfurt), así como professor adjunto en otras Universidades. Posee un Ph.D. in Finance and Economics, un MBA in business administration, y un M.S. in the area of management science, un BS in applied sciences. Posee el Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM).



Optimización

Diagnóstico de Datos
 corre pruebas en heterocedasticidad, micronumerosidad, outliers, no linealidad, autocorrelación, normalidad, estacionalidad, multicolinealidad y correlaciones

Extracción y Exportación de datos
 extract data to Excel or flat text files and Risk Sim files, runs statistical reports and forecast result reports

Abrir e Importar Datos

Análisis de Distribuciones
 calcula exáctamente PDF, CDF y ICDF de 24 distribuciones y genera tablas de probabilidad

Diseño de Distribuciones
 crea sus propias distribuciones personalizadas

Ajuste de Distribuciones (Unica)
 pruebas de Kolmogorov- Smirnov y Chi cuadrado en 23 distribuciones

Ajuste de Distribuciones (Múltiple)
 corre multiples variables simultáneamente

Pruebas de Hipótesis
 prueba si dos pronósticos son estadísticamente similares o diferentes

Bootstrap No Paramétrico
 simulación de las estadísticas para obtener la precisión de los resultados

Gráficos Superpuestos
 gráficos superpuestos de las variables supuesto y de los pronósticos totalmente personalizados (tipos de gráficos CDF, PDF, 2D/3D)

Análisis de Escenarios
 cientos y miles de escenarios estáticos bidimensionales

Segmentación de Grupos
 Grupos de datos dentro de clusters estadísticos para la segmentación de sus datos

Análisis de Sensibilidad
 sensibilidad dinámica (análisis simultáneo)

Análisis Estadístico
 estadística descriptiva, ajuste de distribuciones, histogramas, gráficos, Extrapolación no lineal, Prueba de normalidad, Estimación de parámetros estocásticos, pronóstico de seris de tiempo, proyecciones de líneas de tendencia, etc

Análisis de Tornado
 perturbación estática de sensibilidades, análisis de tornado y araña y tablas de escenarios

Risk Simulator 5.0

Análisis

Pronosticos

ARIMA Modelos autoregresivos Integrados de medias móviles ARIMA (P, D, Q)

ARIMA AUTOMÁTICO
 Corre las combinaciones más comunes del ARIMA para encontrar el modelo que mejor se ajusta

Econometría Automático
 Corre miles de combinaciones y permutaciones para obtener el mejor modelo que se ajusta a los datos existentes (lineal, no lineal, retrasos)

Econometría Básica
 Modelos de Regresión interactivos, lineales y no lineales

Spline Cubico
 Interpolación y extrapolación No lineal

GARCH
 Proyecciones de volatilidad usando modelos autorregresivos con heterocedasticidad condicional

Curvas J-S
 Curvas Exponenciales J y Logísticas S

Cadenas de Markov
 two competing elements over time and market share predictions

Modelos de Máxima Verosimilitud
 Basados en Regresiones logisticas para pronosticar la probabilidad de un evento

Análisis de Regresión Múltiple
 Regresión lineal y no lineal, regresión gradual con reportes detallados

Extrapolación No lineal
 Pronóstico de series de tiempo No lineales

Procesos Estocásticos
 Pronósticos usando simulación y Movimiento Browniano Exponencial y geométrico, Reversión a la media, Jump Difussion, y procesos mixtos

Análisis de Series de Tiempo
 8 modelos de descomposición de series de tiempo para predicción de tendencias, niveles y estacionalidad

Lineas de Tendencia
 lineal, no lineal, potencia, exponencial, promedios móviles con bondad de ajuste

Configuración General

Inglés, Español, Japonés, Chino

Gráficos y colores totalmente personalizados (tipo de gráfico, color, 3D y mucho más)

Manuales del usuario en diferentes idiomas y modulos de ayuda

23 modelos de ejemplo en detalle

El Risk Simulator 5.0 Se puede vincular al Real Options SLS y al Modeling Toolkit

Todos los análisis vienen con reportes detallados

Las funciones del Risk Simulator totalmente compatibles con Excel. Unicamente para tener soporte necesita un right-click y listo

Funciona perfectamente con otros Software ROV incluyendo : Real Options SLS, Modeling Toolkit, Basel Toolkit, ROV Compiler, ROV Extractor and Evaluator, ROV Modeler, ROV Valuator, ROV Optimizer, ROV Dashboard, ESO Valuation Toolkit, y otros

Simulación

24 Distribuciones Estadísticas

Simulación Super Speed
 Corre 100000 iteraciones en pocos segundos

Distribución Personalizada
 Diseña sus propias distribuciones, corre simulaciones históricas y aplica el Método Delphi

Distribuciones Discretas y Continuas
 Simulaciones correlacionadas, truncado, simulación multidimensional

Distribuciones como Funciones de Excel
 Establece variables supuestos como entrada y variables pronóstico como variables de salida usando funciones dentro de Excel

Correlations
 correlaciona simulaciones con cópulas

Normal, triangular, uniforme, personalizada, Bernoulli, beta, binomial, Cauchy, chi cuadrado, uniforme, exponencial, F, gama, Geométrica, gumbel, hipergeométrica, logistica, lognormal, binomial negativa, pareto, poisson, Rayleigh, T, weibull

Estadísticas del Pronóstico de las Variables de Decisión

Activo 1

Número de Datos: 20.0000
 Media: 0.3046
 Mediana: 0.3022
 Desviación Estándar: 0.0087
 Varianza: 0.0001
 Desviación Promedio: 0.0071
 Máximos: 0.3222
 Mínimos: 0.2904
 Alcance: 0.0318
 Sesgo: 0.4124
 Curtosis: -0.5558
 Percentil 25%: 0.2977
 Percentil 75%: 0.3082
 Precisión de Error al 95%: 0.0125

Activo 2

Número de Datos: 20.0000
 Media: 0.1933
 Mediana: 0.1948
 Desviación Estándar: 0.0059
 Varianza: 0.0000
 Desviación Promedio: 0.0044
 Máximos: 0.2100
 Mínimos: 0.1865
 Alcance: 0.0235
 Curtosis: -0.5558
 Percentil 25%: 0.1865
 Percentil 75%: 0.2082
 Precisión de Error al 95%: 0.0125

Pronósticos de Procesos Estocásticos

Los Procesos Estocásticos son secuencias de eventos o rutas generados por leyes de probabilidad donde pueden ocurrir eventos aleatorios en el tiempo pero están regidos por reglas de probabilidad y estadísticas específicas. Útiles para pronosticar eventos aleatorios (p.ej. precios de acciones, tasa de interés, precio de la luz).

Métodos:
 Movimiento Browniano (ruta aleatoria) con Deriva
 Movimiento Browniano Exponencial (ruta aleatoria) con Deriva
 Proceso de Reversión por un Medio con Deriva
 Proceso de Difusión por Salto con Deriva
 Proceso de Difusión por Salto con Deriva y Reversión por un Medio

Valor Inicial: 100
 Rango de Deriva o Crecimiento (%): 5
 Volatilidad anualizada (%): 25
 Horizonte del Pronóstico (Años): 10
 Rango de Reversión (%): 5
 Valor a Largo Plazo: 120
 Rango del Salto (%): 10
 Tamaño del Salto: 100
 Número de Etapas: 10
 Iteraciones: 10
 Comienzo Aleatorio
 Mostrar Todas las Iteraciones

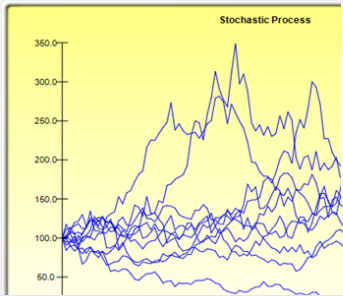
Resumen Estadístico

Un Proceso Estocástico en una secuencia de eventos o caminos generados por aleatorios pueden ocurrir en el tiempo, pero son regidos por leyes estadísticas y Estocásticos incluyen la Caminata Aleatoria o el tiempo pero están regidos por reglas de probabilidad y estadísticas específicas. Útiles para pronosticar eventos aleatorios (p.ej. precios de acciones, tasa de interés, precio de la luz).

El proceso de Movimiento Browniano de Caminata Aleatoria puede utilizarse para básicos o commodities, y otros datos estocásticos de datos se series se tiempo volatilidad alrededor de la trayectoria o sendero originado por la deriva. El proceso las fluctuaciones del Proceso de Caminata Aleatoria, permitiendo al sendero haciéndolo muy útil para pronosticar variables de series de tiempo que tienen una tasa inflación (estas son tasas objetivo a largo plazo determinadas por las autoridades). Salto es muy útil para pronosticar datos de series de tiempo cuando las variable como los precios del petróleo o el precio de la electricidad (eventos eternos y drásticamente). Finalmente, estos tres procesos estocásticos pueden mezclarse y Los resultados a la derecha indican la media y la desviación estándar de todas las iteraciones. Muestra Todas las Iteraciones, cada ruta de las iteraciones se mostrará abajo muestra un ejemplo de un conjunto de varias rutas de iteraciones.

Proceso Estocástico: Movimiento Browniano (ruta aleatoria) con F

Valor Inicial	100	Pasos	100.00
Tasa de Deriva	5.00%	Iteraciones	10.00
Volatilidad	25.00%	Tasa de Regresión	N/A
Horizonte	10	Valor a Largo Plazo	N/A



Optimización Completa

Resultado de Optimización

Problem Parameters:
 Number of Variables is 12
 Number of Functions is 1
 OBJECTIVE FUNCTION WILL BE MAXIMIZED

Function	Name	Status	Type	Initial Value	Lower Bound	Upper Bound
g	OBJ	2.4873				
h	RNGF	6.5000			-1.000000E+010	0.000000E+000
variables	Variable	Name	Status	Initial Value	Lower Bound	Upper Bound

Los valores óptimos se han encontrado. ¿Desea utilizar reemplazar las variables existentes de la decisión con los valores óptimos encontrados o con los valores existentes?

Estadísticas Descriptivas

Estadísticas Descriptivas

Desviación Estándar (Muestral)	172.0140
Desviación Estándar (Poblacional)	171.1781
Intervalo de Confianza Inferior para la Desviación Estándar	148.6590
Intervalo de Confianza Superior para la Desviación Estándar	207.7947
Varianza (Muestral)	29899.2589
Varianza (Poblacional)	29307.2736
Coefficiente de variabilidad	0.9210
Primer Cuartil (Q1)	188.0000
Tercer Cuartil (Q3)	435.0000
Rango Intercuartilico	247.0000
Asimetría o sesgo	0.4838
Curtosis	-0.0952

Resultado Ajustado de la Distribución

Distribución	Estudio Estadístico	Valor-P	Rango
Normal	0.02	99.99%	2
Gamma	0.03	98.83%	2
Logarítmica Normal	0.03	97.19%	4
Logística	0.03	97.19%	3
Gumbel Mínimo	0.05	73.91%	5
Gumbel Máxima	0.05	57.47%	6
Cauchy	0.07	26.58%	7
Triangular	0.08	15.90%	8
Chi-Cuadrada	0.10	3.11%	9
Pareto	0.15	0.04%	1
Uniforme	0.21	0.00%	0
T	0.36	0.00%	0
Exponencial	0.42	0.00%	0
F	0.92	0.00%	0
Weibull	1.00	0.00%	0
Rayleigh	1.00	0.00%	0
Beta	1.00	0.00%	0

Resumen Estadístico: Normal, Mu = 100.67, Sigma = 10.40. Estudio Estadístico Kolmogorov: 0.02, Valor-P: 99.99%.

Gráfica Sobrepuesta

Supuestos y pronósticos: Celda Seleccionada: Ingreso Neto A, Ingreso Neto B, Ingreso Neto E.

Propiedades de la simulación

Nombre del Supuesto: Sample

Media = 0.0000, Desv. Est. = 4.0825, Asimetría = 0.0000, Curtosis = -0.6000

Habilitar Correlación: . Habilitar Límites de Información: . Habilitar Simulación Dinámica:

Supuesto	Ubicación	Correlación
SF56	Reporte...	0
Normal (Multi)	Reporte...	0
Uniforme	Reporte...	0
Binomial	Reporte...	0

Resumen Estadístico

Distribución Empírica contra Teórica

Estudio Estadístico Kolmogorov: 0.02, Valor-P: 99.99%.

R	100
Promedio	100
Desviación Estándar	10
Asimetría	0
Curtosis	-0

Ingreso Neto - Pronóstico del Simulador de Riesgo

Histograma Estadísticas Preferencias Opciones Controles

Tipo de Gráfico: Bar. Grafica Sobrepuesta: Continua. Título: Ingreso Neto (1000 Trial). Grafica Eje -X: 4. Decim.

Distribución Ajuste - Completa

	Real	Teórico
Normal	0.86	0.86
Fit Stats: 0.02	Desv. Est. 0.19	0.20
	Asimetría -0.12	0.00
	P-Value: 0.9421	Curtosis -0.45

Controles: Continúa, Separada, Ajuste.

Ingreso Neto - Pronóstico del Simulador de Riesgo

Histograma Estadísticas Preferencias Opciones Controles

Ingreso Neto (1000 Trials)

Estadísticas: Tipo Doble v inculo, 0.5307, 1.1739, Certeza %, 90.00.

Ingreso Neto - Pronóstico del Simulador de Riesgo

Estadísticas	Resultado
Número de simulaciones	1000
Media	0.8626
Mediana	0.8674
Desviación Estándar	0.1933
Variación	0.0374
Coefficiente de la Variación	0.2241
Máximo	1.3570
Mínimo	0.3019
Rango	1.0551
Asimetría	-0.1157
Curtosis	-0.4480
25% Percentil	0.7269
75% Percentil	1.0068
Precisión de Error al 95% de Confianza	1.3888%

MODIFICACIONES EN EL SIMULADOR DE RIESGO 5.0

A continuación se enlista las mejoras y herramientas disponibles en la última versión del Simulador de Riesgo, así como las mejoras desde sus previas versiones:

Mejoras de la versión 5:

- **Simulación Súper Veloz:** Esta nueva capacidad permite ejecutar el simulador a la máxima velocidad desde el primer análisis del modelo de Excel y posteriormente codifica el modelo al código matemático puro, logrando ejecutar el simulador en su máxima velocidad. Algunos modelos que no puede ser codificadas serán simuladas a la velocidad normal (por ejemplo, modelos con funciones de VBA y macros, ligas a los datos externos o archivos, funciones erróneas o sin fundamento y modelos con errores).
- **Iconos revisados en Excel 2007:** Los usuarios de Excel 2007 encontrará los íconos de la herramienta completamente renovadas, siendo más intuitivas y amigable. Podrá encontrar 4 íconos de ajuste para mayor resolución de la pantalla (1280 x 760 y más resolución).
- **Mejora en los Gráficos de Pronóstico:** Los gráficos del pronóstico ahora cuenta con las siguientes mejoras:
 - **Estadística Truncada:** Si ejecuta algunos datos filtrando en la gráfica del pronóstico (Sección de Filtro de Datos en la gráfica de opciones), la gráfica de estadística mostrará la estadística actualizada basado en el ajuste de datos truncados. Si no se truncó los datos de pronóstico, las estadísticas de todos los datos ajustados se mostrarán normal.
 - **Controles de los gráficos (3D/Inclinar /Mover, Colores, Ajustar, PDF/CDF).** Esta es la nueva gráfica dentro de la gráfica de pronóstico por medio del cual podrá modificar los gráficos del pronóstico existente incluyendo la realización del ajuste distribucional en el ajuste de los datos de pronóstico, crear sobreposición de gráficos de PDF/CDF/ICDF, cambiar las opciones de los gráficos (tipos de los gráficos, rotación de 3D, colores, zoom, inclinación, número de los decimales, valores mínimos y máximos para graficar sobre los ejes, nombre del título, y otras más opciones, incluyendo la habilidad para guardar los ajustes revisados e imprimir los gráficos en varios formatos).
- **Auto Econometría:** Esta nueva herramienta de pronóstico es utilizado para ejecutar cientos, incluso miles de combinaciones de modelos y permutaciones aplicando una inteligente heurística para determinar el modelo que mejor ajusta a los datos por medio de exámenes lineal, no-lineal, retardadas, adelantadas interactuadas, jerarquizadas y otros modelos. Esta herramienta es la contraparte de auto econometría detallada en el software de Modelador de Riesgo de ROV, el cual es capaz de ejecutar cientos de miles de pocos millones de modelos de una gran cantidad de datos.
- **Econometría Básica:** La herramienta de pronóstico existente está mejorado con nuevas capacidades que incluye las habilidades de crear nuevos variables y funciones como el tiempo (variable de series de tiempo lineal), DIFF (primera diferenciación del ajuste de los datos de series de tiempo), RESIDUAL (datos desde términos erróneos de ecuaciones de pronóstico que especificó), TASAS (tasa de primer orden de los datos de series de tiempo), y PRONÓSTICO (datos desde los términos erróneos de ecuaciones de pronóstico que especificó).
- **Análisis de líneas de tendencia:** Esta nueva herramienta ejecuta la línea de tendencia más común que incluye la lineal, no-lineal, exponencial, de fuerza, promedio variable y modelos polinimiales, devolviendo las secuencias de los gráficos así como la prueba de bondad del ajuste para cada modelo.

- **Sobreponer Gráficos:** Esta nueva herramienta de gráficos es utilizado para comparar múltiples supuestos y/o variables de pronóstico trazándolos en los series de tiempo o en la forma sobrepuesta de secciones cruzadas. Esto permite ver rápidamente las similitudes y diferencias en los gráficos de lectura rápida de suposiciones y pronósticos.
- **Segmentación y agrupación:** Esta herramienta es apto para segmentar y agrupar conjuntos de datos grandes en diferentes grupos estadísticamente naturales por medio de la aplicación de algunos algoritmos y heurística inteligente.
- **Crear Tabla de Estadística de los Pronósticos:** Esta nueva herramienta puede crear reportes claves de las estadísticas del pronóstico (por ejemplo, la media, modo medio, desviación estándar, varianza, coeficiente de la variación, oblicuidad, Curtosis) así como los niveles de confianza y probabilidades del resultado de los variables del pronóstico que seleccionó. El resultado es la tabla enlistada de comparación de estadísticas seleccionadas entre los múltiples pronósticos.
- **Flexible adquisición de la Licencia:** Podrá encontrar nuevas mejoras en la adquisición de la Licencia:
 - El control de acceso a usuarios se activó para los usuarios de Vista y en caso de usuarios limitados que sin acceso administrativo podrá también disfrutar de las funciones completas del Simulador de Riesgo al instalar la licencia del programa sin necesidad de realizar alguna otra aplicación. Para instalar el nuevo archivo de licencia que recibió, simplemente inicie Excel, de clic al Simulador de Riesgo, Licencia, Instalar Licencia y examine el archivo de la licencia que le fue otorgado para activar el programa de forma permanente o por el periodo de prueba.
 - El simulador de Riesgo ahora tiene la opción de activar y desactivar ciertas funciones que permitirá personalizar el análisis de riesgo. Por ejemplo, si sólo está interesado en las herramientas del pronóstico del Simulador de Riesgo, será necesario obtener una licencia especial que sólo activará las herramientas del pronóstico, mientras que los demás módulos serán desactivados, que le permitirá ahorrar algún costo sobre el programa. Los cuatros módulos que tendrán la opción de activar y desactivar incluye la Simulación, Pronóstico, Optimización y Herramientas de Análisis. Incluso algunas herramientas específicas de cada módulo podrán ser activadas o desactivadas. Esta personalización esta disponible solamente para licencias de sitios de más de 10 computadoras.
- **Modelo de Pronóstico Avanzado:** Junto con las herramientas y técnicas del pronóstico de la versión 5.0, el Simulador de Riesgo ahora tiene las siguientes metodologías de pronóstico:
 - i. **ARIMA (Promedio Móvil Integral de Auto Regresión)**
 - ii. **Auto ARIMA**
 - iii. **Auto Econometría**
 - iv. **Econometría Básica**
 - v. **Spline Cúbico**
 - vi. **GARCH (Modelos de Autoregresión Generalizada de Heterocedasticidad Condicional)**
 - vii. **Curvas de J**
 - viii. **Cadenas de Márkov**
 - ix. **Maxima Probabilidad**
 - x. **Extrapolación No Lineal**
 - xi. **Regresión**
 - xii. **Curvas de S**
 - xiii. **Procesos Estocásticos**
 - xiv. **Análisis de Series de Tiempo**
 - xv. **Líneas de Tendencia**

Mejoras generales del Simulador de Riesgo Versión 4 en adelante:

- **Las funciones del Simulador de Riesgo de Excel:** Ahora puede acceder a las funciones del Simulador de Riesgo sin Excel con sólo hacer clic sobre la función de inserción en cualquier parte de la hoja de cálculo y desplazar a las funciones empezando con el Simulador de Riesgo. Aquí, puede ajustar las suposiciones así como obtener la estadística del pronóstico del variable del pronóstico. Por ejemplo, Usted puede ejecutar la función normal de la premisa del Simulador de Riesgo para ajustar a la celda la pemisa de la distribución normal o la estadística del pronóstico del Simulador de Riesgo para obtener la estadística de la celda de pronóstico. En el ajuste del pronóstico de la premisa, usted puede aplicar pausa o evaluar temporalmente si se muestra antes o después de ejecutar la simulación (Valor), el nombre de la premisa (Nombre del Variable), el parámetro de la distribución (por ejemplo, Desviación estándar de la Media), así como otros objetos así como valores de percentiles, correlaciones, límites mínimos y máximos. Para los resultados, usted puede usar incluso el *RSForecastStatistic(A1, "Percentile99.9")* para obtener el 99.90 de valores percentiles de la celda A1, donde esta celda tiene el ajuste del parámetro de pronóstico. Las funciones que pueden ser utilizados incluye: "PercentilesXXX", "CertezaXXX", "Media", "Medio", "DesviaciónEstándar", "Varianza", "oblicuidad", y "Curtosis".
- **Clic Derecho en Excel:** Ahora usted puede usar el clic derecho del mouse para acceder a los objetos del Simulador de Riesgo rápidamente en Excel, así como las premisas, ajuste de pronósticos y ejecutar simulación.
- **Percentiles y Medias Condicionales:** En optimización estocástica, las estadísticas adicionales están disponibles ahora, incluyendo Percentiles así como las Medias Condicionales, así como obtener la media mientras que sean $> A$ ó $< A$, los cuales son fundamentales en los cálculos de los valores condicionales en medidas de riesgo.
- **Coefficiente de Variación (CV):** Ahora el valor de desviación media absoluta cambió al Coeficiente de Variación CV en la gráfica de estadísticas del pronóstico, en donde el CV es la desviación estándar dividido por la media, en ocasiones utilizadas como proxy de volatilidad, y es usual como medida relativa de riesgo al comparar diferentes tamaños de proyectos, utilizado así como la tasa de riesgo - rendimiento
- **Análisis de Escenario:** Esta nueva herramienta es utilizado para calcular varios escenarios en el modelo al cambiar uno o dos variables de entrada al mismo tiempo del rango de entradas para determinar los efectos sobre el resultado.
- **Tornado Poderoso:** Opciones y listas adicionales, así como el análisis de Tornado más poderoso y estable, en donde usted puede ejecutar el Tornado a través de múltiples hojas de cálculo, ajustes globales (cambiar el ajuste de prueba de 10% arriba y abajo, que puede controlar si el precedente individual fue cambiado o todo el ajuste de precedente fue cambiado), acentuar o ignorar los posibles valores integrales (a veces los valores integrales son usados como señales en el modelo y esta opción ayuda a identificar precedentes potenciales que desea ignorar para ejecutar el Tornado), nombres de las hojas de cálculo ahora se incluye en las tablas de sensibilidad para una identificación rápida y otras mejoras.
- **Frontera Eficiente:** Esta herramienta de optimización cuenta con la capacidad de ejecutar múltiples ajustes de optimización con cambios de restricciones. Usted puede acceder a ésta herramienta en la ventana de diálogo del Ajuste de Restricciones de la optimización. Esta técnica le permite ejecutar en concurrencia con optimización estática, dinámica y estocástica.
- **Re-habilitación del Simulador de Riesgo:** Esta herramienta está disponible en el menú de *Inicio | Programas | Evaluación de Opciones Reales | Simulador de Riesgo*. Permite

rehabilitar el programa si Windows o Excel deshabilita temporalmente el programa (esto puede ocurrir si hay una pausa poderoso cuando está corriendo la simulación, cuando existe virus o troyano en la computadora o accidentalmente eliminó algunos archivos fundamentales , etc.).

- **Optimización Multifacética:** Ahora los módulos está compuesta con la Optimización Multifacética y el botón de la opción avanzada (se habilita cuando ejecuta la optimización) para la prueba de Optimización Local contra Global. Estas dos aplicaciones cuando se usan juntos con la aplicación avanzada existente, permite al usuario tener más control sobre cómo la optimización va a ejecutarse, incrementando la certeza y dependencia de los resultados.
- **Herramienta Analítica Estadístico:** Seleccione los datos que desea analizar, incluyendo los encabezados y ejecute esta herramienta (se encuentra en *Simulador de Riesgo / Herramientas / Análisis Estadístico*), y encontrará las siguientes formas de análisis:
 - **Estadística Descriptiva**, incluye todos los 4momentos de la distribución así como otras medidas confiables.
 - **Acondicionamiento de la Distribución**, para ajustar si el ajuste de datos puede ser acondicionado a alguna distribución.
 - **Prueba de Hipótesis** para verificar si los datos son estadísticamente similar o diferentes de forma significativa que el valor específico.
 - **Extrapolación No Lineal** para probar si los datos, las series de tiempo son naturalmente no lineales.
 - **Normalidad** muestra si el ajuste de los datos son estadísticamente cercanas a la distribución normal. Esta es una característica muy importante como prueba de hipótesis , así como otras técnicas de modelación requiere de premisas de normalidad.
 - **Estimación de Parámetro Estocástico** para encontrar los parámetros de entrada del camino aleatorio, proceso de media reversiva, difusión con saltos y para decidir si las variaciones expuestas son suficientes para justificar el uso del pronóstico de proceso estocástico.
 - **Auto correlación** muestra los datos si el historial de los datos de series de tiempo pueden ser usado para predecir el futuro.
 - **Pronóstico de Series de Tiempo**, para probar los cambios básicos, tendencias y efectos de estacionalidad de los datos de series de tiempo.
 - **Tendencias Analíticas** para probar que el conjunto de datos sigue la tendencia lineal de tiempo, y si es así, qué nivel de predicción puede tener.
- **Herramienta Avanzada de Diagnóstico de Datos:** Seleccione los datos que desea analizar, incluyendo los encabezados y ejecute esta herramienta (se encuentra en *Simulador de Riesgo / Herramientas / Herramienta de Diagnóstico*), y encontrará las siguientes formas de análisis:
 - Heterocedasticidad.
 - Multicolinealidad.
 - Micro numerosidad.
 - No Linealidad.
 - Erráticos.
 - Autocorrelación.
 - Autocorrelación Parcial.
 - Retraso de Distribución.
 - Normalidad y Esfericidad.
 - No Estacionalidad.
 - Características Estocásticas.
 - Correlación Lineal y No Lineal.
 - Factores de Variación de la Inflación.

- Gráficas Visuales.

Estas pruebas son vitales antes de ejecutar *cualquier* tipo de pronósticos o procesos de análisis de los datos. Cada prueba vienen completos con una fácil comprensión del reporte detallado, por lo que no se requiere de un econometrista experimentado o estadista para comprender e interpretar los resultados.

- **Máxima Probabilidad:** Esto está disponible en (*Simulador de Riesgo | Pronóstico | Máxima Probabilidad*). En donde la iteración de la máxima probabilidad y los procesos de optimización interna son usados para los modelos con variables de respuesta binaria (el variable dependiente es binario, tomando los valores de 0 ó 1). Esta es la clave del análisis discriminativa con múltiples usos (por ejemplo, determinar si el paciente puede desarrollar cáncer dadas algunas características como edad, cigarros fumados, presión sanguínea; o determinar si la línea de crédito o la persona puede incumplir en el préstamo dados los activos de la empresa, la volatilidad de los activos ó la edad de la persona, nivel educacional, antigüedad en el trabajo, etc.).
- **Soporte de Multi-Lenguaje:** Contamos con el soporte de múltiples lenguajes: en Inglés(EEUU), Chino(Simplificado), Español y Japonés, Próximas ediciones con lenguajes adicionales. Usuarios puede hacer cambios de lenguajes mientras está trabaja en el modelo haciendo clic sobre el menú de **Simulador de Riesgo y Lenguajes** y reiniciando Excel.
- **Microsoft .NET Framework 2.0/3.0:** Hemos actualizado completamente nuestro código de fuente para trabajar continuamente con Microsoft .NET Framework 2.0/3.0. Esto traduce a una alta velocidad y mejor compatibilidad con nuevas computadoras.

REAL OPTIONS SUPER LATTICE SOLVER

REAL OPTIONS SLS 5.0

- OPCIONES AMERICANAS, ASIATICAS, BERMUDA, EUROPEAS y personalizadas
- Opciones de abandono, barrera, escogencia, contracción, expansión, esperar y diferir, simultánea, compuesta secuencial, Stage Gate, Opciones de cambio en la volatilidad, Opciones de activos multiples, todos los tipos de opciones financieras, opciones exóticas, Stock Options para empleados.
- Mas de 300 Opciones Exóticas y Avanzadas y opciones relacionadas a modelos (forma cerrada, aproximación americana, precios de estado, opciones sobre bonos, métodos analíticos de reducción de varianza, binomial, reversión a la media trinomial, Jump Difussion cuadranomial, activo dual de composición de arco iris pentanomial, Dual Asset Rainbow Compound, Forfeitures, Suboptimal Exercise, Structured Financial Vehicles, Non-marketability Discount, Performance-Based Options, Simulation-Based Option Valuation, and much more)
- Crea infinitas combinaciones con su propio generador de Opciones
- Corre miles de redes en segundos
- El software está en Ingles, Español, Japonés y Portugués
- Software escalonado en excel en funcionalidad (simulación y optimización compatible)
- Materiales de soporte: 5 libros, DVD de entrenamiento, Cursos en vido, manual del usuario, un archivo de ayuda, una gran biblioteca de archivos ejemplo, casos de negocios, consultas en tiempo real
- Ecuaciones y funciones visibles



REAL OPTIONS SUPER LATTICE SOFTWARE (SLS)

Muévase más allá de los papers académicos y la teoría, y empiece aplicar las Opciones Reales con este nuevo software. Real Options SLS es un software autónomo y sobre hojas de cálculo accesibles para analizar y valorar Opciones Reales, Opciones Financieras, Opciones Exóticas y Stock Options para empleados para incorporarlas dentro y a la medida de los modelos de hojas de cálculo. El nuevo diseño es más sofisticado dado que todas las ecuaciones y funciones matemáticas son visibles, desmitificando la obtención de resultados más fáciles de entender y explicar.

FUNCIONALIDAD DEL SOFTWARE, ALGORITMOS Y MODELOS

- Las Opciones reales como opciones compuestas secuenciales, opciones stage-gate y opciones de múltiples activos, con la combinación de opciones para abandonar, barrera, escoger, contraer, expandir, intercambiar, esperar y aplazar y cualquier otro uso específico; con la posibilidad de combinar y coincidir opciones (mutuamente excluyentes y opciones anidadas)
- Las Opciones financieras incluyen todo tipo de combinación de activos múltiples, opciones de benchmark, de garantía, vehículos de estructura financiera para opciones americanas, europeas, bermuda y asiáticas, así como la que usted quiera crear.
- Usted puede crear su propio modelo de opciones usando ecuaciones predefinidas o sus propias ecuaciones, donde una red de 1000- pasos binomiales puede ser resuelta en pocos segundos (algo que realizado manualmente le tardaría más de 100 años en un computador), también incluye modelos benchmark de forma cerrada, Modelos desde Black-Scholes-Merton a otros modelos avanzados americanos de forma cerrada.
- El software está en Inglés, Español, Japones, Chino, Portugués así como un manual del usuario en múltiples idiomas. El manual tiene ejemplos de estudio de casos y paso a paso enseña técnicas de modelación y solución así como más de 80 modelos de ejemplo en detalle.
- Corre modelos binomiales, trinomiales (Opciones con reversión a la media), cuadrinomiales (Opciones con Jump Diffusion), pentanomiales (Opciones compuestas Arco Iris); así como más de 300 de modelos avanzados de opciones de forma cerrada (Modelos de precios de estado, métodos analíticos, cálculo de Volatilidades, reducción de varianza, Modelos de aproximación Americanos, Valoración de Opciones por técnicas de simulación, todos los tipos de Opciones para Bonos y garantías convertibles, opciones con cambio de volatilidad, otros modelos relacionados con opciones y mucho más.
- El SLS es completamente funcional con Excel, donde puede correr la simulación de Monte Carlo para su modelo de opciones y lo puede enlazar de o para un modelo ya existente en Excel, y aplicar en otros modelos analíticos avanzados como en el Risk Simulator, optimización, pronósticos estocásticos y macros SLSL VBA
- Las ecuaciones y funciones para las redes son totalmente visibles en Excel con un modelo que enlaza ecuaciones dentro del excel y que son completamente visibles,, es muy importante como herramienta para aprender a modelar opciones.
- SLS es una herramienta totalmente personalizable, con la posibilidad de permitir el ingreso de sus propias ecuaciones de opciones SLS
- El efecto de apalancamiento adicional sobre el análisis estático del VPN se adiciona una sofisticación financiera incluyendo una simulación más dinámica, un análisis de Opciones reales y una optimización que usted puede marcar para identificar, valorar, seleccionar y priorizar dentro del proyecto correcto para ganar y comprender bien la valoración estratégica y el manejo flexible de la decisión tomada
- Usted puede evaluar correctamente el valor intrínseco de un proyecto estratégico y eliminar la posibilidad de subvalorar el valor estratégico de ciertos proyectos, identificando y valorando futuras oportunidades estratégicas, así como incorporando nuevas decisiones en el tiempo, en contraposición del enfoque del VPN donde todas las decisiones se toman desde el principio.
- El software SLS es una herramienta que posee procesos fidedignos, repetibles y consistentes para para la toma de decisiones con un uso de manera amigable que le proveerá de las más poderosas herramientas para resolver problemas que no se pueden resolver de otro modo
- 5 libros de análisis de riesgo, opciones reales y valoración de opciones escritos por el creador del software y una serie de DVD de entrenamiento de Opciones Reales y Análisis de Riesgo (simulaciones, optimización, opciones reales, y estadística aplicada)

TRIAL y VERSION ACADEMICA

El software REAL OPTIONS SLS puede bajarse inmediatamente desde nuestro sitio web por un tiempo de 10 días de licencia. Nuestra filosofía es que usted entrene antes de comprarla, luego de que usted la use, estamos convencidos que se enamorará de la simplicidad y del poder de estas herramientas que serán parte indispensable de sus herramientas de modelaje financiero. También se tiene una licencia académica para los profesores de tiempo completo que enseñan Análisis de Riesgo (y para sus estudiantes) o para otros cursos asociados que utilicen el Real Options SLS u productos de software de nuestra compañía. Por favor contáctenos para más detalle en admin@realoptionsvaluation.com

ENTRENAMIENTO Y CONSULTORIA

Herramientas Analíticas avanzadas como el software de Risk Simulator son construidos para un uso fácil, sin embargo si se usa inapropiadamente puede generar problemas. La comprensión de la teoría junto con una aplicación pragmática es vital, por lo tanto el entrenamiento es crítico.

Nuestro curso de Análisis de Riesgo es un seminario de dos días enfocado en un entrenamiento dado por un software, con temas que cubren lo básico en riesgos e incertidumbre y el uso de la simulación de Montecarlo y todos los métodos para pronóstico y optimización.

También tenemos un curso de Opciones Reales para analistas que quieran empezar a implementar inmediatamente Opciones reales en su trabajo, pero que no poseen la experiencia en el análisis y modelación de las opciones reales. En estos dos días de aprenderá como desarrollar un modelo de opciones reales, y a solucionar problemas de Opciones Reales usando simulación, soluciones matemáticas de forma cerrada, redes binomiales y multinomiales usando el software SLS.

El seminario de Certificación en la Gestión de Riesgo (CRM) es de 4 días y cubre el material de nuestros cursos de Análisis de Riesgo y de Análisis de Opciones Reales orientando hacia la certificación CRM provista por el Instituto internacional de profesionales en educación e investigación (AACSB)

Nuestro Análisis de Riesgo para Gerentes Senior es un curso especializado de 1 día para personas ejecutivas a nivel senior, donde se repasarán casos de estudio del manejo de riesgo en empresas como 3M, Airbus, Boeing, GE y otras más. Se proveerá un enfoque gerencial del análisis de riesgo, Opciones Reales estratégicas y optimización de portafolio, y conceptos de riesgo sin detalles técnicos.

También están disponibles cursos para decisiones personalizadas, valoración y Análisis de Riesgo con énfasis en el entrenamiento que su firma exactamente necesita basados en sus propios casos y modelos de negocios. El servicio de consultoría está disponible e incluye el análisis de problemas de riesgo, simulación, análisis de riesgo, modelos de construcción, análisis de decisión, optimización de software

EXPERIENCIA

El creador de este software es el **Dr. Johnathan Mun**. Profesor de Análisis de Riesgo y **Opciones Reales para Analistas, Análisis de Riesgo para Gerentes** y para el **Certificado de Gestión de Riesgos**, entre otros cursos. Ha sido consultor para muchas empresas del Fortune 500 (3M, Airbus, Boeing, General Electric, Motorola entre otras) y del Gobierno de los Estados Unidos (Departamento de Defensa, Agencias Estatales y federales) en Análisis de Riesgo, Valoración y Opciones Reales. El Dr. Mun ha escrito diversos libros sobre el tema como: *Real Options Analysis: Tools and Techniques, 1st and 2nd Edition (Wiley Finance, 2005, 2002)*; *Real Options Analysis Course: Business Cases (Wiley Finance, 2003)*; *Applied Risk Analysis: Moving Beyond Uncertainty in Business (Wiley, 2003)*; *Valuing Employee Stock Options Under 2004 FAS 123 (Wiley Finance, 2004)*; *Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Forecasting and Optimization (Wiley, 2006)*; *Advanced Analytical Models: 800 Functions and 300 Models from Basel II to Wall Street and Beyond (Wiley 2008)*; *The Banker's Handbook on Credit Risk: Implementing Basel II (Elsevier Academic Press 2008)*; El Dr. Mun es el fundador y CEO de REAL OPTIONS VALUATION INC. Y es el responsable del desarrollo de productos de Software para análisis, consultoría y entrenamiento. Anteriormente fué Vicepresidente de Análisis en Decisioneering, Inc (ORACLE), fué Gerente de Consultoría de KPMG, también fué Jefe de Pronósticos Financieros para Viking, Inc (Compañía de FedEx). El Dr. Mun también es Profesor en the U.S. Naval Postgraduate School y the University of Applied Sciences and Swiss School of Management (Zurich y Frankfurt), así como professor adjunto en otras Universidades. Posee un Ph.D. in Finance and Economics, un MBA in business administration, y un M.S. in the area of management science, un BS in applied sciences. Posee el Certified in Financial Risk Management (FRM), Certified in Financial Consulting (CFC), and Certified in Risk Management (CRM).

Pentanomial - Maximum of Two Assets American Call (3D Binomial) - Multinomial Lattice Solver

Guardar (F) Ayuda (H)

Comentar: Pentanomial - Maximum of Two Assets American Call Option (3D Binomial Equivalence)

Tipo de Árbol: Trinomial Trinomial con Reversión en la Medía Difusión de Salto Cuadrinomial Dos Activos Acorcis Pentanomial

Entradas Básicas:

VP Activo Subyacente (\$) 100 Tasa de Dividendo (%)

VP Activo Subyacente 2 (\$) 98 Tasa de Largo Plazo (\$)

Costo de Implementación (\$) 3.15 Tasa de Reversión (%)

Volatilidad (%) 25 Precio de Mercado del Riesgo (%)

Volatilidad 2 (%) 12 Tasa de Salto (%)

Tasa Libre de Riesgo (%) 9.53 Intensidad del Salto (I)

Madurez (Años) 1.25 Correlación (C) 0

Pasos de Árbol 100 * Todas las entradas son tasas anualizadas

Pasos Blackout y Periodos de Concesión:

Ejemplos: 1, 2, 10-20, 35

Ecuación de Nodo Terminal (Opciones en Expiración):

$$\text{Max}(\text{Max}(\text{Asset}_2, \text{Asset}_1) - \text{Cost}, 0)$$

Ejemplos: $\text{Max}(\text{Asset} - \text{Cost}, 0)$

Ecuaciones Personalizadas:

Ecuaciones de Nodo Intermedio (Opciones Antes de Expiración):

$$\text{Max}(\text{Max}(\text{Asset}_2, \text{Asset}_1) - \text{Cost}, 0)$$

Resultado:

Árbol de Dos-Activos Acorcis Pentanomial: 108.4169

ESO (Vesting, Blackout, Suboptimal, Forfeiture) - Single Asset Super Lattice Solver

Guardar (F) Ayuda (H)

Opciones SLS: Gráfico de Pagos Sensibilidad Escenario Convergencia

Comentar: Employee Stock Option with vesting period, suboptimal exercise behavior and forfeiture rates.

Opciones: Americana Europea Bermuda Modificar

Variables Modificadas:

VariableName	Valor	Starting
ForfeiturePost	0.1	
ForfeiturePre	0.1	
DT	0.1	
Suboptimal	1.8	

Basic Inputs:

VP Activo Subyacente (\$) 100 Tasa Libre de Riesgo (%) 5.5

Costo de Implementación (\$) 100 Tasa de Dividendo (%) 4

Maduración (Años) 10 Volatilidad (%) 45

Pasos del Árbol 100 * Todas las entradas son tasas anualizadas

Pasos de Blackout y Periodo de Concesión (Opciones Modificadas y Bermudas):

Ejemplo: 1, 2, 10-20, 35

Ecuación de Nodo Terminal (Opciones en Expiración):

$$\text{Max}(\text{Asset} - \text{Cost}, 0)$$

Ejemplos: $\text{Max}(\text{Asset} - \text{Cost}, 0)$

Ecuaciones Modificadas:

Ecuación de Nodo Intermedio (Opciones en Expiración):

$$\text{IF}(\text{Asset} > \text{Suboptimal} \cdot \text{Cost}, \text{Max}(\text{Asset} - \text{Cost}, 0), \text{IF}(\text{Asset} < \text{Suboptimal} \cdot \text{Cost}, (\text{Cost} \cdot \text{ForfeiturePost}) + \text{DT} \cdot \text{ForfeiturePre}, \text{Max}(\text{Asset} - \text{Cost}, 0)))$$

Resultado:

Ejemplo: Opción modificada: 26.1821

Prueba Patrón (Benchmark):

Compra (Call)	Venta (Put)	
Black-Scholes	37.45	28.11
Americana de Foma-Cerrada	43.20	36.50
Europea Binomial	37.44	28.11
Americana Binomial	43.33	36.74

Super Lattice Solver

Real Options Valuation

El Modelo de Opción de Activo Único es usado principalmente para resolver opciones con un solo activo subyacente dentro de una fase única usando árboles binomiales, aun cuando se pueden resolver opciones complejas con un solo activo subyacente. Las opciones típicas que se pueden resolver usando este enfoque son opciones que incluyen Americanas, Bermudas y Europeas para abandonar, escoger, contratar, diferir, ejecutar, expandir, esperar, con barreras así como combinaciones modificadas de estas opciones con cambios en la entrada.

Crear un Nuevo Modelo de Opciones para un Activo Único
 Crear un Nuevo Modelo de Opciones para Activos Múltiples
 Crear un Nuevo Modelo para Opciones Multinomiales
 Crear un Árbol
 Abrir un modelo de Ejemplo
 Calculador de las Opciones Exóticas Financieras

Language: Spanish

Salir

1. Licencia SLS Principal
2. Licencia Exóticas/Funciones

MSLS Multiple-Phased Complex Sequential Compound Option - Multiple Super Lattice Solver

Guardar (F) Ayuda (H)

Comentar: Multiple-Phased Complex Sequential Compound Option

Maduración 5

Variables Modificadas:

Nombre	Valor	Paso de Inicio
Salvage	100	31
Salvage	90	11
Salvage	80	0
Contract	0.0	0
Expansion	1.5	0
Savings	20	0

Valoraciones de Opciones:

Nombre	Costo	Libre...	Pasos	Ecuación Terminal	Ecuación Inte
Phase1	0	5	10	Max(Phase2, Salvage, 0)	Max(Salvage, 0)
Phase2	0	5	30	Max(Phase3, Phase3*Contract-Savings, Salvage, 0)	Max(Phase3*Contr Salvage, 0)
Phase3	50	5	50	Max(Underlying*Expansion, Underlying)	Max(Underlying)

Resultado: PHASE1: 134.0002

Creador de Árboles

Entradas Básicas:

Valor Presente de Activos (\$) 100 Costo de Implementación 100

Volatilidad (%) 25

Libre de Riesgo (%) 5

Dividendo (%) 0

Madurez (Años) 1

Pasos del Árbol 50

Opciones de Combinación:

 Factor de Expansión (I)

Costo de Expansión (\$)

 Factor de Contracción (I)

Ahorros de Contracción (\$)

 Valor de Rescate por Abandono (\$)

 Mostrar las Fórmulas

Opción Americana
 Opción Europea

Calcular

Assumptions:

PV Asset Value (\$) 100.00

Volatility (%) 25.0000

Risk-free Rate (%) 5.0000

Dividends (%) 0.0000

Maturity (Years) 1.00

Lattice Steps 10

Option Type American

Underlying Asset Lattice

100.00	108.23	117.13	126.77	137.19	148.48	160.70	
	85.38	92.40	100.00	108.23	117.13	126.77	
		78.89	85.38	92.40	100.00	108.23	
			67.35	72.89	78.89	85.38	
				62.23	67.35	72.89	
					57.50	62.23	
						49.09	
							45.36

Option Valuation Lattice

12.09	16.98	23.27	31.06	40.34	50.95	62.68	75.40	89.22	104.21	120.47
Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Execute
15.33	21.65	29.63	39.17	49.97	61.69	74.41	88.22	103.21	119.47	137.19
Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Execute
3.54	5.66	8.86	13.50	19.92	28.25	38.19	48.98	60.70	74.41	90.22
Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Execute
1.35	2.36	4.08	6.90	11.39	18.12	27.26	37.19	48.98	62.23	78.89
Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Execute
0.30	0.59	1.15	2.26	4.44	8.73	17.13	31.06	49.09	74.41	108.23
Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Execute
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Continue	Execute

Plain Vanilla Call Option I - Single Asset Super Lattice Solver

Guardar (F) Ayuda (H)

Opciones SLS: Gráfico de Pagos Sensibilidad Escenario Convergencia

La gráfica de sensibilidad del valor de la opción muestra los diferentes resultados de opciones basado en los diferentes valores definidos en la variable de entrada seleccionada.

Selección de la Variable de Entrada: VP Activo Subyacente

Tipo de Opción: Americana

Valor de la Opción vs Variable de Entrada

Plain Vanilla Call Option I - Single Asset Super Lattice Solver

Guardar (F) Ayuda (H)

Opciones SLS: Gráfico de Pagos Sensibilidad Escenario Convergencia

La siguiente tabla proporciona los resultados de la opción, basada en los diferentes escenarios que usted especifique a continuación.

Variable de la columna horizontal: VP Activo Subyacente

Min:	Max:	Tamaño del Paso:	Costo de Implementación:	Tipo de Opción:	Americana
10.00	100.00	10.00	10.00	Americana	10.00

Variable de la fila (vertical): Costo de Implementación

Min:	Max:	Tamaño del Paso:	Costo de Implementación:	Tipo de Opción:	Americana
0.00	10.00	1.00	10.00	Americana	10.00

Actualizar tabla

Min:	Max:	Tamaño del Paso:	Costo de Implementación:	Tipo de Opción:	Americana
10.00	100.00	10.00	10.00	Americana	10.00

Copiar Imprimir

Plain Vanilla Call Option I - Single Asset Super Lattice Solver

Guardar (F) Ayuda (H)

Opciones SLS: Gráfico de Pagos Sensibilidad Escenario Convergencia

Entre mayor sea el número de pasos del enrejado, mayor el nivel de precisión del resultado de la opción, (lo cual solo implica posiciones decimales adicionales). En algún punto, dicho resultado del entramado converge. El test de convergencia, ejecuta entre 5 y 5000 pasos, para determinar el nivel de convergencia. A partir de este punto, un número de pasos superior es innecesario.

Pasos en los que converge el enrejado

Tornado

Variable	Salida superior	Rango efectivo	Entrada inferior	Entrada superior	Valor base
VP Activo Subyacente	17.25	13.06	90.00	110.00	100.00
Costo de Implementación	25.23	3.70	4.50	5.50	5.00
Volatilidad (%)	25.04	3.28	0.05	0.05	0.05
Madurez (Años)	23.84	0.83	0.09	0.11	0.10
Pasos del Árbol	23.40	0.00	0.00	0.00	0.00

Convergencia

Tipo de Opción	Pasos	Valor	Pasos	Valor	Pasos	Valor
Americana	5	23.32	300	23.41	2000	23.42
Americana	10	23.39	400	23.42	3000	23.42
Americana	100	23.40	500	23.42	4000	23.42
Americana	200	23.41	1000	23.42	5000	23.42

Hecho

Real Options SLS 5.0

Configuración General

- Software en Inglés, Español, Japonés, Chino, Portugués
- Manual del usuario con múltiples idiomas y con ejemplos de casos de estudio mostrando paso a paso las técnicas de modelación y soluciones
- 80 ejemplos de modelos detallados

Multinomial Lattice SLS Solver

- Resuelve múltiples tipos de Opciones Reales, Opciones Exóticas, Opciones Financieras, Stock Options para empleados
 - una completa herramienta de modelado con la posibilidad de introducir sus propias ecuaciones para las opciones
- Redes Trinomiales
 - para resolver opciones con reversión a la media y como herramienta de comparación para redes binomiales
- Redes Cuadrinomiales
 - para resolver Opciones con Jump Difusion
- Redes Pentanomiales
 - usadas para resolver ver Opciones compuestas Arco Iris

Calculadora de Opciones Exóticas

- Resuelve Múltiples Tipos de Opciones Reales, Opciones Exóticas, Opciones Financieras, Stock Options para empleados
- Más de 300 Modelos y Tipos de Opciones Solucionados
 - todos los tipos de modelos de forma cerrada
 - todos los modelos de redes
- Modelos Analíticos Avanzados
 - todos los tipos de volatilidad computarizados, modelos de Precios de Estado, Métodos Analíticos, Reducción de Varianza, Modelos de Aproximación americanos, valoración de opciones via técnicas de simulación y mucho más
- Modelos relacionados con Opciones
 - todos los tipos de Opciones de Bonos y Conversión de Garantías y otros Modelos de Opciones

Funciones en Excel

- Completa Funcionalidad en Excel
 - use SLS exactamente como usaria las funciones regulares de excel
- Una completa compatibilidad con el Risk Simulator
 - usted puede correr el Risk Simulator de Montecarlo en sus modelos de Opciones
 - Usted puede enlazar de y para otros modelos de Excel existentes
 - otras herramientas avanzadas de Análisis como Optimización, Pronóstico Estocástico y macros VBA son todos compatibles
- Cambiando los Modelos de Volatilidad con Redes no recombinadas

Lattice Maker for Excel

- Trabaja con Excel
 - las redes serán creadas desde las hojas de cálculo de Excel
- Completa compatibilidad con el Risk Simulator
 - usted puede correr el modelo de Simulación de Monte Carlo en sus propio modelos de opciones
 - usted puede enlazar de y para otros modelos de excel existentes
 - otras herramientas avanzadas de análisis como optimización, Pronóstico estocásticos y macros VBA son todos compatibles
- Completa Visualización de las Ecuaciones
 - la generación de redes será un modelo con links y ecuaciones dentro del excel completamente visibles... óptimo como herramienta de aprendizaje en la modelacion de opciones

Activos Individuales y Fases Individuales SLS

- Resuelve múltiples tipos de Opciones Reales, Opciones Exóticas, Opciones financieras y Stock Options para empleados
 - Opciones Reales como Opciones de Abandono, Barrera, Escoger, Contraer, Expandir, intercambiar, esperar y postergar, y cualquier Opción Real definida por el usuario con la posibilidad de combinar y unir las opciones (mutuamente Excluyentes y Opciones anidadas)
 - Las opciones financieras incluyen todo tipo de combinación de activos multiples y opciones de benchmark, garantías, convertibles, vehículos de estructura financiera para opciones Americanas, Europeas, Bermuda y Asiaticas, así como sus propias Opciones
 - employee stock options such as with vesting, forfeitures, suboptimal exercise multiples, performance-based shares (external market and internal corporate), and make-your-own custom options
- Modelos Completamente Personalizados
 - usted puede crear su propio modelo de Opciones usando ecuaciones predefinidas o sus propias ecuaciones
 - Corre Redes Binomiales
- Rapidez en Computación y Algoritmos
 - 1000 pasos en la red binomial puede ser calculada en pocos segundos (algo que si se hace manualmente tomaría CIENTOS DE AÑOS)
 - Capaz de correr miles de pasos en la Red muy rápido
- Modelos Benchmarks Cerrados
 - Modelos de Black-Scholes-Merton para otros modelos Americanos de forma cerrada están disponibles
- Auditor de Redes
 - Usted puede personalizar redes de Opciones binomiales disponibles para ser visualizados en una hoja de Excel
- Used by the U.S. Financial Accounting Standards Board!
 - used in the FAS 123R released in 2004 by FASB!

Activos Múltiples y Múltiples Fases SLS

- Resuelve Múltiples Tipos de Opciones Reales, Opciones Exóticas, Opciones Financieras, Stock Options para empleados
 - Opciones Reales como Opciones Compuestas Secuenciales, Opciones stage-gate y Opciones de Múltiples Activos, con combinaciones de Opciones de Abandono, Barrera, escoger, contraer, expandir, intercambiar, esperar y postergar, con la posibilidad de combinar y unir las opciones (mutuamente Excluyentes y Opciones anidadas)
 - Las opciones financieras incluyen todo tipo de combinación de activos multiples y opciones de benchmark, garantías, convertibles, vehículos de estructura financiera para opciones Americanas, Europeas, Bermuda y Asiaticas, así como sus propias Opciones
 - capaz de resolver innumerables tipos de opciones completamente personalizadas, también para trabajar con activos únicos SLS y redes multinomiales SLS
- Corre usando redes binomiales personalizadas con modelos Benchmarks de forma cerrada

ROV MODELING TOOLKIT 1.2

- Biblioteca con 300 modelos de plantilla y cerca de 800 modelos en Excel
- Trabaja complementariamente con Risk Simulator y aplicaciones del Real Options SLS
- Cubrimiento detallado de temas incluyendo las áreas generales de
 - Análisis
 - Modelos Bancarios
 - Análisis Crediticio
 - Analisis de Deuda
 - Analisis de Decision
 - Opciones Exóticas
 - Pronósticos
 - Aplicaciones a la Industria
 - Optimización
 - Análisis de Opciones
 - Probabilidad de Incumplimiento
 - Direccion de Proyectos
 - Real Options SLS
 - Análisis de Riesgo
 - Cobertura de Riesgo
 - Sensibilidad
 - Simulación
 - Six Sigma
 - Valoración
 - Valor en Riesgo
 - Volatilidad
 - Curva de Rendimiento

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ROV MODELING TOOLKIT ROV MODELING TOOLKIT comprende cerca de 800 modelos analíticos, funciones y herramientas, y cerca de 300 plantillas sobre modelos analíticos Excel/SLS, hojas de cálculo que cubren las áreas de análisis de riesgo, simulación, pronósticos, análisis de riesgo Basilea II, riesgo de crédito y defecto, modelos estadísticos y mucho más! Este kit es un set de sofisticados modelos matemáticos escritos en C++ y vinculados a hojas de cálculo de Excel. Hay un total de 1100 modelos, funciones, con hojas de cálculo y plantillas SLS que cubren las áreas de:

Análisis: 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

Modelos Bancarios: 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

Análisis de Crédito: 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

Análisis de Decisión: 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

Opciones Exóticas: 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

Pronósticos: 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

Aplicaciones a la Industria: 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

Optimización: 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

Análisis de Opciones: Binary Digital Instruments, Inverse Floater Bond Lattice Maker, Options Adjusted Spreads on Debt, Options on Debt, Options Trading Strategies

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

Dirección de Proyectos: Cost Estimation Model, Critical Path Analysis (CPM PERT GANTT), Project Timing

Opciones Reales 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

Opciones Exóticas: 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

Análisis de Opciones: 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



Opciones Reales: 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 Quadrantomial 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

Enrejados Trinomiales: 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

Enrejados Cuadrinomiales: Jump Diffusion American Call Option, Quadrantomial Lattices: Jump Diffusion American Put Option, Quadrantomial Lattices: Jump Diffusion European Call Option, Quadrantomial Lattices: Jump Diffusion European Put Option

Enrejados Pentanomiales: 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)

Análisis de Riesgo: Integrated Risk Analysis, Interest Rate Risk, Portfolio Risk and Return Profile

Cobertura de Riesgo: Delta Gamma Hedge, Delta Hedge, Effects of Fixed versus Floating Rates, Foreign Exchange Cash Flow Model, Foreign Exchange Exposure Hedging

Sensibilidad: Greeks, Tornado and Sensitivity Charts Linear, Tornado and Sensitivity Nonlinear

Simulación: 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

Six Sigma: 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

Valoración: 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 Only

Valor en Riesgo: Optimized and Simulated Portfolio VaR, Options Delta Portfolio, Portfolio Operational and Capital Adequacy, Right Tail Capital Requirements, Static Covariance Method

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

Curva de Rendimiento: CIR Model, Curve Interpolation BIM, Curve Interpolation NS, Forward Rates from Spot Rates, Spline Interpolation and Extrapolation, Term Structure of Volatility, US Treasury Risk Free Rate, Vasicek Model

MODELO ROV, OPTIMIZADOR ROV, ROV VALUATOR, PROGRAMADOR ROV, ROV CHARTER, MODELO ROV BASILEA II

- Análisis de Miles de millones de datos a altas velocidades
- Compatible con bases de datos ODBC, incluidos Oracle OFDM, Excel, archivos de texto planos y otros sistemas DSN.
- Simulación de Monte Carlo, Optimización de Portafolio, Pronósticos Estocásticos y Análisis Avanzado (Ajustes de Datos, Diagnóstico de Datos, Simulaciones, ARIMA, GARCH, y mas de 600 modelos de análisis financiero)
- Los Resultados son compatibles con el ROV Dashboard en línea para gestión segura de información, los análisis son compatibles con el Simulador de Riesgo ROV y ROV Real Options SLS software y los modelos son compatibles con ROV Modeling Toolkit
- Modelos totalmente personalizables y modelos de industria específica (Riesgo de Mercado y Crédito Basilea II)
- Limpia su Base de datos con los controles de integridad de datos y commands SQL antes de utilizar los datos de su análisis.
- Programar los modelos o los portafolios individuales para que funcionen en momentos específicos ya sea en un día o en una semana

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ROV RISK MODELER es un software, desarrollado por Real Options Valuation, Inc., que incluye varios módulos. Este Software toma los modelos fuera de Excel y los mete en el entorno de su base de datos, permitiendo al usuario final la posibilidad de vincular directamente a la base de datos o a bases de datos más grandes, también limpia los datos y corre análisis avanzados a velocidades muy altas. El ROV RISK MODELER se compone de varios módulos, entre ellos:

- ROV Modeler es un software avanzado creado para la solución de varios tipos de modelos, incluidos los modelos computacionales en varias industrias, modelos de simulación y pronósticos, Ajustes de Datos Históricos, series de tiempo provisionales (ARIMA, Econometría Automática, Regresiones, Procesos Estocásticos y otros), Volatilidad computacional (de cálculo) (GARCH) y muchas otras aplicaciones. También se incluye en este módulo (así como el Basel Modeler y el módulo de Optimización de Riesgo) tienen la capacidad de enlace y descarga de diversas bases de datos y fuentes de datos (ejm., Oracle OFDM, SQL Server, Excel, CSV, text y otras bases de datos compatibles con ODBC), Limpiar la pantalla de datos antes de su uso (aplicando comandos SQL y rutinas de limpieza de datos), calcular nuevas variables sobre la base de datos existente, ejecutar simulaciones de riesgo de Monte Carlo, aplicar datos de distribución y montaje y otras rutinas. Este módulo es personalizable ya que los usuarios pueden modificar la lista de funciones, descripciones y que modelos o aplicaciones se deben mostrar, permitiendo a los usuarios personalizar la herramienta para adaptarse a sus necesidades. El ROV Modeler también es personalizable en el que las listas de los modelos pueden ser cambiadas o editadas según las necesidades, en el cual puede decidir que modelos son importantes para mostrarlos o usado, mientras otros pueden ser bloqueados o eliminados (ejm., Diferentes departamentos, unidades de negocio o grupos industriales pueden tener su propio modelo personalizado).

- ROV MODELER BASILEA II es un módulo de software de análisis avanzado para la solución de múltiples tipos de modelos, incluidos los modelos computacionales en varias industrias (ejm., para bancos, compañías de seguro y servicios financieros, tales como los modelos de probabilidad de incumplimiento (quiebra), pérdida por incumplimiento en los pagos, exposición al no pago, Valor de Riesgo y otros indicadores claves). También funciona como el ROV Modeler descrito anteriormente

- Optimizador ROV tiene la capacidad de ejecutar con rapidez la selección de proyectos de inversión o portafolios y la optimización no lineal, con simulaciones y optimizaciones estocásticas, al mismo tiempo utilizando enteros discretos, binarios y las variables continuas sujetas a múltiples restricciones, así como un análisis de frontera eficiente. La optimización puede ejecutarse en cientos de variables de decisión y los resultados se calculan rápidamente.

- ROV RISK VALUATOR tiene más de 600 modelos y funciones para valorar todo desde opciones simples y exóticas hasta commodities, futuros y perfiles de retorno-riesgo de portafolios de activos y así sucesivamente. Por favor vease el Apéndice para una lista más detallada de los modelos disponibles.

- ROV CHARTER ejecuta diferentes modelos y archivos de optimización y retorna archivos predefinidos en XML que pueden ser utilizados por ROV Dashboard para generar gráficos dinámicos, tablas, tablas pivotes y reportes. ROV Dashboard es otro programa desarrollado por Real Options Valuation, Inc.

- ROV Scheduler ejecuta diferentes Modelos, optimización, gráficos y archivos de portafolio y retornos, el resultado es un archivo de texto plano que puede ser guardado o cargado en excel o otra base de datos.

- PORTAFOLIO ROV ejecuta múltiples Modelos y Optimiza archivos y múltiples modelos inmediatamente. Este es similar al SCHEDULER en el que múltiples modelos pueden ser escogidos para que se ejecuten desde diferentes perfiles, pero la diferencia es que los análisis funcionan inmediatamente al contrario de los que se ejecutan en un momento determinado.

VERSIÓN DE PRUEBA

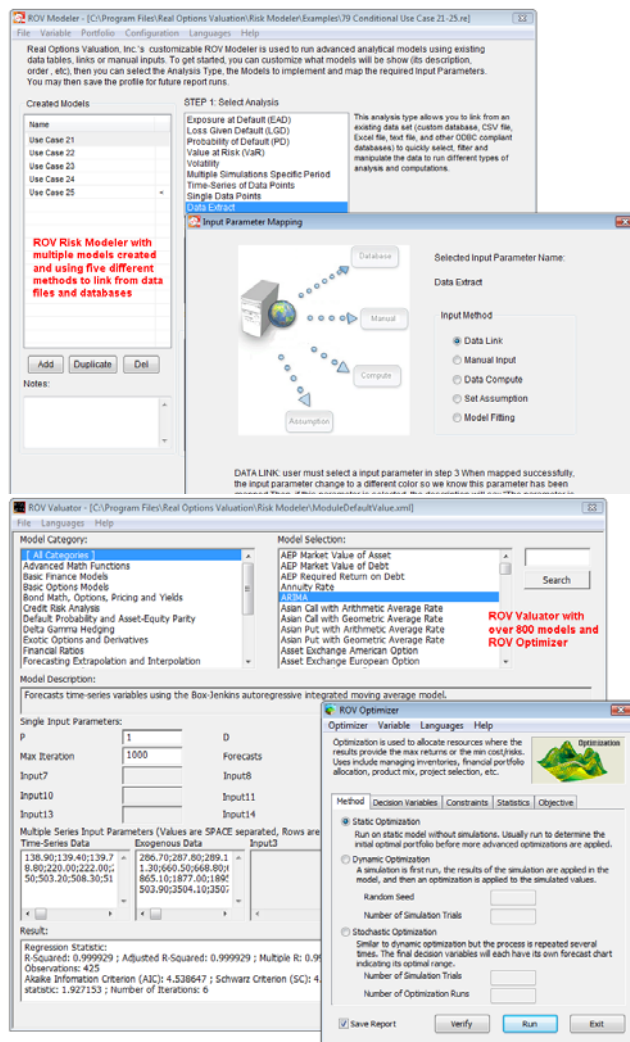
No Existen versiones de prueba de este software ya que la implementaciones de este software requieren entrenamiento y consulta sobre los temas.

En adición, el ROV MODELER software tiene la habilidad de:

- Limpiar y filtrar su base de datos a través de Data Integrity y SQL Conditional screener y Data Compute capabilities y revise sus calidad de datos a través de las funciones de Data Diagnostic
- Ejecutar Modelos individuales o modelos de portafolios con determinado calendario, cuando la herramienta se descarga automáticamente los enlaces de las bases de datos o los archivos de datos, ejecutara el análisis y devuelve el resultado en XML o formato de archivos de datos
- Proporciona 5 métodos de mapear la variable, para extraer y bajar los datos de su base de datos o archivos de datos para su análisis, incluyendo el Ajuste de datos, datos y cálculos variables, supuestos y simulaciones distribucionales, Manual de Entrada y Enlace de Datos a los ficheros.
- Se Ejecuta en un sólo núcleo o núcleos múltiples con hilos de distribución y procesamiento distributivo
- Disponible en Inglés, Chino, Japones, Español, Portugues y muchos más idiomas.

REQUISITOS DEL SISTEMA

Este software puede ser ejecutado con cualquier plataforma de Windows o MAC (el sistema operativo MAC requiere una máquina virtual que emule el ambiente de Windows), y es compatible con Microsoft Excel como también las otras bases de datos o archivos de datos compatibles a ODBC. El software requiere 100Mb de espacio libre en el disco duro y recomienda un mínimo de 1Gb de Memoria RAM para su mejor desempeño. Nosotros recomendamos que el usuario tenga derechos administrativos (esto es por defecto en la mayoría de ordenadores personales), pero también puede ejecutarse con logins de derechos de usuarios limitados (simplemente instala el software a un archivo o carpeta no protegida para el correcto funcionamiento del software).



ROV COMPILER 1.0

- Compila cualquier modelo existente de Excel 2002, 2003, 2007 en EXE
- Los Archivos Compilados funcionarán exactamente igual que un archivo de Excel, con todas la funcionalidades de Excel, pero el usuario final no tendrá acceso a los cálculos, las funciones o a la lógica.
- Todos los cálculos se encajan en formato binario, que están encriptados y el usuario final no tiene acceso
- Distribuya con seguridad el modelo sin perder el control de propiedad intelectual o algún secreto de la compañía
- Se Bloquea mediante un cifrado de 2048 Bits RSA (más poderoso y seguro que la misma protección militar)
- Cree las Licencias de Usuario (número de aplicaciones, la fecha y número de días)
- Mantiene un estricto control de calidad y previene la manipulación maliciosa o rotura accidental del modelo (no más enlaces rotos, funciones y cálculos equivocados y así sucesivamente)
- Puede ser usado por terceras aplicaciones informáticas en un ambiente llamado modo de la consola de mando de componentes basados de modelaje
- Use Excel como plataforma de programación en lugar de solo

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ROV COMPILER sirve como convertidor de archivos de Microsoft Excel XP, 2003 y 2007 para extraer un modelo existente en relaciones matemáticas puras y para cifrar que el mismo modelo puede ser usado como de costumbre, pero la característica intelectual de esta, está protegida. Usted puede utilizar a Excel como herramienta del desarrollo de programas en vez de herramienta de modelado. Es decir, suponga que usted es un experto en cierta industria ya sea en actividades bancarias, farmacéuticas, biotecnología, manufactureras, aseguradoras, aeronáuticas y así sucesivamente, suponga que usted ha desarrollado modelos y hojas de trabajo en Excel que son apropiadas para su uso y para usos en otros campos. Usted puede utilizar el ROV Compiler para crear archivos ejecutables en EXE desde los modelos existente en Excel, y trabar la matemática, la lógica computacional y los negocios en código binario y crear un hardware extremadamente seguro y con licencia de protección de sus archivos para poderlo distribuir como un programa informático. El archive compilado cuando se corre tendrá el mismo ambiente que Excel, menos la habilidad de tener acceso lógico a cálculos críticos, mas la habilidad de asegurarlo y licenciarlo como los programas informáticos regulares. Existen programas de dominio público que pueden craquear las contraseñas de Excel rápidamente y sin esfuerzo, pero esos programas no son capaces de trabajar en archivos compilados. Ejecutando el Modelo extraído, varios artículos son completados, a saber:

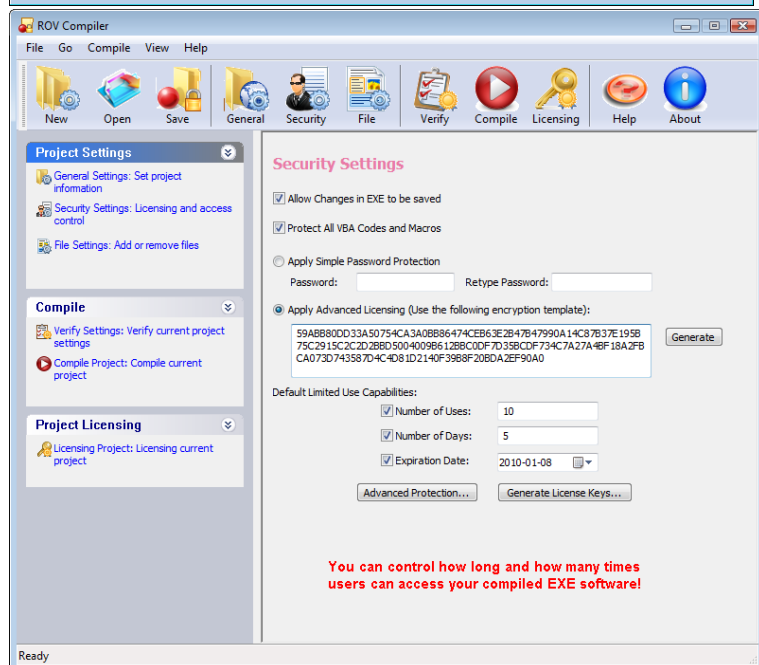
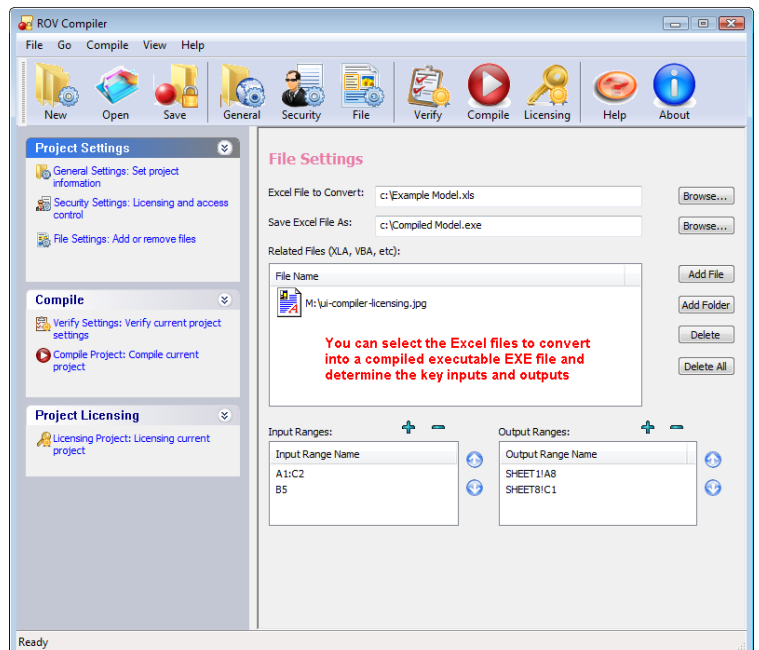
- Use Excel como plataforma de programación en lugar de solo modelación... no es necesario aprender de programación avanzada para crear su propio software con autorizado.
- Cualquier archivo existente de Excel 2002, 2003, 2007 y mas allá puede ser compilado o extraído de Excel XLS o XLSC y convertirlo en código matemático binario y el archivo se convertirá en un archivo EXE ejecutable, que cuando se ejecute abrirá a Excel. El archivo funcionara exactamente como un archivo de Excel, con todas las funciones de Excel, pero el usuario final no tendrá acceso a los cálculos, las funciones o la lógica. Parecerá y se sentirá como si fuera Excel pero los cómputos estarán en formato binario encriptado y el usuario final no tendrá acceso.
- Toda la inteligencia empresarial y relaciones se mantienen pero no serán más visible al usuario final, permitiendo al creador del modelo distribuir con seguridad el modelo sin pérdida de control de propiedad intelectual o secretos de la compañía.
- El modelo compilado se Bloquea mediante un cifrado de 2048 Bits RSA (más poderoso y seguro que la misma protección militar) y puede solemnemente ser accesible usando la contraseña y licencia correcta (usando el hardware que trabaja con algoritmos)
- El usuario final no puede cambiar el modelo compilado pero se mantiene un control de calidad estricto y previene trampas maliciosas o fracturas accidentales del modelos (ejm., las ecuaciones y las funciones con acoplamiento rotos o las funciones y cálculos incorrectos, etc).
- El Archivo compilado también se puede utilizar por aplicaciones informáticas terceras en un ambiente de Componentes Basados en Modelaje. Por ejemplo, el usuario final puede tener su propio software o base de datos con cálculos predefinidos. El archivo compilado se liga en y es una parte de este sistema y se puede llamar modo de la consola de comando. Usted obtiene la propiedad del sistema y simplemente obtiene las entradas o links para compilar los archivos o los modelos para realizar los cómputos y devolver las salidas requeridas.

REQUISITOS DEL SISTEMA

Este software puede ser ejecutado con cualquier plataforma de Windows o Mac (el sistema operativo MAC requiere una maquina virtual que emule el ambiente de Windows), y es compatible con Microsoft Excel como también las otras bases de datos o archivos de datos compatibles a ODBC. El software requiere 30Mb de espacio libre en el disco duro y recomienda un mínimo de 1Gb de Memoria RAM para su mejor desempeño.

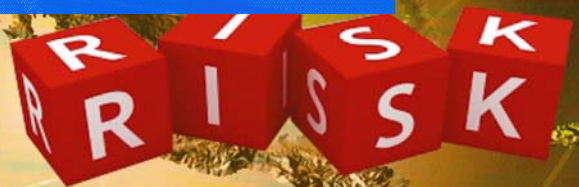


Utilice por favor el software ROV Extractor y Evaluator en lugar de otro, también desarrollado por Real Options Valuation, Inc., si usted desea extraer el modelo en un archivo que funcione totalmente fuera de Excel (extraído en archive EXE) donde todos sus cálculos se ocultan y protegen. El ROV Extractor y Evaluator se complementa con el software ROV Compiler tal que un modelo muy largo que tardaba mucho tiempo para ejecutarse en Excel ahora puede ejecutarse a una velocidad extremadamente rápida en el modelo levantado EXE. Las simulaciones de Riesgo de Monte Carlo de gran escala y con gran número de pruebas pueden desarrollarse a una velocidad muy rápida. Los modelos grandes con muchas partes irrelevantes se identifican y adicionalmente, usted puede identificar las entradas dominantes y las salidas principales que usted deseaba haber modelado. Por ejemplo, en un modelo como $A+B+C=D$, $B+E=F$, y si F se elige como salida dominante, solo B y E son relevantes. Esto disminuye el tiempo computacional para el modelo en identificar las variables de entrada, y el modelo entonces se puede optimizar para funcionar más rápidamente una vez que el tema del modelo se identifica. El modelo largo de Excel se puede dar vuelta en una calculadora, donde todo usuario final tiene que meter las variables de entrada y obtener las salidas. Imagínese como crear una función muy grande de Visual Basic en Excel, pero en vez de una función simple con varias líneas de cómputos, esta función es un libro de trabajo con muchas hojas de trabajo interconectadas.



ROV EXTRACTOR y ROV EVALUATOR 1.1

- ROV EXTRACTOR compila un modelo existente de Excel 2007 en un archivo EXP que sólo puede ser corrido en el ROV EVALUATOR.
- Toda la información del negocio y las relaciones en los modelos se mantienen pero no pueden ser vistas por el usuario final con el fin de que el creador del modelo lo pueda distribuir de una forma segura sin que pierda cualquier propiedad intelectual o información secreta de la compañía.
- Un modelo grande que puede tomar mucho tiempo de correr en Excel, ahora puede ser corrido en pocos segundos (1 millón de simulaciones en un modelo de tamaño regular, toma unos pocos segundos en correrse).
- El modelo extraído puede ser asegurado usando una codificación RSA 1028 (protección similar a información militar), y solo se puede acceder con la contraseña correcta.
- Modelos grandes que tienen varias partes irrelevantes, son identificados únicamente con sus entradas y salidas claves para así reducir el tiempo.
- El modelo grande de Excel puede ser convertido en algo similar a una calculadora: introducir los inputs para obtener los outputs.
- Cree un nuevo paradigma en modelación! Los archivos extraídos son similares a crear una función Visual Basic en Excel, pero en vez de una función con muchas líneas se convierte en un archivo de Excel con hojas de cálculo conectadas.
- Distribuya el modelo sin perder control de la propiedad intelectual y los secretos de la compañía.
- Mantenga control estricto de calidad y rotura accidentales del modelo (no mas enlaces malos, o funciones y cálculos incorrectos).
- Use Excel como plataforma de programación y no solo de modelación, no necesita aprender software avanzado de programación para crear su propio software.



ROV EXTRACTOR & ROV EVALUATOR es producido por Real Options Valuation Inc. Y trabaja con Excel 2007 y posteriores. Este software puede ser usado en Microsoft Excel 2007 para extraer un modelo existente en puras relaciones matemáticas para que el mismo modelo pueda ser corrido por fuera de Excel. Al correr el modelo extraído los siguientes ítems son alcanzados :

- Toda la información del negocio y las relaciones en los modelos se mantienen pero no pueden ser vistas por el usuario final con el fin de que el creador del modelo lo pueda distribuir de una forma segura sin que pierda cualquier propiedad intelectual o información secreta de la compañía.
- Un modelo grande que puede tomar mucho tiempo de correr en Excel, ahora puede ser corrido en pocos segundos.
- Simulaciones de Riesgo Monte Carlo de gran escala pueden ser realizadas a altas velocidades.
- El modelo extracto puede ser asegurado usando una codificación RSA 1028 (protección similar a información militar), y solo se puede acceder con la contraseña correcta.
- Identifica las partes irrelevantes de los modelos y adicionalmente puede identificar los inputs y outputs claves para la modelación. Por ejemplo en un modelo como $A+B+C=D$, $B+E=F$, y si F es escogida como el input clave o relevante, solo B y E son relevantes. Esto disminuye el tiempo del modelo identificando los inputs críticos, y el modelo luego puede ser optimizado para que corra más rápido.
- El modelo largo de Excel puede ser convertido en algo similar a una calculadora: introducir los inputs para obtener los outputs. Los archivos extraídos son similares a crear una función Visual Basic en Excel, pero en vez de una función con muchas líneas se convierte en un archivo de Excel con hojas de cálculo conectadas.
- Mantenga control estricto de calidad y rotura accidentales del modelo (no mas enlaces malos, o funciones y cálculos incorrectos).

REQUERIMIENTOS DEL SISTEMA

Los requerimientos del sistema incluyen:

- Windows Vista
- Excel 2007 (versiones anteriores no son soportadas)
- 300MB de espacio libre en el disco duro
- 1GB de RAM mínimo
- Others: Otros: Microsoft .NET 3.5 Framework or later, VS Runtime, Microsoft Installer. El .NET 3.5 Framework es incluido en el archivo de instalación, donde el instalador primero chequea el sistema e identifica muchos prerrequisitos faltantes (.NET 3.5 Framework or later, VS Runtime, y otros componentes) y automáticamente los instala antes de instalar el ROV EXTRACTOR Y EVALUATOR

PRUEBAS Y VERSIONES ACADÉMICAS

ROV Extractor y Evaluador puede ser bajado de la página web con una licencia de prueba de 10 días. Nuestra filosofía es que debe probar antes de comprar. Una vez lo pruebe, estamos seguros que le encantará su simplicidad y el poder de esta herramienta, y se convertirá en una parte indispensable de su herramienta de modelación. Sin embargo, tenga en cuenta que la versión de prueba solo puede crear licencias por 10 días y viene con mensajes para esta versión (esto desaparecerá para las versiones de licencia completa).

El ROV EXTRACTOR Y EVALUATOR le permite extraer el modelo en un archivo que corre completamente fuera de Excel (extraído en archivos EXP) donde todos los cálculos son protegidos. El Extractor y Evaluador ROV complementa el Compilador ROV de forma que un modelo grande que toma mucho tiempo correr en Excel ahora puede correrse a gran velocidad en el modelo EXP. Simulaciones de Riesgo Monte Carlo de gran escala pueden ser realizadas a altas velocidades.

Por favor usar el Compilador ROV si desea extraer el modelo en un archivo ejecutable (EXE) que corre en Excel pero todos sus cálculos son ocultados, protegidos y pueden ser autorizados. El software ROV Compilador complementa al Extractor y Evaluador y es fabricado por la misma compañía.

Discounted Cash Flow / ROI Model						
Base Year	2009	Sum PV Net Benefits	\$4,762.09	Discount Type		
Start Year	2009	Sum PV Investments	\$1,634.22			
Market Risk-Adjusted Discount Rate	15.00%	Net Present Value	\$3,127.87	Model		
Private-Risk Discount Rate	5.00%	Internal Rate of Return	55.68%			
Terminal Period Growth Rate	2.00%	Return on Investment	191.40%			
Effective Tax Rate	40.00%	Profitability Index	2.91			
	2009	2010	2011	2012	2013	2014
Product A Avg Price/Unit	\$10.00	\$10.50	\$11.00	\$11.50	\$12.00	\$12.50
Product B Avg Price/Unit	\$12.25	\$12.50	\$12.75	\$13.00	\$13.25	\$13.50
Product C Avg Price/Unit	\$15.15	\$15.30	\$15.45	\$15.60	\$15.75	\$15.90
Product A Sale Quantity ('000s)	50	50	50	50	50	50
Product B Sale Quantity ('000s)	35	35	35	35	35	35
Product C Sale Quantity ('000s)	20	20	20	20	20	20
Total Revenues	\$1,231.75	\$1,268.50	\$1,305.25	\$1,342.00	\$1,378.75	\$1,415.50
Direct Cost of Goods Sold	\$184.76	\$190.28	\$195.79	\$201.30	\$206.81	\$212.33
Gross Profit	\$1,046.99	\$1,078.23	\$1,109.46	\$1,140.70	\$1,171.94	\$1,203.18
Operating Expenses	\$157.50	\$157.50	\$157.50	\$157.50	\$157.50	\$157.50
Sales, General and Admin. Costs	\$15.75	\$15.75	\$15.75	\$15.75	\$15.75	\$15.75
Operating Income (EBITDA)	\$873.74	\$904.98	\$936.21	\$967.45	\$998.69	\$1,029.93

My Simulation 1

Simulation Result

Configuration

- Random seed number: 1378377745
- Number of trials: 10000
- Number of CPUs: 4
- Strict synchronization: true

Assumptions

Price A
Triangular
Minimum = 9, Mode = 10.25, Maximum = 11.55

Other Inputs

'Model'IC15 = 50 'Model'IC13 = 12.25 'Model'IC16 = 35 'Model'IC14 = 15.15 'Model'IC17 = 20

Forecasts

Forecast 1

Mean:	3,180.8164	Median:	3,179.4283
Variance:	10,492.96	1st Quartile:	3,107.8608
Standard Deviation:	102.4351	3rd Quartile:	3,254.5866
Coefficient of Variation:	0.0322	90th Percentile:	3,320.3683
Skewness:	0.0104	95th Percentile:	3,352.5447
		99th Percentile:	3,396.0217

Simulation Name: Simulation Run
Simulation Configuration
Number of Trials: 100000
Random Seed: 357193641
Number of CPUs: 4

Simulation Status
Simulation completed. 0:00:00:03



ROV BIZSTATS 1.1

- Herramienta de estadísticas para negocios la cual es un complemento en Excel, la
- Cual resuelve sus necesidades diarias a nivel estadístico
- Fácil de utilizar con informes detallados (completos resultados analíticos y explicaciones detalladas sobre los resultados)
- Modelo Chooser para ayudarle a elegir el tipo de análisis que se debe ejecutar
- Análisis de Varianza (ANOVA)
- Estadística Básicas
- Prueba de Hipótesis (Una y Dos Variables)
- Simulación Montecarlo
- Pruebas No Paramétricas
- Probabilidades
- Pronosticos Estocásticos
- Análisis de Series de Tiempo
- Análisis de Regresiones

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R R I S S K

ROV BIZSTATS es una aplicación de herramientas estadísticas que se centra en la facilidad de manejo para los usuarios siendo en sí muy ponderosa ya que puede resolver la mayoría de problemas estadísticos cotidianos. Como complemento de Excel, este trabajará con sus datos existentes en sus hojas de cálculo. La Herramienta estadística para negocios la cual es un complemento en Excel, la cual resuelve sus necesidades diarias a nivel estadístico es muy fácil de utilizar con informes detallados (termina con resultados analíticos y explicaciones detalladas sobre los resultados).

Para los análisis estadísticos avanzados, por favor usar el Simulador de Riesgo para correr el Simulador del Modelo de Riesgo de Monte Carlo, Pronósticos Estocásticos, Optimización de Portafolio y otros Análisis Avanzados.

El ROV BizStats Software está dividido en 10 módulos analíticos:

- **El Modelo Chooser** ayuda a elegir el tipo de análisis correcto dependiendo de los tipos de datos y el tipo de pruebas que usted esta interesado en desarrollar, haciendole una serie de preguntas en lenguas cotidianas de hoy en día.
- **Análisis de Varianza** (solo un factor ANOVA, tratamientos al azar de bloque múltiples, Anova de 2 vías) para probar las diferencias en conjuntos de datos estadísticamente similares o diferentes uno del otro, después de la contabilidad de ciertas variables de control.
- **Estadísticas Básicas** (Estadísticas Descriptivas, Matriz de Correlación, Matriz de Varianza-Covarianza) que analizan automáticamente los datos para usted y retorna la técnica estadística mas utilizada.
- **Prueba de Hipótesis** (de Una o Dos Variables incluyendo la Prueba-t y la prueba-Z, para proporciones con variables dependientes e independientes) para probar si un conjunto de datos es estadísticamente similar o diferente a la hipótesis evaluada
- **Simulación Monte Carlo** (7 simples distribuciones de simulación. Usar el Simulador de Riesgo para las simulaciones más avanzadas)
- **Análisis No Paramétricos** (bondad de ajuste Chi-cuadrado y pruebas de independencia y varianzas, Prueba Friedman's, prueba de Kruskal-wallis, Prueba Lilliefors, Runs test, Prueba Wilcoxon-Rank para Una o Dos variables)
- **Probabilidades** (Crea las tablas de probabilidad exacta de 18 tipos de distribución)
- **Previsiones Estocásticas** (salto de difusión, reversión-media y paseos aleatorios)
- **Análisis de Series de Tiempo** (ARIMA, Auto ARIMA y 8 modelos de descomposición de series de tiempo)
- **Análisis de Regresión** (Análisis de Regresión multivariada y análisis de componentes principales)

REQUERIMIENTOS DEL SISTEMA

Windows XP o Vista y Excel XP, 2003 o 2007, con 30 Mb de espacio de disco duro y 512MB de RAM como mínimo. Trabaja en MAC con una Máquina Virtual o Paralela

VERSION DE PRUEBA

La Versión de Prueba de este software está disponible bajo petición y está disponible en el sitio de descarga. La versión de prueba viene por defecto con una licencia de 10 días.

The screenshot displays the ROV BizStats software interface with several analysis windows open:

- Regression Analysis Report:** Shows regression statistics including R-Squared (0.5247), Adjusted R-Squared (0.4527), and Multiple R (0.7244). It includes a table of regression results with coefficients and standard errors.
- Actual vs. Forecast:** A line graph comparing actual values (Actual (Y)) and forecast values (Forecast (F)) over time.
- Multiple Regression Analysis:** A dialog box for setting up a multiple regression analysis, including dependent and independent variables.
- Chi-Square Goodness of Fit Test:** A window for performing a chi-square test, showing a table of categories and frequencies.
- Sample Dataset for Nonparametric Tests I:** A window displaying a sample dataset for nonparametric tests.
- Friedman Test (Randomized Block Design):** A window for performing a Friedman test, showing data for different treatments and blocks.
- Kruskal-Wallis Test (Nonparametric One-Way ANOVA):** A window for performing a Kruskal-Wallis test, showing data for different treatments.





ROV DASHBOARD 1.0

- Cree un grupo de reportes, diagramas y tablas que son altamente intuitivas, y protegidas por nombre de usuario y contraseña.
- Cree la oportunidad de acceder desde cualquier parte del mundo para ver sus reportes que son constante y automáticamente actualizados.
- Viene en múltiples lenguajes incluyendo Inglés, Chino, Español, Japonés, Portugués, Italiano, Francés, Alemán y Ruso.
- Completamente compatible con ROV Risk Modeler
- Separación de tareas y control con Administradores y Usuarios Regulares.
- Gráficos y tablas altamente interactivos, incluyendo la habilidad de cambiar las tablas y gráficos de una lista de 25 gráficos.
- Cree los escenarios para todos los reportes y datos una vez, y nuevos datos y resultados alimentaran los reportes automáticamente.

ROV Real Options
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R R I S S K K

ROV DASHBOARD es una aplicación de software para empresas que puede ser instalada en un servidor con múltiples usuarios, y de igual forma como aplicación para un único computador de escritorio.

La edición para empresas o ROV Dashboard es muy simple de usar, donde el usuario, solo requiere visitar una pagina web interna e introducir un nombre de usuario y contraseña asignados por su administrador de redes. Todos los requerimientos técnicos son controlados por el administrador. Como usuario final, simplemente necesita la dirección de la página web y su propio nombre de usuario y contraseña en la página de registro. Esta información se la provee su administrador de redes.

Estos son algunas herramientas destacadas del sistema ROV Dashboard:

- Cree un grupo de reportes, diagramas y tablas que son altamente intuitivas, y protegidas por nombre de usuario y contraseña
- Cree la oportunidad de acceder desde cualquier parte del mundo para ver sus reportes que son constante y automáticamente actualizados
- Viene en múltiples lenguajes incluyendo Inglés, Chino, Español, Japonés, Portugués, Italiano, Francés, Alemán y Ruso
- Completamente compatible con ROV Risk Modeler donde los archivos XML de salida creados por ROV Modeler pueden ser leídos y actualizados en el ROV Dashboard.
- Cree los escenarios para todos los reportes y datos una vez, y nuevos datos y resultados alimentaran los reportes automáticamente.
- Gráficos y tablas altamente interactivos, incluyendo la habilidad de cambiar las tablas y gráficos de una lista de 25 gráficos
- Junto al ROV Modeler, ROV Dashboard provee una solución a los datos y necesidades de análisis de su empresa.
- Proveeremos consultoría y entrenamiento en analizar datos y necesidades de análisis de su empresa, implementándolos en Excel con la ayuda de ROV Risk Simulator y ROV Modeling Toolkit, y convertirlo en ROV Modeler para la implementación del software (enviaremos nuestro personal para configurar el servidor), y los ejecutivos de la firma solo accederán los reportes en el ROV Dashboard.
- Proceso simple e intuitivo de 4 pasos para crear reportes:
 - Fijar usuarios
 - Fijar la fuente de datos
 - Fijar reportes
 - Asignar reportes para usuarios específicos
- Dos tipos de usuarios pueden ser fijados: Administradores y usuarios regulares.
- Los Administradores pueden:
 - Crear nuevos usuarios, cambiar contraseñas y nombres de usuario
 - Crear nuevos reportes y asignar los reportes a distintos grupos y usuarios
 - Crear nuevos ítems como gráficos y tablas, y la ubicación de sus Fuentes de datos
- Usuarios Regulares pueden:
 - Ver reportes que están solo autorizados a ver y recibir
 - Actualizar ciertos gráficos y tablas en el reporte

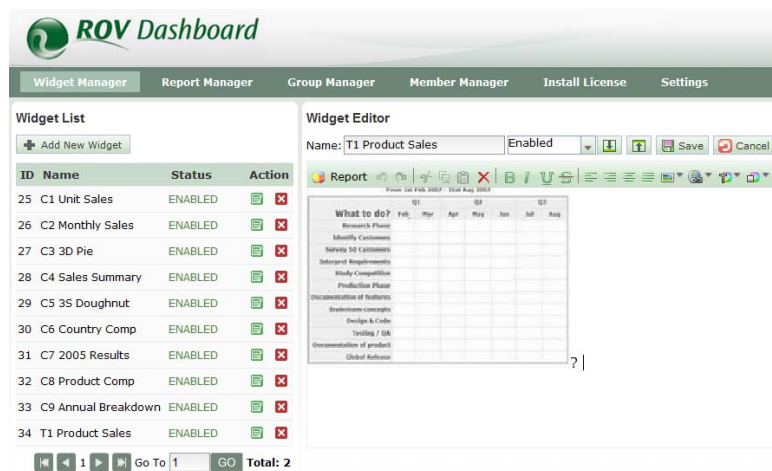
VERSIONES DE PRUEBA

No hay versiones de prueba para ROV Dashboard ya que esta herramienta requiere consultoría y entrenamiento antes de la implementación, y la implementación con un servidor, junto a las herramientas del ROV Modeler (el ROV Modeler es usado para bajar y vincular bases de datos y archivos de datos para realizar análisis avanzados en miles y millones de datos y devuelve los resultados en archivos XML que pueden ser leídos, actualizados y vistos en ROV Dashboard.

REQUISITOS DEL SISTEMA

ROV Dashboard es una aplicación Java Web basada en Tecnologías Hibernate, Spring, y Struts. Para la edición de escritorio, solo necesita Windows (XP y Vista, 32 y 64 bits), Linux, Unix, o Mac y un navegador de internet como Internet Explorer o Firefox.

Para la edición de empresa, corre con cualquier aplicación Java y soporta todos los sistemas de administración de datos (RDBMS). Puede ser instalado en Windows (XP y Vista, 32 y 64 bits), Linux, Unix, Mac, y soporta arquitecturas X86, X64, AMD64, y IA64 . Soporta todos los RDBMS como MSSQL, Oracle, DB2, SYBASE, MySQL, etcétera. La interface del usuario final es la aplicación Web 2.0, usando Ajax, Flash, y XML. Finalmente, para servidores, realizamos la consulta inicial e implementación para su firma. La consulta incluye aplicar análisis ROV Modeler a los datos de su firma y el uso subsecuente de los resultados generados en ROV Dashboard.



ROV WEB MODELS (MODELOS WEB ROV) 1.0

- Sobre 800 funciones y modelos avanzados en la web.
- Nuestros modelos matemáticos pueden ser OEM en sus propios sistemas.
- Páginas web diseñadas para la necesidad de su negocio (podemos crear las páginas con los modelos que usted seleccione)
- Cálculos rápidos con resultados rápidos versus salidas detalladas de escenarios en tablas y gráficos.
- Todos los modelos matemáticos, financieros y analíticos han sido doblemente revisados por diferentes profesores y expertos en el tema.
- Completamente compatible con aplicaciones software de ROV Risk Simulator y ROV Modeling Toolkit
- Menos caro que una simple licencia de computador de escritorio con la posibilidad de múltiples usuarios en una única cuenta de usuario.
- Accesible desde cualquier parte del mundo sin la necesidad de tener grandes aplicaciones de software instaladas

ROV Real Options
Valuation
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R R I S S K

ROV WEB MODELS es un conjunto de modelos y funciones accesibles en Internet usando Internet Explorer o Firefox.

Estas son algunas herramientas destacadas de ROV Web Models:

- Sobre 800 funciones y modelos avanzados disponibles en la Web.
- Modelos de planeación financiera con tablas y gráficos interactivos (seguros de vida, amortización de hipotecas, jubilaciones, ahorros universitarios, inversiones personales y mucho más) en la Web
- Podemos diseñar y crear modelos nuevos que cumplan sus necesidades y estos ser cargados en nuestra página o en nuestros sistemas propios.
- Nuestros modelos matemáticos pueden ser OEM en sus propios sistemas.
- Paginas web diseñables a las necesidades de su negocio (podemos crear las paginas con los modelos que usted seleccione)
- Cálculos y resultados rápidos versus salidas detalladas de escenarios en tablas y gráficas
- Todos los modelos matemáticos, financieros y analíticos han sido doblemente revisados por profesores y expertos en el tema.
- Completamente compatible con aplicaciones software ROV Risk Simulator y ROV Modeling Toolkit
- Menos caro que una simple licencia de computador de escritorio con múltiples usuarios en una única cuenta de acceso.
- Accesible en cualquier parte del mundo sin la necesidad de grandes aplicaciones de software instaladas.
- La lista detallada de nuestros 800 modelos avanzados está disponible para descarga con solicitud, y estos modelos son distribuidos en los siguientes grupos:

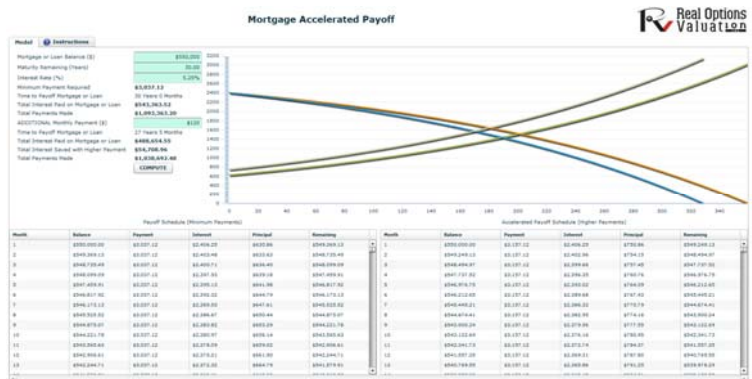
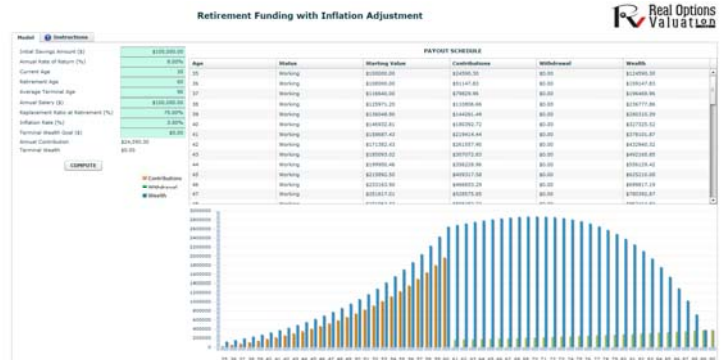
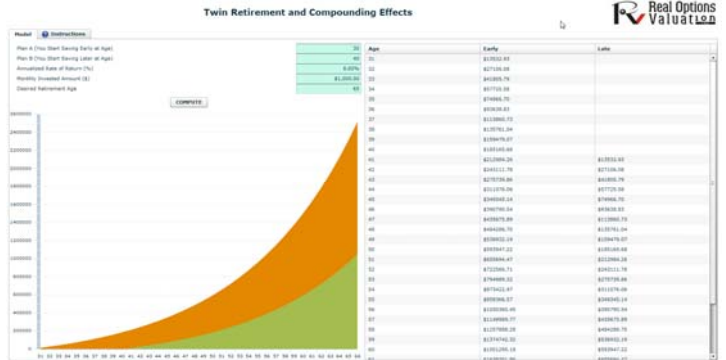
- Funciones Matematicas Avanzadas
- Modelos Financieros Basicos
- Modelos de Opciones Basicas
- Matemáticas de Bonos, Opciones, Precios y Rendimientos
- Analisis de Riesgo Crediticio
- Probabilidad de Incumplimiento y paridad activos-patrimonio
- Delta Gamma Hedging
- Opciones exoticas y derivados
- Razones financieras
- Pronosticos de extrapolacion e interpolacion
- Analisis de inventorios
- Distribución de probabilidad CDF, ICDF,PDF
- Distribución de probabilidad de momentos teóricos
- Paridad put-call y opción de sensibilidad
- Modelos Queuing
- Modelos Six Sigma
- Valoración en riesgo, volatilidad, riesgo de portafolio y retornos
- Análisis de Opciones Reales

REQUISITOS DEL SISTEMA

Sólo necesita acceso a Internet y un navegador como Internet Explorer o Firefox. Nosotros manejaremos todos los requisitos en nuestros servidores.

VERSIONES DE PRUEBA

No hay versiones de prueba para este modelo Web.



Software-based Hands-on Seminarios y Cursos

**Certificado en Dirección de Riesgo (CRM)
Certificación Senior Credit Risk Management (SCRM)**

Risk Analysis Course

- **Herramientas Analíticas**
- **Opciones Reales Básicas (SLS Software)**
- **Pronósticos (Simulador de Riesgo)**
- **Simulación de Monte Carlo (Simulador de Riesgo)**
- **Optimización (Simulador de Riesgo)**

Real Options for Analysts

- **Bases para Opciones Reales**
- **Entendiendo las bases del software SLS**
- **Enmarcar Opciones básicas**

Real Options for Executives

- **Las bases de Opciones Reales**
- **Decisiones estratégicas utilizando opciones reales**
- **Enmarcar opciones estratégicas**
- **Interpretar resultados de opciones**

Valuing Employee Stock Options

- **Aplicar redes binomiales en el ESO Toolkit para valorar opciones de empleados bajo el FAS 123 revisado del 2004**
- Seminario y Cursos Personalizados**
- **Cursos personalizados para las necesidades de su empresa**

Sample companies that have been through our training seminars:

3M, Accenture, AIG, Allstate Insurance, Airbus, Alexion, Aquiva Trading, AT&T, Boeing, Chevron Texaco, Duke Energy, Eli Lilly, 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!

RO Real Options
Valuation

Herramientas analíticas avanzadas como el software del simulador de riesgo son construidas para ser fáciles de usar pero pueden complicar al analista si son mal utilizadas. Suficiente entendimiento teórico junto a aplicación pragmática es vital; por lo tanto el entrenamiento es crítico. Ofrecemos muchos cursos y seminarios de entrenamiento en las áreas de análisis de riesgo, y análisis de opciones reales, dictado por expertos mundiales en estos temas. Nuestras clases generalmente cuentan con pocos participantes para así transmitir un mejor conocimiento por parte de los instructores. Los cursos son dictados en diferentes regiones a nivel mundial (buscar en la pagina web para el calendario), en salones equipados con computadores donde cada participante tendrá su terminal de computador.

Nuestro curso de **Análisis de Riesgo (Risk Analysis)** es un seminario de dos días enfocado en el entrenamiento de software, con temas cubriendo las bases de riesgo e incertidumbre, usando simulación de Monte Carlo, y todos los métodos detallados en proyección y optimización. Este curso de 2 días basado en simulador de riesgo cubre los siguientes temas:

- Simulación Monte Carlo (simulación, simulación no paramétrica bootstrap, simulación correlacionada cópula, truncado, ajuste de la distribución, estadísticas aplicadas para interpretar resultados de la simulación, pruebas de hipótesis, extracción de datos y análisis, simulación multidimensional, perfiles en simulación, y análisis de datos históricos.)
- Pronósticos (series de tiempo, regresión multivariable, extrapolación no lineal, procesos estocásticos, Box-Jenkins ARIMA, econometría básica, modelo GARCH, curvas logísticas, pronósticos sin datos, método DELPHI, modelación estacional y mucho mas!)
- Optimización (optimización lineal en decisión continua y discreta, optimización de portafolio, análisis de frontera eficiente, y técnicas de análisis de decisión)
- Modelando Análisis (análisis de situación, análisis de sensibilidad, análisis tornado y spider, simulación, gráficos y otros)
- Opciones Reales Básicas (casos simples y ejemplos de aplicaciones, entendiendo las bases de opciones reales)

También tenemos un curso para los **Analistas (Real Options for Analysts)** que quieren inmediatamente empezar a aplicar opciones estratégicas en su trabajo pero carecen de experiencia en análisis y modelación. Este curso de dos días cubre como montar modelos, aplicarlos, y resolver problemas usando simulación, utilizando de cerca las matemáticas y enrejados binomiales y multinomiales utilizando el SLS software.

Este es un curso de dos días usando el software SLS y cubre los siguientes temas:

- Introducción a opciones reales (qué, donde, quién, cuando, cómo y porqué)
- Casos aplicados en análisis de opciones reales
- Perspectiva de diferentes técnicas de valoración: modelos, ecuaciones parciales diferenciales, y enrejados binomiales.
- Aplicar la técnica de probabilidad neutral de riesgo, opciones europeas y americanas, abandono, expansión, contracción, opciones de elección, y 4 métodos de estimación de volatilidad
- Perspectiva de los diferentes módulos SLS y volatilidad informática.
- Solucionar opciones cambiando elementos de entrada y opciones exóticas personalizadas, complejas opciones secuenciales compuestas, mean-reverting options, jump-diffusion options, and dual-asset rainbow options usando enrejados trinomiales, quadrimomiales, y pentanomiales.
- Enmarcar opciones reales-----estructurando el problema

Nuestro curso es diseñado especialmente para **Ejecutivos (Risk Analysis for Managers)** donde repasaremos casos de estudio en 3M, Airbus, Boeing, GE y muchos otros. Provee una visión ejecutiva del análisis de riesgo, opciones reales estratégicas, optimización de portafolio, pronósticos y conceptos de riesgo sin los detalles técnicos. Este seminario de 1 día es dirigido hacia ejecutivos, directores, y tomadores de decisión y cubre los siguientes tópicos:

- perspectiva de alto nivel sobre análisis de riesgo y opciones reales
- casos y aplicaciones reales en firmas multinacionales
- diseño de problemas en opciones estratégicas
- preguntas correctas sobre opciones estratégicas reales
- entender cómo interpretar los resultados

El seminario de **Certificado en Gestión de Riesgo (CRM, Certified in Risk Management)** es de 4 días y comprende los materiales de los cursos Risk Analysis y Real Options for Analyst enfocado hacia la certificación (CRM) proporcionada por el Instituto Internacional de Educación Profesional e Investigación. Al final del seminario de 4 días junto a los proyectos en clase y a un examen de certificación al final de las sesiones, usted recibirá su certificado CRM indicando su nueva credencial. Luego usted podrá recibir su designación CRM en cualquier documento.

El Instituto Internacional de Educación Profesional e Investigación es un instituto global con oficinas alrededor del mundo incluyendo Estados Unidos, Suiza, Hong Kong, México, Portugal, Singapur, Nigeria, Malasia, y otros. La certificación CRM es acreditada por la comisión nacional de certificación y IIPR es un miembro prestigioso de AACSB (Association for the Advancement of Collegiate Schools of Business). AACSB es una de las agencias acreditadoras más grandes de Estados Unidos, reconocida por el Departamento de Educación y tiene más de 500 escuelas de negocios alrededor del mundo como sus miembros. Además los seminarios de IIPR son aprobados por Project Management Institute (PMI) y los participantes obtienen 30 unidades profesionales de desarrollo (PDU) al completar el curso. IIPER comprende profesores de varias universidades incluyendo Lehigh University (Pennsylvania), University of Applied Sciences (Switzerland), Naval Postgraduate School (California), University of Missouri (Kansas City), y otras. También tiene alianzas estratégicas y colabora con varias instituciones de investigación a nivel global.

Seminarios Personalizados

Cualquiera de los seminarios puede ser adecuado a su firma. Las ventajas incluyen tener contenido específico para sus necesidades, casos y aplicaciones específicos para su industria, requerimientos inmediatos y discutir abiertamente datos modelos y estrategias bajo acuerdos de confidencialidad.

- Aprenda de expertos en el tema con las mejores credenciales y experiencia y no de entrenadores no calificados.
- El instructor principal del seminario es el creador del simulador de riesgo y el software SLS, el autor de 7 libros en temas de modelación de riesgo, opciones de riesgo y valoración. También es profesor en economía y finanzas, consultor de muchas multinacionales, y es conocido globalmente por su experiencia en análisis de riesgo y opciones reales.
- Obtenga libros gratis, modelo y ejemplos de entrenamiento, videos, diapositivas y muchos otros materiales.

CONOCIMIENTOS TECNICOS

Dr. Johnathan Mun es el creador del Software y enseña Análisis de Riesgo, Análisis de Opciones Reales, Análisis de Riesgo para Gerentes, CRM, y otros cursos. Ha sido Consultor de muchas firmas que están en la lista Fortune 500 (3M, Airbus, Boeing, GE y Motorola) y para el gobierno (Departamento de Defensa, Agencias Estatales y Federales) en Análisis de Riesgo, Valoración y Opciones Reales. Ha escrito muchos libros en temas de: Análisis de Opciones Reales: Técnicas y Herramientas, Primera y Segunda Edición (Wiley Finance, 2005, 2002); Curso de Análisis Opciones Reales: Casos de Negocios (Wiley Finance, 2003); Análisis de Riesgo Aplicada: Mas allá de la Incertidumbre en los Negocios (Wiley, 2003); Valoración de Opciones de Acciones para los Empleados en Virtud 2004 FAS 123 (Wiley Finance, 2004); Modelando Riesgo: Aplicación Simulación Monte Carlo, Análisis de Opciones Reales, Pronostico y Optimización (Wiley 2006); Modelos Analíticos Avanzados: 800 Funciones y 300 Modelos de Basilea II a Wall Street y mas Allá (Wiley 2008); The Banker's Hand Book on Credit Risk: Implantación de Basilea II (Elsevier Academic Press 2008); y otros. Es el Fundador y Director General en Valoración de Opciones Reales, Inc., y es el responsable del desarrollo de analisis de productos de Software, consultoría y entrenamiento en servicios. Fue Vicepresidente de Analytics at Decisioneering, Inc. (Oracle), y fue Gerente de Consultoría en KPMG's Global Financial Strategies. Antes de KPMG, fue jefe de pronostico financiero para Vikings, Inc. (FDX/FedEx Company). Dr Mun es también catedrático en U.S. Naval Postgraduate School y Catedrático en la University of Applied Science and Swiss School of Management (Zúrich and Frankfurt), y se ha encargado de otras cátedras en varias universidades. Tiene un PH.D en Finanzas y Economía, un MBA en Administración de Empresas, M.S. en Gestión de Ciencia, y BS en Licenciatura en Ciencias Aplicadas. El esta certificado en Gestión de Riesgo Financiero (GRF), Certificado en Consultoría Financiera (CCF) y Certificado en Manejo de Riesgo (CRM).

CERTIFIED IN RISK MANAGEMENT



"El Dr. Johnathan Mun es un instructor brillante y enérgico capaz de poder tomar los temas más difíciles y hacerlos comprensibles y practicos. Sin duda el mejor instructor que he tenido durante mucho tiempo."
-Curtis Ching, Director de Desarrollo de Negocios en Finanzas, GE Money

"Dr. Mun está en condiciones de tomar los más difíciles y desafiantes conceptos y hacerlos más fácil de entender aplicándolos a los retos de hoy en día y a los constantes cambios en los entornos empresariales. Definitivamente es uno de los mejores seminarios a los cuales he asistido y lo catalogo como el mejor profesor en el campo." -Robert Finocchiaro, Ph.D., Director Corporativo de Servicios R&D, The 3M Company

Asistir a uno de nuestros seminarios intensivos sobre Análisis de Riesgo Integrado por 4 días, Completar el requisito de trabajo en clase y obtendrá el Certificado en Manejo del Riesgo (CRM), Ofrecido por el Instituto Internacional de Educación Profesional e Investigación

"Nunca antes había visto un entrenador tan capaz!" Hussein Alghamdi, Grupo Savola, Arabia Saudita
"Excelente instructor con talleres y ejemplos prácticos." Y.L. Lee, Ingeniero Industrial, Seagate Technology
"Muy buena Formación (entrenamiento) con ejemplos prácticos." Aprianto Sommantri, Ingeniero, Chevron Texaco

"Dr. Johnathan Mun ha sido capaz de juntar tanto la aproximación al aprendizaje y los materiales de enseñanza para que cambiemos nuestro esquema cognitivo y logremos digerir de una forma más fácil el manejo del riesgo. Como el futuro de los negocios está centrado en la vigilancia de la toma de decisiones, el enfoque que utiliza el Dr. Mun es de lejos uno de los mecanismo más efectivos en la sostenibilidad corporativa."
Kenneth English, Director de Tecnologías Emergentes, The Timken Company

"Dr. Mun tiene la capacidad de tomar el cohete de la ciencia y de traer materias complicadas a la tierra de manera memorable. De una forma simple usted sale de las secciones habiendo aprendido mucho y empezando a ponerlo en practica inmediatamente."
Robert Fourt, Partner, Gerald Eve Consulting (UK)



Real Options Valuation, Inc. es el proveedor mundial preferido por el Instituto Internacional de Educación Profesional y Investigación (IIEPI) y se han concedido los derechos de CRM para enseñar cursos de certificación. Después de completar nuestro seminario de 4 días y presente con éxito un examen administrado in vivo el último día, los participantes tendrán la designación de CRM!!, Real Options Valuation, Inc. es una de las 3 organizaciones en el mundo con derecho de conceder esta designación (CRM). Entonces, ¿Cómo comparar nuestro seminario con otros? Sorprendentemente, nuestro seminario de formación de 4 días es más barato que otros, llamados cursos de simulación, al completar nuestro curso de entrenamiento, usted recibirá la designación en CRM, certificación que otras firmas pueden otorgar. Además la formación estará dirigida por un exclusivo entrenador en CRM, el Dr. Johnathan Mun, Fundador y Director General en Real Options Valuation, Inc.; un profesor y experto de renombre internacional en Análisis de Riesgo; autor de 8 libros en temas de riesgo, valoración y estrategia; así como promotor del Simulador de Riesgo y Real Options SLS Software. Compare esto a ser entrenado por alguien recién graduado y con menos de 2 años de experiencia en el campo empresarial, o por un MBA con una insuficiente formación en la teoría y práctica en el Análisis de Riesgo. Usted no solo aprenderá las aplicaciones prácticas de análisis de riesgo, sino también las bases teóricas de estas aplicaciones.

VENTAJAS

Las Principales Ventajas de asistir a uno de nuestros seminarios son las siguientes:

- Obtener el Certificado de Manejo de Riesgo (CRM).
- Aprender de Expertos reales en este campo, con las mejores credenciales y mucha experiencia, y no de un grupo de maestros incompetentes.
- Obtener todo de la fuente!! El principal instructor del seminario es el creador de el simulador de riesgo y el software REAL OPTION SUPER LATTICE SOLVER (SLS), autor de 8 libros en temas de modelación de riesgo, opciones reales y Valoración. También es profesor de Economía y Finanzas, consultor de varias multinacionales y es conocido a nivel mundial por su experiencia en Análisis de Riesgo y opciones reales.
- Obtén libros Gratis, ejemplos y modelos de formación, videos, diapositivas y muchos otros materiales para empezar.

El Instituto Internacional de Educación Profesional e Investigación (IIPER) es una institución mundial con aliados y oficinas alrededor del mundo incluyendo los Estados Unidos, Suiza, Hong Kong, Mexico, Portugal, Singapur, Nigeria, Malasia y otros. IIPER CRM es la certificación acreditada por la Comisión Nacional de Certificación y el IIEPI es un miembro prestigioso de la AACSB (Association for the Advancement of Collegiate Schools of Business).

AACSB es uno de las agencias más grandes acreditadas en Estados Unidos y reconocida por el Departamento de Educación de Estados Unidos, y tiene alrededor de 500 escuelas de negocios alrededor del mundo. Además, Los seminarios por el IIEPI son aprobados por el Instituto de Gestión de Proyectos (IGP) y los participantes también pueden obtener 30 unidades de desarrollo profesional (PDU) al finalizar el curso. La Junta de Normas Internacionales del IIEPI comprende profesores de varias universidades incluyendo Lehigh University (Pensilvania), Universidad de Ciencias Aplicadas (Suiza), Naval Postgraduate School (California), University Of Missouri (Kansas City) y otras. El IIPER también tiene alianzas estratégicas y colaboraciones con varias instituciones de investigación a nivel mundial.

TEMAS DEL SEMINARIO DE CRM

Modulo 1: Introducción al Análisis de Riesgo

Capítulo 1: Introducción a la Capacitación y qué esperar de este.
Capítulo 2: ¿Cómo Son Tomadas las Decisiones Empresariales?
Capítulo 3: ¿Qué es el Riesgo y Porqué Debe Ser Considerado el Riesgo
Capítulo 4: Listado de Aplicaciones sobre Análisis de Riesgo

Modulo 2: Simulación Monte Carlo Con Simulación de Riesgo

Capítulo 1: Listado de Software sobre el Simulador de Riesgo
Capítulo 2: Perfiles, Supuestos, Previsiones y Simulaciones
Capítulo 3: Interpretación sobre Pronósticos Estadísticos
Capítulo 4: Preferencias de Ejecución y Valores Semilla
Capítulo 5: Ejecución de Informes, Almacenamiento y Extracción de simulación

Modulo 3: Técnicas Avanzadas de Simulación

Capítulo 1: Correlación y Distribución Truncada
Capítulo 2: Parámetros Alternos
Capítulo 3: Simulaciones Multidimensionales
Capítulo 4: Ajuste de la distribución
Capítulo 5: Análisis de datos Históricos y dificultades en la Simulación

Modulo 4: Herramientas de Análisis y Simulación

Capítulo 1: Gráficos Tornado y Spider
Capítulo 2: Análisis Dinámico de Sensibilidad y análisis de Escenarios
Capítulo 3: Prueba de Hipótesis sobre Distribuciones
Capítulo 4: Simulación No Paramétrica Bootstrap

Modulo 5: Optimización en Simulador de Riesgo

Capítulo 1: Introducción a la Optimización
Capítulo 2: Optimización Continua
Capítulo 3: Optimización Entera

Modulo 6: Pronóstico

Capítulo 1: Descripción General de las Técnicas de Pronóstico y de los Tipos de Datos
Capítulo 2: Pronóstico sin Datos
Capítulo 3: Pronóstico y Análisis de Series de Tiempo
Capítulo 4: Extrapolación No Lineal
Capítulo 5: Análisis Multivariado Lineal y Análisis de Regresiones No Lineales
Capítulo 6: Procesos Estocásticos
Capítulo 7: Pronósticos Avanzados: Box-Jenkins ARIMA y Auto ARIMA, GARCH, J-Curve, S-Curves, Markov Chains, Diagnóstico de Datos, Propiedades Estadísticas, Econometría Básica

Modulo 7: Análisis de Opciones Reales: Teoría y Antecedentes

Capítulo 1: Opciones Reales: ¿Qué, ¿Dónde, ¿Quién, ¿Cuándo, ¿Cómo y ¿Por qué?
Capítulo 2: Casos Aplicados a los Negocios
Capítulo 3: Descripción de las Diferentes Técnicas de Valoración de las Opciones
Capítulo 4: Técnicas de Probabilidad del Riesgo Neutral
Capítulo 5: Resolviendo Opciones Europeas Básicas y Americanas de tipo Call
Capítulo 6: Usando Excel para Resolver Opciones Call Americanas y Europeas
Capítulo 7: Opciones de Abandono, Expansión, Contracción y Selección

Modulo 8: Análisis de Opciones Reales: Aplicación al Programa SLS

Capítulo 1: Visión General de los Diferentes Módulos SLS y Estimación de Volatilidad
Capítulo 2: La Estimación de Volatilidad
Capítulo 3: Cambios en Opciones con Entradas Personalizadas y Opciones Exóticas
Capítulo 4: MSLS: Múltiples Opciones Compuestas Secuenciales
Capítulo 5: MNLS: Solución de procesos con Reversión a la Media, Salto de Difusión y Opciones Arco Iris de doble activo usando utilizando enrejados Trinomiales, Quadronomiales y Pentanomiales
Capítulo 6: Elaboración de Opciones Reales --- Estructura del Problema
Capítulo 7: Los Sigüientes Pasos...

CONOCIMIENTOS TECNICOS

Dr. Johnathan Mun es el creador del Software y enseña Análisis de Riesgo, Análisis de Opciones Reales, Análisis de Riesgo para Gerentes, CRM, y otros cursos. Ha sido Consultor de muchas firmas que están en la lista Fortune 500 (3M, Airbus, Boeing, GE y Motorola) y para el gobierno (Departamento de Defensa, Agencias Estatales y Federales) en Análisis de Riesgo, Valoración y Opciones Reales. Ha escrito muchos libros en temas de: Análisis de Opciones Reales: Técnicas y Herramientas, Primera y Segunda Edición (Wiley Finance, 2005, 2002); Curso de Análisis Opciones Reales: Casos de Negocios (Wiley Finance, 2003); Análisis de Riesgo Aplicada: Más allá de la Incertidumbre en los Negocios (Wiley, 2003); Valoración de Opciones de Acciones para los Empleados en Virtud 2004 FAS 123 (Wiley Finance, 2004); Modelando Riesgo: Aplicación Simulación Monte Carlo, Análisis de Opciones Reales, Pronóstico y Optimización (Wiley 2006); Modelos Analíticos Avanzados: 800 Funciones y 300 Modelos de Basilea II a Wall Street y más Allá (Wiley 2008); The Banker's Hand Book on Credit Risk: Implantación de Basilea II (Elsevier Academic Press 2008); y otros. Es el Fundador y Director General en Valoración de Opciones Reales, Inc., y es el responsable del desarrollo de análisis de productos de Software, consultoría y entrenamiento en servicios. Fue Vicepresidente de Analytics at Decisioneering, Inc. (Oracle), y fue Gerente de Consultoría en KPMG's Global Financial Strategies. Antes de KPMG, fue jefe de pronóstico financiero para Vikings, Inc. (FDX/FedEx Company). Dr. Mun es también catedrático en U.S. Naval Postgraduate School y Catedrático en la University of Applied Science and Swiss School of Management (Zúrich and Frankfurt), y se ha encargado de otras cátedras en varias universidades. Tiene un Ph.D en Finanzas y Economía, un MBA en Administración de Empresas, M.S. en Gestión de Ciencia, y BS en Licenciatura en Ciencias Aplicadas. El está certificado en Gestión de Riesgo Financiero (GRF), Certificado en Consultoría Financiera (CCF) y Certificado en Manejo de Riesgo (CRM).

REFERENCIAS DE LOS CLIENTES

Compañías que han pasado por nuestros seminarios de entrenamiento o han obtenido nuestro software y servicios de consultoría:

3M, Accenture, AIG, Allstate Insurance, Airbus, Alexion, Aquiva Training, AT&T, Boeing, Chevron Texaco, Duke Energy, Eli Lilly, 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, y muchas otras!

SOBRE EL ENTRENAMIENTO Y SEMINARIOS:

GE (La corporación más grande del mundo):

“El Dr. Johnathan Mun es un instructor brillante y energético, capaz de tratar los temas más complicados y volverlos entendibles y prácticos. Sin duda el mejor instructor que he tenido en un largo tiempo.”

-Curtis Ching, Director de Desarrollo de Negocios y Finanzas, GE, GE Money (Asia).

3M (La firma más creativa en el mundo):

“Johnathan Mun es capaz de tomar hasta los conceptos técnicamente más complicados, y volverlos simples de entender y aplicables al cambiante mundo de los negocios actuales. Es definitivamente uno de los mejores seminarios al que he asistido, y calificaría al Dr. Mun como uno de los principales concededores de este campo.”

-Robert Finocchiaro, Ph. D, Director de Servicios Corporativos R&D, The 3M Company, (USA)

Departamento de Defensa EE.UU. (El Empleador más grande del mundo):

“Gran presentación! Muy buena sesión con la mejor discusión costo/ opción/riesgo/ que he visto. Debe ser un requisito para cada promoción nueva de almirantes de la Armada. Esta sesión fue increíble. Gran expositor, nos tuvo interesados todo el tiempo. El describió y presentó una serie de herramientas para que un líder las utilice para tomar las mejores decisiones. El Dr. Mun fue muy animado y entusiasta. Ejemplos de la vida real ayudaron significativamente al entendimiento. Exige a la audiencia que piense. Muy buenos ejemplos reales fueron incluidos. Simplemente sobresaliente! **-Una recopilación de citas de Comandantes y Capitanes de la Armada en la Escuela Naval de Postgrados (USA)**

The Timken Company (La Corporación mas caritativa):

“El Dr. Johnathan Mun ha sido capaz de poner juntos los materiales de aprendizaje y enseñanza que cambian nuestro esquema del conocimiento en como manejamos el riesgo de una forma digerible. Como el futuro de los negocios esta enfocado en la toma de decisiones, la aproximación que utiliza el Dr. Munn es de lejos uno de los mecanismos más efectivos para el soporte corporativo sostenible.” **Kenneth English, Director de Tecnologías Emergentes, The Timken Company (USA)**

Gerald Eve (Firma Consultora del sector real en el Reino Unido):

“Mun tiene la habilidad de tomar el cohete fuera de la ciencia y aterrizar temas de una manera memorable. De una forma simple usted sale de las sesiones no sólo habiendo aprendido mucho, sino empezando a ponerlo en práctica inmediatamente.”

-Robert Fourt, Socio, Gerald Eve Consultora (UK)

“Dr. Johnathan Mun es uno de los profesores más talentosos en análisis cuantitativo de riesgo en la historia de las finanzas y los negocios. Todos sus libros combinan ciencias, arte, intuición, creatividad, y por encima de todo, plenamente perceptivos, siempre prácticos, proveen claridad sorprendente, en los métodos y caminos apropiados en la toma de decisiones, al enfrentarse a la incertidumbre. Su herramienta de software contiene un vasto tesoro de cerca de 600 modelos, algo jamás creado en este campo. La aplicación práctica de los modelos de riesgo en sus libros, software, y lecturas nos tendrán ocupados por muchos años!”

-Brian Watt, Jefe Oficial de Riesgo y CFO, GECC (USA)

“El uso de ejemplos reales para ilustrar conceptos fue genial. Mun tiene un conocimiento profundo en la materia y fue capaz de impartir el conocimiento a los participantes.”

-Tim Mull, Capitán de la Armada, Departamento de Defensa (USA)

“La profundidad y conocimiento del instructor y la habilidad para aprender de la práctica fue increíble.”

-Debra Gordon, Analista de Crédito, National Bank of Dominica (Caribbean)

“Los materiales técnicos fueron fáciles de entender por las excelentes explicaciones y ejemplos.”

-Mark Rhoades, Profesor, Universidad Naval (USA)

“Una excelente entrega de una materia compleja. Dr. Mun tuvo a la clase entera comprometida todo el tiempo.”

-Lou Owayni, Director de Proyectos, Adaptec (USA)

“Muy relevante para mi trabajo, con un amplio tema, y un gran estilo de presentación.”

-Chris Law, Director de Servicios de Proyecto, Genentech (USA)

“Excelente conocimiento adquirido.”

-Vitorio Stana, Director de Calidad, Industrias Avcorp (Canada)

“Explicación clara del tema, entusiasmo, y accesibilidad del Dr. Mun.”

-Andrew Putney, Grupo de Consultoría Maxiom (USA)

“El conocimiento y entusiasmo por la materia de Johnathan, y la habilidad de proveer ejemplos realísticos que son aplicables lo hicieron un seminario increíble.” **-Kristi Novinger, Senior IT Project Manager, APL Limited (USA)**

“El conocimiento del Dr. Mun fue fantástico y su entusiasmo fue alto y contagioso. Realmente disfruté el tema.”

-Brian Suter, Analista de Proyectos, Wells Fargo (USA)

Airbus (La constructora de Aviones más grande del mundo localizada en Francia):

Johnathan Mun había publicado previamente un número de libros muy populares que trataban sobre diferentes aspectos del análisis de riesgo, técnicas asociadas y herramientas. Esta última publicación pone todos los pedazos juntos. El libro es realmente inevitable para cualquier profesional que quiera tratar la evaluación del riesgo siguiendo una aproximación lógica, concreta, y concluyente.”

-Jean Louis Vaysse, Vicepresidente, Airbus (Francia)

Seagate (Una de las fabricantes de discos duros más grande del mundo):

“Lectura obligada para directores de portafolio.....captura la exposición al riesgo de inversiones estratégicas, y provee gestión con estimaciones de resultados posibles y mitigación de riesgo” **-Rafael E. Gutierrez, Director Ejecutivo de Marketing Estratégico, Seagate Technology (USA)**

GEMPLUS (Constructores de memorias y tarjetas inteligentes en Francia):

“Desmitifica el análisis de las opciones reales y entrega una poderosa guía pragmática para tomadores de decisiones y similares. Finalmente hay un libro que equipa a los profesionales a fácilmente reconocer, valorar y aprovechar opciones reales en su mundo alrededor.” **-Jim Schreckengast, Vicepresidente, R&D Strategy, Gemplus International SA, (Francia)**

MONITOR GROUP (firma consultora):

“Este libro se debe tener y leer, una refrescante visión de los procesos de toma de decisiones...a menudo no puedes decir sinceramente que un libro rompe nuevos esquemas, pero este claramente lo ha hecho.”

-Glenn Kautt, CEO, Monitor Group, Inc. (USA)

WHARTON (una de las mejores escuelas de negocios):

“Real Option Analysis es el libro de opciones reales más claro que hasta ahora hemos leído. Hace un trabajo excelente de desmitificar un tema difícil y complejo. Provee una base sólida para concebir y evaluar opciones reales de inversión, lo que lo hará útil para los estudiantes.”

-Ian MacMillan, Ph.D., Fred Sullivan Professor of Entrepreneurship, Wharton School, Universidad de Pennsylvania (USA)

KOZO (desarrollador premier en Japón):

“Muchos libros en opciones reales pueden ser intimidadores. Mun ofrece una guía pragmática, fiable, y entretenida. Fórmulas y conceptos complejos son explicados brillantemente con ejemplos de varias industrias.”

-Shota Hattori, Presidente y CEO, Kozo Keikaku, Inc. (Japan)

GARTNER GROUP (grupo de consultoría y publicación):

“La estrategia de desarrollo ha caído en tiempos difíciles en los que se juzgan como no relevantes para un mundo que cambia rápido. Con este libro, ataca esta excusa pobre presentando una metodología claramente organizada y soportada que progresa lógicamente a la construcción de estrategias de negocio reales.”

-Robert Mack, Vicepresidente, Gartner Group (USA)

“Finalmente un libro técnicamente sofisticado, suficientemente útil y escrito para que pueda ser usado. Destinado a convertirse en el manual de opciones reales.”

-Tracy Gomes, Presidente, Intellectual Property Economics, (USA)

“Escrito desde el punto de vista de un educador, este libro ofrece una referencia posible de leer, llena de herramientas de decisión para satisfacer tanto novatos como veteranos.”

-Richard Kish, Ph.D., Profesor de Finanzas, Lehigh University (USA)

“Mun ha convertido su tácito conocimiento financiero en un libro digerible y amigable. Efectivamente guía al lector por un camino empezando en el descuento de flujo de efectivo, pasando por Análisis de Monte Carlo, llegando a opciones reales, para luego acercarse más al objetivo de alcanzar decisiones corporativas confidenciales. Su habilidad para explicar claramente las relaciones de métodos de análisis populares, hará de este un libro de referencia obligado para tomadores de decisiones.”

-Kenneth English, Director de R&D, The Timken Company (USA)

“El libro debe ser leído por cualquiera interesado en los análisis de opciones reales. Mun ha hecho el tema claro como un cristal, y exponencialmente fácil de entender. Simulación de Monte Carlo y el software en opciones reales, simplemente valen más que el precio del libro.” **-Morton Glantz, Profesor de Finanzas, autor de libros, asesor financiero del gobierno y entidades privadas (USA)**

“Mun provee una guía paso a paso de las simulaciones y el análisis, invaluable para nosotros quienes estamos insatisfechos con valoraciones convencionales.”

-Fred Kohli, Head of Portfolio Management, Syngenta Ltd. (Suiza)

“Muchos de nosotros llegamos con la perspectiva desde nuestra propia destreza. Su capacidad hace que el libro sea entendible, relevante y por lo tanto aplicable inmediatamente.”

-Robert Fourt, Socio, Gerald Eve, (Reino Unido)

“Es una joya resplandeciente en mi biblioteca de finanzas. Demuestra un conocimiento profundo de la teoría matemática en su capacidad de reducir conceptos complejos, a explicaciones y ejemplos lúcidos. Por esta razón es mi autor preferido en este campo. Profesionales con experiencia apreciarán la competencia para convertir matemática compleja en una presentación clara de soluciones a riesgo financiero, finanzas corporativas, y pronósticos.” **-Janet Tavakoli, CEO, Tavakoli Structured Finance**

“Todos los años el mercado es inundado con libros y libros. Este es diferente. Pone una herramienta valorable en las manos de directores corporativos que desean levantarse frente a incertidumbres y riesgos y están determinados de crear valor a sus accionistas. Es un libro para la nueva generación de directores, a los que Corporate America está esperando.”

-Dr. Markus Junginger, Managing Partner, IBCOL Consulting, (Suiza)

“Presenta paso a paso a los lectores una aproximación reveladora de cómo los métodos y las herramientas cuantitativas marcan diferencia. Te enseña que es relevante. Yo recomiendo este libro, especialmente si quieres incorporar las últimas tecnologías en tu toma de decisiones para tu negocio.”

- Dr. Paul W. Finnegan, MD, MBA, Vicepresidente, Operaciones Comerciales y Desarrollo, Alexion Pharmaceuticals, Inc.

“Dr. Mun tiene la increíble habilidad de clarificar lo complejo, desmenuzando conceptos de análisis de riesgo en una guía entendible y practica para tomadores de decisiones. Este libro traza un camino que conecta teorías abstractas con aplicaciones y ejemplos reales dejando al lector ilustrado.” **-Stephen Hoye, CEO, Hoye Consulting**

“Este libro es un placer de leer no sólo para los expertos en el tema sino para los novatos. Tiene un alto riesgo de adicción para sus lectores. Guía a los lectores paso a paso por complejos conceptos matemáticos con facilidad y claridad. Ejemplos e indicadores bien escogidos, complementan los buenos capítulos. Este libro va a ser un best-seller en Dirección de Riesgo y es obligatorio para todos los profesionales.”

-Dr. Hans Weber, Syngenta AG (Suiza)

“Su nuevo libro provee la mejor y más comprensible guía para valorar decisiones estratégicas, tanto en el escenario corporativo como en la evaluación de decisiones militares estratégicas. Este libro es un clásico instantáneo y debe ser leído por cualquiera que deba tomar decisiones y hacer análisis de riesgo. La segunda versión es más versátil pues expande su alcance y cubrimiento mientras que continúa con el standard de excelencia de la primera edición. Es el libro más práctico y teórico que he leído en la materia.” **-Tom Housel, Ph.D., Profesor en Ciencias de Información, Escuela de Posgrados de la Armada, Departamento de Defensa, Monterey (USA)**

“La claridad y el cubrimiento lo hace una de las mejores guías junto a las herramientas financieras en CD-ROM.”

-Michael Sim, Partner, Moores Rowland International (Hong Kong)

“Una vez más el Dr. Johnathan Mun ha alcanzado su standard usual: excelencia en complicadas técnicas analíticas y cuantitativas que permiten al lector acceso aunque no tengan entrenamiento ingeniero o científico. Este libro presenta una seria guía para quienes usan todos los días modelos, particularmente aquellos interesados en Análisis de Riesgo y Dirección, o en como ir mas allá en cuanto a análisis estadístico simple. Es obligación tenerlo para académicos buscando bibliografía amigable, y para estudiantes que deseen tener una primera experiencia en herramientas analíticas altamente productivas.” **-Dr. Roberto J. Santillan-Salgado,**

Director del M.S., EGADE-ITESM, Campus Monterrey, (Mexico)

“Su último libro es una extensión lógica de la teoría y aplicación presentada en Real Options Analysis. Más específicamente, The Real Options Analysis Course, presenta numerosos ejemplos y provee al lector soluciones paso a paso. Después de leer el libro, los lectores entenderán mejor la teoría y las oportunidades de aplicación en decisiones corporativas.”

-Chris D. Treharne, M.B.A., A.S.A., M.C.B.A., Presidente Gibraltar Business Appraisals, Inc. (USA)

“Este texto provee un excelente seguimiento al primer libro, Real Options Analysis. Los casos en el curso dan numerosos ejemplos en como el software puede asistir en la valoración de flexibilidad de gestión y estratégica, con muchos ejemplos prácticos y útiles.” **-Charles T. Hardy, Ph.D., M.B.A., Chief Financial Officer & Director of Business Development, Panorama Research, Inc. (USA)**

“Mun claramente se ha Ganado la reputación en ser un experto en la materia....asesores, analistas, e ingenieros se volcarán todos sobre este libro y su software.”

-Phyllis Koessler, Managing Director, Koessler and Associates (Suiza)

BIBLIOGRAFIA DEL FUNDADOR

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

Dr. Johnathan C. Mun es el fundador, presidente y CEO de Real Options Valuation Inc. (ROV), una empresa consultora, entrenadora y desarrolladora de software especializada en opciones estratégicas reales, evaluación financiera, simulación de Monte Carlo, pronósticos estocásticos, optimización, y análisis de riesgo localizada en Silicon Valley, California. ROV tiene socios en California, Nueva York, Chicago, México, Chile, Suiza, Australia, Japón, y una filial local en Shanghai, China. También es el presidente del Instituto Internacional de Educación Profesional e Investigación (IIPER), una acreditada organización global que provee el Certificado en Gestión de Riesgo (CRM), integrado por profesores de distintas universidades de renombre en el mundo. También es el creador del software Modeling Toolkit, Real Options Super Lattice Solver software, Risk Simulator software, y Employee Stock Options Valuation software, así como el DVD de entrenamiento en análisis de riesgo, y dicta seminarios públicos en análisis de riesgo y Certificados en Gestión de Riesgo (CRM). Es el autor de diez libros incluyendo el manual BASILEA II en Riesgo de Crédito y Mercado (Elsevier 2008), y Modelos Analíticos Avanzados : 800 aplicaciones de Basel II a Wall Street (Wiley 2008), Modelando Riesgo: Aplicando Simulación Monte Carlo, Opciones Reales, Optimización y Pronósticos, (Wiley 2006), Análisis Opciones Reales: Herramientas y Técnicas, primera y segunda edición (Wiley 2003 y 2005), Curso en análisis de Opciones Reales: Casos de Negocios (Wiley 2003), Análisis Aplicado de Riesgo: Moviéndose en la Incertidumbre (Wiley 2003), Valorando Acciones (Wiley 2004), y otros. Sus libros y software son usados en distintas universidades alrededor del mundo incluyendo el Instituto Bern en Alemania, Universidad Chung-Ang en Corea del Sur, Universidad Georgetown, ITESM en México, Instituto de Tecnología de Massachusetts, Escuela Naval de Postgrados, Universidad de Nueva York, Universidad de Estocolmo en Suecia, Universidad de Los Andes en Chile, Universidad de Pennsylvania, Universidad de York en el Reino Unido, y la Universidad de Edimburgo en Escocia entre otras.

Actualmente también es profesor de Finanzas y Economía y ha dictado cursos en Dirección Financiera, Inversiones, Opciones Reales, Economía, y Estadística en pregrado y postgrado. Ha enseñado en universidades alrededor del mundo, desde la Escuela Naval de Postgrados (Monterrey, California), Universidad de Ciencias Aplicadas (Alemania y Suiza), hasta Universidad Golden Gate (California), y St. Mary's (California), y ha presidido muchas tesis. También ha enseñado análisis de riesgo, análisis de opciones reales, y análisis de riesgo para directores en cursos públicos donde los participantes pueden obtener el certificado en Dirección de Riesgo una vez cumplan las horas completas del programa. También mantiene la posición del Presidente de la Academia Americana de Dirección Financiera y participa en el concejo global AAFM. Era el Vicepresidente de análisis en Decisioneering Inc. Donde encabezaba el desarrollo de software para el análisis de opciones financieras, consultoría analítica, entrenamiento, y soporte técnico, y donde fue el creador del Real Options Analysis Toolkit Software, el predecesor del Real Options Super Lattice software. Antes de unirse a Decisioneering Inc. Fue Director Consultor y economista financiero en valoración de servicios y servicios financieros globales en KPMG Consulting. Tiene una experiencia extensiva en modelación econométrica, análisis financiero, opciones reales, análisis económico, y estadística. En su paso por Real Options Valuation Inc., Decisioneering, y KPMG, había enseñado y consultado en una variedad de asuntos sobre opciones reales, análisis de riesgo, pronósticos financieros, dirección de proyectos, y valoración financiera en cerca de 100 firmas multinacionales incluyendo(3M, Airbus, Boeing, BP, Chevron Texaco, Financial Accounting Standards Board, Fujitsu, GE, Microsoft, Motorola, Pfizer, State of California, Timken, U.S. Department of Defense, U.S. Navy, Veritas, y muchas otras). Su experiencia antes de unirse a KPMG incluye ser el Director del Departamento de análisis y planeación financiera en Viking Inc. De FedEx, realizando proyecciones financieras, análisis económico, e investigación de mercados. Antes de eso hacia consultoría y planeación financiera.

El Dr. Mun recibió su Ph. D en economía y finanzas de Lehigh University, donde sus intereses académicos y de investigación fueron en las áreas de inversión financiera, modelación econométrica, opciones financieras, finanzas corporativas, y teoría microeconómica. También tiene un M.B.A., un M.S., en gestión científica, y un B.S., en biología y física. Esta certificado en Gestión de Riesgo Financiero (FRM), en Consultoría Financiera (CFC), y en Gestión de riesgo (CRM). Es miembro de la American Mensa, Phi Beta Kappa Honor Society, y Golden Key Honor Society, así como muchas otras organizaciones profesionales incluyendo Eastern and Southern Finance Associations, American Economic Association, and Global Association of Risk Professionals. Finalmente ha escrito muchos artículos académicos publicados en el 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.



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Análisis de Riesgo

DVD de Entrenamiento

DVD de entrenamiento cubre:

Simulación Monte Carlo con Risk Simulator

- Estadísticas de simulación aplicadas
- Escogiendo las distribuciones relevantes
- Simulación correlacionada y trunca
- Interpretando los resultados de la simulación
- Simulación y perfiles multidimensionales

Pronósticos con Risk Simulator

- Modelos Box-Jenkins ARIMA
- Análisis de regresión multivariada
- Pronósticos de procesos Estocásticos
- Pronosticando series de tiempo y extrapolación no lineal

Optimización con Risk Simulator

- Optimización Continua
- Herramientas de análisis de decisión
- Optimización Entera

Análisis de opciones reales con Real Options Super Lattice Solver

- Bases de análisis para opciones reales
- Proceso integrado de análisis de riesgo y estimaciones de volatilidad
- Resolviendo diferentes opciones reales usando SLS incluyendo abandono, Americanas, Barrera, Bermuda, chooser complex custom, contracción, Europea, expansión, sequential compound, switching, multi-asset and multiphased complex sequential compound y muchas más

Herramientas Analíticas

- Ajuste de la Distribución
- Pruebas de hipótesis
- Simulación no-paramétrica
- Análisis de sensibilidad, gráficos tornados y spider



TRAINING DVD

El DVD de entrenamiento comprende 10 DVDS y cubre las siguientes áreas:

- **Simulación Monte Carlo con Risk Simulator**
- **Pronósticos con Risk Simulator**
- **Optimización con Risk Simulator**
- **Análisis de opciones reales con Real Options Super Lattice Solver**
- **Herramientas Analíticas**

Como parte del DVD de entrenamiento, usted recibirá 10DVDS, un libro de trabajo con las diapositivas y ejemplos en los DVDS, y los siguientes dos libros: "Modeling Risk: Applying Monte Carlo Simulation, Real Options Analysis, Forecasting, and Optimization, 2nd Edition," by Dr. Johnathan Mun (Wiley Finance, 2006), and "Real Options Analysis: Tools and Techniques, 2nd Edition," by Dr. Johnathan Mun (Wiley Finance 2005), y los CD de modelos de entrenamiento usado en las lecciones.

Las lecciones son desarrolladas y dictadas por Dr. Johnathan Mun, el creador de Risk Simulator y Real Options Super Lattice software, profesor de finanzas y economía, autor de muchos libros en riesgo y opciones reales, y CEO de Real Options Analysis Inc. Esto es particularmente importante en términos de consistencia y destreza, pues usted aprende el material directamente de quien desarrollo el software, escribió los libros y consulta para muchas empresas.

En cada DVD, hay una introducción a los temas, también como resultados de cada módulo. Cada DVD es dividido en varios capítulos resumidos a continuación:

DVD 1: Introducción a análisis de riesgo

- Capítulo 1: introducción al DVD de entrenamiento
- Capítulo 2: Como están hechas las decisiones de negocios?
- Capítulo 3: Que es riesgo y porqué debe ser considerado?
- Capítulo 4: Visión sobre las aplicaciones de software de riesgo

DVD 2: Simulación Monte Carlo con Risk Simulator

- Capítulo 1: Visión del software del Risk Simulator
- Capítulo 2: Perfil, supuestos, pronósticos y gestión de simulaciones
- Capítulo 3: interpretando las estadísticas pronosticadas
- Capítulo 4: preferencias de simulación y valores
- Capítulo 5: Gestión de reportes, guardar y extraer datos de simulación

DVD3: Tecnicas de simulacion avanzadas

- Capítulo 1: distribuciones correlacionadas y truncadas
- Capítulo 2: parametros alternos
- Capítulo 3: Simulaciones multidimensionales
- Capítulo 4: Ajuste de la distribución y elección de distribuciones
- Capítulo 5: Análisis de datos históricos y dificultades en simulación

DVD 4: Herramientas de simulación y analíticas

- Capítulo 1: Tornado Estático y gráficos Spider
- Capítulo 2: Análisis de sensibilidad dinámicos
- Capítulo 3: Pruebas de hipótesis con diferentes distribuciones
- Capítulo 4: simulación Bootstrap no-paramétrica
- Capítulo 5: control de precisión

DVD 5: Pronosticos

- Capítulo 1: Técnicas de pronósticos y tipos de datos
- Capítulo 2: Pronósticos sin datos
- Capítulo 3: Pronósticos sobre análisis de Series de Tiempo
- Capítulo 4: Extrapolacion no lineal
- Capítulo 5: Analisis de Regresion Multivariado
- Capítulo 6: Procesos Estocásticos
- Capítulo 7: Box-Jenkins ARIMA

DVD 6-7: Análisis de Opciones Reales : Teoría y Antecedentes

- Capítulo 1: Introducción a Opciones Reales: qué, donde, quién, cuando, cómo y porqué
- Capítulo 2: Ejemplos de Casos Aplicados
- Capítulo 3: Visión sobre diferentes técnicas de valoración de opciones: modelos de forma cerrada, ecuaciones parciales diferenciales, y enrejados binomiales
- Capítulo 4: técnica de probabilidad libre de riesgo
- Capítulo 5: resolver una opción call básica Europea y Americana
- Capítulo 6: usar Excel para resolver opciones básicas Americanas
- Capítulo 7: resolver Opciones de abandono básico, expansión, contracción, y opciones mutuamente excluyentes

DVD 8-9: Real Options Analysis: Aplicación con software SLS

- Capítulo 1: Visión de los diferentes módulos SLS
- Capítulo 2: Estimar Volatilidad (GARCH, Log PV Asset, Log Cash Flow Returns, management assumptions)
- Capítulo 3: resolver opciones con entradas cambiantes y opciones exóticas personalizables
- Capítulo 4: MSLS: múltiples opciones secuenciales compuestas
- Capítulo 5: MNLS: resolviendo procesos de Reversión a la media, jump-diffusion, y dual-asset opciones arco iris usando enrejados trinomiales, cuadrinomiales, y pentanomiales.
- Capítulo 6: Enmarcar opciones reales- estructurando el problema
- Capítulo 7: Los siguientes pasos...

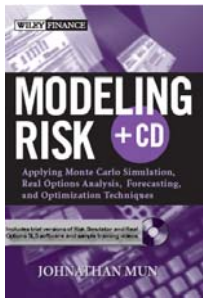
DVD 10: Optimización con Risk Simulator

- Capítulo 1: Introducción a problemas de optimización
- Capítulo 2: Optimización continua
- Capítulo 3: Optimización Entera

CONOCIMIENTOS TECNICOS

Dr. Johnathan Mun es el creador del Software y enseña Análisis de Riesgo, Análisis de Opciones Reales, Análisis de Riesgo para Gerentes, CRM, y otros cursos. Ha sido Consultor de muchas firmas que están en la lista Fortune 500 (3M, Airbus, Boeing, GE y Motorola) y para el gobierno (Departamento de Defensa, Agencias Estatales y Federales) en Análisis de Riesgo, Valoración y Opciones Reales. Ha escrito muchos libros en temas de: Análisis de Opciones Reales: Técnicas y Herramientas, Primera y Segunda Edición (Wiley Finance, 2005, 2002); Curso de Análisis Opciones Reales: Casos de Negocios (Wiley Finance, 2003); Análisis de Riesgo Aplicada: Mas allá de la Incertidumbre en los Negocios (Wiley, 2003); Valoración de Opciones de Acciones para los Empleados en Virtud 2004 FAS 123 (Wiley Finance, 2004); Modelando Riesgo: Aplicación Simulación Monte Carlo, Análisis de Opciones Reales, Pronostico y Optimización (Wiley 2006); Modelos Analíticos Avanzados: 800 Funciones y 300 Modelos de Basilea II a Wall Street y mas Allá (Wiley 2008); The Banker's Hand Book on Credit Risk: Implantación de Basilea II (Elsevier Academic Press 2008); y otros. Es el Fundador y Director General en Valoración de Opciones Reales, Inc., y es el responsable del desarrollo de analisis de productos de Software, consultoría y entrenamiento en servicios. Fue Vicepresidente de Analytics at Decisioneering, Inc. (Oracle), y fue Gerente de Consultoría en KPMG's Global Financial Startegies. Antes de KPMG, fue jefe de pronostico financiero para Vikings, Inc. (FDX/FedEx Company). Dr Mun es también catedrático en U.S. Naval Postgraduate School y Catedrático en la University of Applied Science and Swiss School of Management (Zürich and Frankfurt), y se ha encargado de otras cátedras en varias universidades. Tiene un PH.D en Finanzas y Economía, un MBA en Administración de Empresas, M.S. en Gestión de Ciencia, y BS en Licenciatura en Ciencias Aplicadas. El esta certificado en Gestión de Riesgo Financiero (GRF), Certificado en Consultoría Financiera (CCF) y Certificado en Manejo de Riesgo (CRM).





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

Dr. Johnathan Mun

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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.

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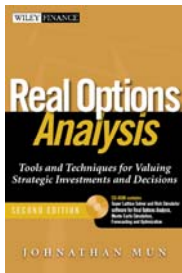
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Real Options Analysis, 2nd Edition: Tools and Techniques for Valuing Strategic Investments & Decisions

Dr. Johnathan Mun

ISBN: 0471747483 (2005)

Hard Cover and Cloth, 670 Pages

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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, quadrinomial 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.

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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, Koza 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)

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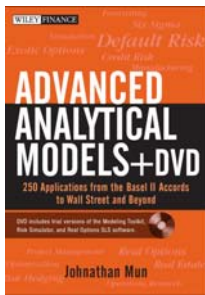
American, European, Bermudan, and Customized Abandonment Option
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Advanced Analytical Models: Over 800 Models and 300 Applications from the Basel II Accords to Wall Street and Beyond

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

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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

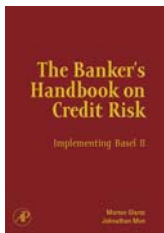
- Over 25 statistical distributions
- Covering the following applications:
- Applied Business Statistics (descriptive statistics, CDF/ICDF/PDF probabilities, stochastic parameter calibration)
- Bootstrap Simulation and Hypothesis Testing (testing empirical and theoretical moments)
- Correlated Simulations (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, Quadrinomial 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

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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

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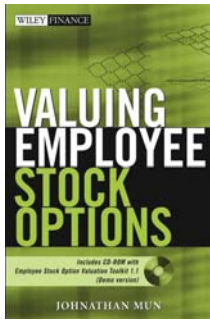
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Valuing Employee Stock Options: Under 2004 FAS 123 Proposals (CD-ROM Included)

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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.

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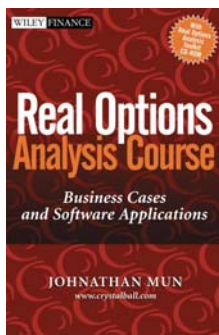
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Real Options Analysis Course: Business Cases and Software Applications

Dr. Johnathan Mun

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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 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

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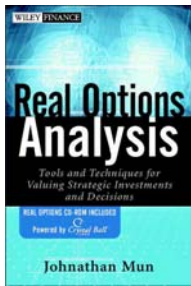
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Real Options Analysis: Tools and Techniques for Valuing Strategic Investments & Decisions

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 or 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

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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, Koza 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."

-*Jan 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)*

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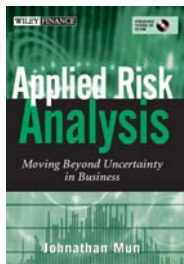
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Applied Risk Analysis: Moving Beyond Uncertainty

Dr. Johnathan Mun

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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.

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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

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ENDNOTES, LIST OF MODELS, TABLES YOU REALLY NEED

		Risk Simulator	Crystal Ball	@Risk
NUEVOS PRODUCTOS DE SOFTWARE	ROV Risk Simulator	★	★	★
	ROV BizStats	★	Ninguno	★
	ROV Compiler	★	Ninguno	Ninguno
	ROV Modeler, ROV Optimizer, ROV Valuator	★	Ninguno	Ninguno
	ROV Extractor and Evaluator	★	Ninguno	Ninguno
	ROV Dashboard	★	Ninguno	Ninguno
	ROV Web Models	★	Ninguno	Ninguno
	ROV Modeling Toolkit	★	Ninguno	Ninguno
	ROV Real Options SLS	★	Ninguno	Ninguno
	ROV Employee Stock Options Toolkit	★	Ninguno	Ninguno

	LISTA DE FUNCIONALIDADES	Risk Simulator	Crystal Ball	@Risk
SIMULACION DE MONTECARLO	24 distribuciones estadísticas y 1 distribución empírica personalizada no paramétrica	★	★	★
	Integración completa con Excel (enlace dinámico, macros VBA)	★	★	★
	Métodos tradicionales de Montecarlo	★	★	★
	Simulación correlacionada con distribuciones truncadas	★	★	★
	Simulaciones multidimensionales con parámetros de entrada inciertos	★	★	★
	Simulación Super Rápida	★	★	★
	Simulación completa y Reportes Analíticos	★	Algunos	Algunos
	Métodos avanzados de correlación con Cópulas	★	Ninguno	Ninguno
	Perfiles de Simulación para análisis de escenarios	★	Ninguno	Ninguno

PRONOSTICOS	Modelos ARIMA (Series de Tiempo y Panel)	★	Ninguno	Ninguno
	Modelos ARIMA Automático (Series de Tiempo y Panel)	★	Ninguno	Ninguno
	Econometría Automático (miles de modelos probados)	★	Ninguno	Ninguno
	Modelos de Econometría Básica (Series de Tiempo y Panel)	★	Ninguno	Ninguno
	Pronósticos con Spline Cúbicos (Series de Tiempo y Panel)	★	Ninguno	Ninguno
	Curvas Exponencial J y Logística S (Series de Tiempo)	★	Ninguno	Ninguno
	Pronóstico de Volatilidad GARCH (Series de tiempo)	★	Ninguno	Ninguno
	Pronóstico con Cadenas de Markov (Series de tiempo)	★	Ninguno	Ninguno
	Modelos de Máxima Verosimilitud (cross-sectional)	★	Ninguno	Ninguno
	Análisis de Regresión Múltiple (series de tiempo, corte transversal)	★	★	★
	Extrapolación No lineal (Series de Tiempo)	★	Ninguno	Ninguno
	Pronósticos con procesos Estocásticos (Series de Tiempo)	★	Ninguno	Ninguno
	Pronósticos con Análisis de Series de Tiempo	★	★	★

OPTIMIZACION	Optimización con variables continuas	★	★	★
	Optimización con variables discretas enteras	★	★	★
	Optimización con variables continuas y discretas	★	★	★
	Optimización Lineal	★	★	★
	Optimización No lineal	★	★	★
	Optimización Estática y Análisis de Frontera Eficiente	★	★	★
	Optimización Dinámica (Simulación con Optimización)	★	★	★
	Optimización Estocástica (iteraciones multiples con las distribuciones de las variables de decision)	★	Ninguno	Ninguno

HERRAMIENTAS ANALÍTICAS	Diagnóstico de datos (Autocorrelación, Correlación, Distribución de los retrasos, Heterocedasticidad, Micronumerosidad, Multicolinealidad, No linealidad, No estacionalidad. Normalidad, Outliers , Estimación de parámetros estocásticos)	★	Ninguno	Ninguno
	Extracción de datos y pronósticos de extracción	★	★	★
	Análisis de Distribuciones de Probabilidad (PDF, CDF, ICDF)	★	Ninguno	Ninguno
	Ajuste de Distribución de los datos existentes	★	Ninguno	Ninguno
	Pruebas de Hipótesis de las distribuciones	★	Ninguno	Ninguno
	Simulación Bootstrap No paramétrica	★	★	★
	Gráficos Superpuestos	★	★	★
	Análisis de Escenarios	★	★	★
	Segmentación de grupos	★	Ninguno	Ninguno
	Análisis de Sensibilidad	★	★	★
	Análisis Estadístico (Autocorrelación, Ajuste de datos, Estadística Descriptiva, Pruebas de Hipótesis, Extrapolación No lineal, Normalidad, Estimación de parámetros estocásticos , Pronósticos con series de tiempo)	★	Ninguno	Ninguno
	Gráficos de Tornado y Araña	★	★	★

REAL OPTION SUPER LATTICE SOLVER (SLS)	Opciones de Abandono, Contracción, Expansión y Chooser	★	Ninguno	Ninguno
	Opciones Americanas, Bermuda, Personalizadas y Europeas	★	Ninguno	Ninguno
	Opciones con cambio de Volatilidad	★	Ninguno	Ninguno
	Ejemplos de modelos avanzados SLS	★	Ninguno	Ninguno
	Opciones Exóticas Simple y Doble barrera	★	Ninguno	Ninguno
	Calculadora de Opciones Exóticas con más de 300 modelos	★	Ninguno	Ninguno
	Opciones Financieras, Opciones Reales y Stock Options para empleados	★	Ninguno	Ninguno
	Lattice Maker (add-in de Excel)	★	Ninguno	Ninguno
	Opciones de Fases y Activos Múltiples	★	Ninguno	Ninguno
	Opciones Compuestas	★	Ninguno	Ninguno

	Opciones Especializadas (Reversión a la media, Jump Diffusion, Arco iris)	★	Ninguno	Ninguno
	Simulación y optimización compatible con las funciones de Excel	★	Ninguno	Ninguno
	Redes Trinomiales, Cuadranomiales, Pentanomiales con reversión A la media y Jump Difussion con Opciones Arco Iris de 2 activos		Ninguno	Ninguno
	Ecuaciones Visibles y Cálculos de las funciones de Modelos de volatilidad	★	Ninguno	Ninguno
	Type of Employee Stock Options <ul style="list-style-type: none"> • Blackout Period • Changing Forfeiture Rates • Changing Risk-free Rates • Changing Volatilities • Forfeiture Rates (Pre- and Post-vesting) • Stock Price Barrier Requirements • Suboptimal Exercise Behavior Multiple • Vesting Periods • Todas las demás variables exóticas 	★	Ninguno	Ninguno

MODELING TOOLKIT	El Modeling Toolkit comprende más de 800 funciones, modelos y herramientas, así como más de 300 modelos en Excel y SLS basado en plantillas del Risk Simulator, Opciones Reales SLS, Excel, así como las siguientes funciones avanzadas: <ul style="list-style-type: none"> • Análisis de Crédito • Análisis de Deuda • Análisis de Decisiones • Pronósticos • Aplicaciones Industriales • Análisis de Opciones • Probabilidad de Impago • Gerencia de proyectos • Cobertura de Riesgos • Six Sigma and Quality Analysis Tools • Herramientas Estadísticas • Modelos de Valoración • Curvas de Rendimiento 	★	Ninguno	Ninguno
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SERVICIOS DE CONSULTORÍA	Servicios de Modelaje Avanzado	★	Ninguno	Ninguno
	Servicios de Construcción De Modelaje Básico	★	★	★
	Employee Stock Options Valuation 2004 FAS 123	★	Ninguno	Ninguno
	Valoración de Instrumentos financieros Exóticos (Warrants, Convertibles, Swaptions, CDO, MBS, y muchos otros instrumentos personalizados)	★	Ninguno	Ninguno
	Seguros y Análisis Actuarial	★	Ninguno	Ninguno
	Servicios de Valoración de Opciones Reales	★	Ninguno	Ninguno
	Análisis de Riesgo y Estrategias de Valoración	★	Ninguno	Ninguno
	Servicios de Valoración	★	Ninguno	Ninguno

SERVICIOS DE ENTRENAMIENTO

Certificado en Gestión de Riesgo (CRM)	★	Ninguno	Ninguno
Análisis de Riesgo de Mercado Y Riesgo de Crédito De acuerdo a Basilea II	★	Ninguno	Ninguno
Risk Analysis Courses: Cursos de Análisis de Riesgo : <ul style="list-style-type: none"> Analytical Tools Herramientas Analíticas <ul style="list-style-type: none"> Basic Real Options (SLS software) Opciones Reales Básicas (software SLS) <ul style="list-style-type: none"> Forecasting (Risk Simulator) Pronósticos (Risk simulator) <ul style="list-style-type: none"> Monte Carlo Simulation (Risk Simulator) Simulación de Montecarlo (Risk simulator) <ul style="list-style-type: none"> Optimization (Risk Simulator) Optimización (Risk simulator)	★	★	★
Real Options for Analyst Opciones Reales para Analistas : <ul style="list-style-type: none"> Advanced real options analytics Análisis Avanzado de Opciones Reales <ul style="list-style-type: none"> Understanding the SLS software Comprendiendo el Software SLS <ul style="list-style-type: none"> Framing options Diseño de Opciones	★	Ninguno	Ninguno
Real Options for Executives Opciones Reales para Ejecutivos: <ul style="list-style-type: none"> The basics of real options Lo básico de las Opciones Reales <ul style="list-style-type: none"> Making strategic decisions in real options Tomando decisiones Estratégicas con Opciones Reales <ul style="list-style-type: none"> Framing strategic options Diseñando Opciones estratégicas <ul style="list-style-type: none"> Interpreting options results Interpretando los resultados de las Opciones	★	Ninguno	Ninguno
Valoración de Stock Options para Empleados	★	Ninguno	Ninguno
Customized Seminars Seminarios Especializados: Cursos personalizados a sus necesidades específicas	★	Ninguno	Ninguno

MODELING TOOLKIT

Real Options Valuation, Inc. se enorgullece en presentar su más reciente innovación: Modeling Toolkit (edición Premium). Esta herramienta consta de más de 800 modelos analíticos, funciones y herramientas, y cerca de 300 modelos analíticos en Excel /plantillas SLS y ejemplos en hojas de cálculo que cubre áreas de análisis de riesgo, simulación, predicción, análisis de riesgos de acuerdo a Basilea II, Riesgo de crédito y Riesgo de incumplimiento, los modelos estadísticos, y mucho más! . Esta herramienta es un conjunto de modelos matemáticos sofisticados escrito en C++ vinculadas en hojas de cálculo de Excel. Hay más de 1100 modelos, funciones, con plantillas de hojas de cálculo y plantillas SLS en este Modeling Toolkit:

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

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12. Banker's Construction Budget
13. Classified Breakeven Loan
14. Classified Loan Borrowing Base
15. Classified Loan Cash Budget and Overdraft
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18. Project Finance Risk Rating
19. Queuing Models
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21. Risk Rating Model
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25. Valuation and Appraisal

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List of Functions

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|--|--|
| <p>1. B2AEPMarketValueAsset
Market Value of Asset using the Asset-Equity Parity Model.</p> <p>2. B2AEPMarketValueDebt
Market Value of Debt using the Asset-Equity Parity Model.</p> <p>3. B2AEPRequiredReturnDebt
Required Return on Risky Debt using the Asset-Equity Parity Model.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>12. B2AssetExchangeEuropeanOption
Option holder has the right at expiration to swap out Asset 2 and receive Asset 1, with predetermined quantities.</p> <p>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.</p> <p>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.</p> <p>15. B2BarrierDoubleUpInDownInCall
Valuable or knocked in-the-money only if either barrier (upper or lower) is breached, i.e., asset value is above the</p> | <p>upper or below the lower barriers, and the payout is in the form of a call option on the underlying asset.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>27. B2BDTAmericanCallonDebtLattice
Computes the American Call option on interest-based</p> |
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- 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 $[\text{Max}(Q2S2-X2, Q1S1-X1)]$ and valued using a 3D binomial lattice model.
76. B2Binomial3DAmericanDualStrikePutOption
Returns the American option with the payoff $[\text{Max}(X2-Q2S2, X1-Q1S1)]$ and valued using a 3D binomial lattice model.
77. B2Binomial3DEuropeanDualStrikeCallOption
Returns the European option with the payoff $[\text{Max}(Q2S2-X2, Q1S1-X1)]$ and valued using a 3D binomial lattice model.
78. B2Binomial3DEuropeanDualStrikePutOption
Returns the European option with the payoff $[\text{Max}(X2-Q2S2, X1-Q1S1)]$ 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 $[\text{Max}(Q2S2, Q1S1)-X]$ and valued using a 3D binomial lattice model.
81. B2Binomial3DAmericanMaximumTwoAssetsPutOption
Returns the American option with the payoff $[X-\text{Max}(Q2S2, Q1S1)]$ and valued using a 3D binomial lattice model.
82. B2Binomial3DEuropeanMaximumTwoAssetsCallOption
Returns the European option with the payoff $[\text{Max}(Q2S2, Q1S1)-X]$ and valued using a 3D binomial lattice model.
83. B2Binomial3DEuropeanMaximumTwoAssetsPutOption
Returns the European option with the payoff $[X-\text{Max}(Q2S2, Q1S1)]$ and valued using a 3D binomial lattice model.
84. B2Binomial3DAmericanMinimumTwoAssetsCallOption
Returns the American option with the payoff $[\text{Min}(Q2S2, Q1S1)-X]$ and valued using a 3D binomial lattice model.
85. B2Binomial3DAmericanMinimumTwoAssetsPutOption
Returns the American option with the payoff $[X-\text{Min}(Q2S2, Q1S1)]$ and valued using a 3D binomial lattice model.
86. B2Binomial3DEuropeanMinimumTwoAssetsCallOption
Returns the European option with the payoff $[\text{Min}(Q2S2, Q1S1)-X]$ 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.		yield using a binomial lattice, where the option can be exercised only at maturity.
88.	B2Binomial3DAmericanPortfolioCallOption Returns the American option with the payoff [Q2S2+Q1S1-X] and valued using a 3D binomial lattice model.	107.	B2BlackCallOptionModel Returns the Black model (modified Black-Scholes-Merton) for forward contracts and interest-based call options.
89.	B2Binomial3DAmericanPortfolioPutOption Returns the American option with the payoff [X-Q2S2+Q1S1] and valued using a 3D binomial lattice model.	108.	B2BlackPutOptionModel Returns the Black model (modified Black-Scholes-Merton) for forward contracts and interest-based put options.
90.	B2Binomial3DEuropeanPortfolioCallOption Returns the European option with the payoff [Q2S2+Q1S1-X] and valued using a 3D binomial lattice model.	109.	B2BlackFuturesCallOption Computes the value of commodities futures call option given the value of the futures contract.
91.	B2Binomial3DEuropeanPortfolioPutOption Returns the European option with the payoff [X-Q2S2+Q1S1] and valued using a 3D binomial lattice model.	110.	B2BlackFuturesPutOption Computes the value of commodities futures put option given the value of the futures contract.
92.	B2Binomial3DAmericanReverseDualStrikeCallOption Returns the American option with the payoff [Max(X2-Q2S2,Q1S1-X1)] and valued using a 3D binomial lattice model.	111.	B2BlackScholesCall European Call Option using Black-Scholes-Merton Model.
93.	B2Binomial3DAmericanReverseDualStrikePutOption Returns the American option with the payoff [Max(Q2S2-X2,X1-Q1S1)] and valued using a 3D binomial lattice model.	112.	B2BlackScholesProbabilityAbove Computes the expected probability the stock price will rise above the strike price under a Black-Scholes paradigm.
94.	B2Binomial3DEuropeanReverseDualStrikeCallOption Returns the European option with the payoff [Max(X2-Q2S2,Q1S1-X1)] and valued using a 3D binomial lattice model.	113.	B2BlackScholesPut European Put Option using Black-Scholes-Merton Model.
95.	B2Binomial3DEuropeanReverseDualStrikePutOption Returns the American option with the payoff [Max(Q2S2-X2,X1-Q1S1)] and valued using a 3D binomial lattice 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.
96.	B2Binomial3DAmericanSpreadCallOption Returns the American option with the payoff [Q1S1-Q2S2-X] and valued using a 3D binomial lattice model.	115.	B2BondCIRBondPrice Cox-Ross model on Zero Coupon Bond Pricing assuming no arbitrage and mean-reverting interest rates.
97.	B2Binomial3DAmericanSpreadPutOption Returns the American option with the payoff [X+Q2S2-Q1S1] and valued using a 3D binomial lattice model.	116.	B2BondCIRBondYield Cox-Ross model on Zero Coupon Bond Yield assuming no arbitrage and mean-reverting interest rates.
98.	B2Binomial3DEuropeanSpreadCallOption Returns the European option with the payoff [Q1S1-Q2S2-X] and valued using a 3D binomial lattice model.	117.	B2BondConvexityContinuous Returns the debt's Convexity of second order sensitivity using a series of cash flows and current interest rate, with continuous discounting.
99.	B2Binomial3DEuropeanSpreadPutOption Returns the European option with the payoff [X+Q2S2-Q1S1] and valued using a 3D binomial lattice model.	118.	B2BondConvexityDiscrete Returns the debt's Convexity of second order sensitivity using a series of cash flows and current interest rate, with discrete discounting.
100.	B2BinomialAdjustedBarrierSteps Computes the correct binomial lattice steps to use for convergence and barrier matching when running a barrier option.	119.	B2BondConvexityYTMContinuous Returns debt's Convexity or second order sensitivity using an internal Yield to Maturity of the cash flows, with continuous discounting.
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.	120.	B2BondConvexityYTMDiscrete Returns debt's Convexity or second order sensitivity using an internal Yield to Maturity of the cash flows, with discrete discounting.
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.	121.	B2BondDurationContinuous Returns the debt's first order sensitivity Duration measure using continuous discounting.
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.	122.	B2BondDurationDiscrete Returns the debt's first order sensitivity Duration measure using discrete discounting.
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.	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.
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.	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.
106.	B2BinomialEuropeanPut Returns the European put option with a continuous dividend	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 a 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.		perform a Delta-Gamma neutral hedge. Returns a negative value indicating cash outflow.
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.	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.
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.	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.
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.	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.
167.	B2CreditRatingWidth Computes the credit ratings width to generate the credit ratings table.	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.
168.	B2CreditRejectionCost Computes the risk-adjusted cost of rejecting a new credit line with a probability of default.	185.	B2DistributionBernoulliMean Returns the Bernoulli distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.
169.	B2CreditRiskShortfall Returns the Credit Risk Shortfall given probability of default and recovery rates.	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).
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).	187.	B2DistributionBernoulliStdev Returns the Bernoulli distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.
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).	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.
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.	189.	B2DistributionBetaMean Returns the Beta distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.
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.	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).
174.	B2CurrencyForwardCallOption Computes the value of a currency forward call option.	191.	B2DistributionBetaStdev Returns the Beta distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.
175.	B2CurrencyForwardPutOption Computes the value of a currency forward put option.	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.
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.	193.	B2DistributionBinomialMean Returns the Binomial distribution's theoretical mean or expected value (first moment), measuring the central tendency of the distribution.
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.	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).
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.	195.	B2DistributionBinomialStdev Returns the Binomial distribution's theoretical standard deviation (second moment), measuring the width and average dispersion of all points around the mean.
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		

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 values 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.	411.	B2IRRContinuous Returns the continuously discounted Internal Rate of Return for a cash flow series with its respective cash flow times in years.
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.	412.	B2IRRDiscrete Returns the discretely discounted Internal Rate of Return for a cash flow series with its respective cash flow times in years.
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.	413.	B2LinearInterpolation Interpolates and fills in the missing values of a time series.
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.	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.
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%).	415.	B2MathIncompleteGammaQ Returns the result from an incomplete Gamma Q function.
398.	B2ImpliedVolatilityCall Computes the implied volatility in a European call option given all the inputs parameters and option value.	416.	B2MathIncompleteGammaP Returns the result from an incomplete Gamma P function.
399.	B2ImpliedVolatilityPut Computes the implied volatility in a European put option given all the inputs parameters and option value.	417.	B2MathIncompleteBeta Returns the result from an incomplete Beta function.
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%).	418.	B2MathGammaLog Returns the result from a log gamma function.
401.	B2InterestAnnualtoPeriodic Computes the periodic compounding rate based on the annualized compounding interest rate per year.	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.
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.	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.
403.	B2InterestContinuousToDiscrete Returns the corresponding discrete compounding interest rate given the continuous compounding rate.	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.
404.	B2InterestContinuousToPeriodic Computes the periodic compounding interest rate based on a continuous compounding rate.	422.	B2MatrixTranspose Transposes a matrix, from MxN to NxM. Copy and paste function and use Ctrl+Shift Enter to obtain the matrix.
405.	B2InterestDiscreteToContinuous Returns the corresponding continuous compounding interest rate given the discrete compounding rate.	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.
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.	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.
407.	B2InterestPeriodictoAnnual Computes the annualized compounding interest rate per year based on a periodic compounding rate.	425.	B2NormalTransform Converts values into a normalized distribution.
408.	B2InterestPeriodictoContinuous Computes the continuous compounding rate based on the periodic compounding interest rate.	426.	B2NPVContinuous Returns the Net Present Value of a cash flow series given the time and discount rate, using Continuous discounting.
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.	427.	B2NPVDiscrete Returns the Net Present Value of a cash flow series given the time and discount rate, using discrete discounting.
410.	B2InverseGammaPutOption Computes the European Put option assuming an inverse	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).

<p>464. B2PutCallParityCalltoPut Computes the European put option value given the value of a corresponding European call option with identical input assumptions.</p> <p>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.</p> <p>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.</p> <p>467. B2PutCallParityPuttoCall Computes the European call option value given the value of a corresponding European put option with identical input assumptions.</p> <p>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.</p> <p>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.</p> <p>470. B2PutDelta Returns the option valuation sensitivity Delta (a put option value's sensitivity to changes in the asset value).</p> <p>471. B2PutGamma Returns the option valuation sensitivity Gamma (a put option value's sensitivity to changes in the delta value).</p> <p>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.</p> <p>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.</p> <p>474. B2PutRho Returns the option valuation sensitivity Rho (a put option value's sensitivity to changes in the interest rate).</p> <p>475. B2PutTheta Returns the option valuation sensitivity Theta (a put option value's sensitivity to changes in the maturity).</p> <p>476. B2PutVega Returns the option valuation sensitivity Vega (a put option value's sensitivity to changes in the volatility).</p> <p>477. B2QueueingMCAveCustomersinSystem Average number of customers in the system using a multiple channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.</p> <p>478. B2QueueingMCAveCustomersWaiting 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.</p> <p>479. B2QueueingMCAveTimeinSystem 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.</p> <p>480. B2QueueingMCAveTimeWaiting 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.</p> <p>481. B2QueueingMCProbHaveToWait Probability an arriving customer has to wait using a multiple</p>	<p>channel queuing model assuming a Poisson arrival rate with Exponential distribution of service times.</p> <p>482. B2QueueingMCProbNoCustomer 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.</p> <p>483. B2QueueingMGKAveCustomersinSystem Average number of customers in the system using a multiple channel queuing model assuming a Poisson arrival rate with unknown distribution of service times.</p> <p>484. B2QueueingMGKCostPerPeriod Total cost per time period using a multiple channel queuing model assuming a Poisson arrival rate with unknown distribution of service times.</p> <p>485. B2QueueingMGKProbBusy Probability a channel will be busy using a multiple channel queuing model assuming a Poisson arrival rate with unknown distribution of service times.</p> <p>486. B2QueueingSCAAveCustomersinSystem 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.</p> <p>487. B2QueueingSCAAveCustomersWaiting 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.</p> <p>488. B2QueueingSCAAveTimeinSystem 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.</p> <p>489. B2QueueingSCAAveTimeWaiting 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.</p> <p>490. B2QueueingSCAProbHaveToWait 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.</p> <p>491. B2QueueingSCAProbNoCustomer 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.</p> <p>492. B2QueueingSCAveCustomersinSystem Average number of customers in the system using a single channel queuing model.</p> <p>493. B2QueueingSCAveCustomersWaiting Returns the average number of customers in the waiting line using a single channel queuing model.</p> <p>494. B2QueueingSCAveTimeinSystem Average time a customer spends in the system using a single channel queuing model.</p> <p>495. B2QueueingSCAveTimeWaiting Average time a customer spends in the waiting line using a single channel queuing model.</p> <p>496. B2QueueingSCProbHaveToWait Probability an arriving customer has to wait using a single channel queuing model.</p> <p>497. B2QueueingSCProbNoCustomer Returns the probability that no customers are in the system using a single channel queuing model.</p> <p>498. B2RatiosBasicEarningPower Computes the basic earning power (BEP) by accounting for earnings before interest and taxes (EBIT) and the amount of total assets employed.</p> <p>499. B2RatiosBetaLevered</p>
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- 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 where 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. B2ROQuadrnomialJumpDiffusionAmericanCall
Returns the American call option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadrnomial lattice.
591. B2ROQuadrnomialJumpDiffusionAmericanPut
Returns the American put option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadrnomial lattice.
592. B2ROQuadrnomialJumpDiffusionEuropeanCall
Returns the European call option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadrnomial lattice.
593. B2ROQuadrnomialJumpDiffusionEuropeanPut
Returns the European put option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadrnomial 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. B2SimulateStandardNormal
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. B2ZEOB HoldingCost
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: Quadrinomials
810. SLS Multinomial Lattices: Pentanomials