

<b>COMPARAÇÕES COMPETITIVAS</b>		<b>Real Options Valuation, Inc.</b>	<b>Oracle, Inc. / Crystal Ball</b>	<b>Palisades, Inc.</b>
<b>Novos Programas</b>	ROV Risk Simulator	★	★	★
	ROV BizStats	★	Não há	★
	ROV Modeling Toolkit	★	Não há	Não há
	ROV Quantitative Data Miner	★	Não há	Não há
	ROV Real Options SLS	★	Não há	Não há
	ROV Modeler, ROV Optimizer, ROV Valuator	★	Não há	Não há
	ROV Employee Stock Options Toolkit	★	Não há	Não há
	ROV Extractor e Evaluator	★	Não há	Não há
	ROV Web Models	★	Não há	Não há
	ROV Compiler	★	Não há	Não há
	ROV Visual Modeler	★	Não há	Não há
	ROV Dashboard	★	Não há	Não há

<b>SIMULAÇÃO</b>			
<b>FUNCIONALIDADE</b>	<b>RISK SIMULATOR 2011®</b>	<b>DECISION TOOLS Industrial 5.7</b>	<b>CRYSTAL BALL 11.1.2.1.000</b>
Compatível com 64-Bit e 32-Bit	SIM	SIM	SIM
Compatível com Excel VBA	SIM	SIM	NÃO
Relatórios Compreensivos da Simulação, Resultado Estatístico, e Extração de Dados.	SIM	SIM	SIM
Simulação Correlacionada e Truncamento da Distribuição	SIM	SIM	SIM
Correlação Copulas	SIM	NÃO	NÃO
Criação de Perfis Múltiplos em Simulação para Análise de Cenários	SIM	NÃO	NÃO
Árvore de Decisão	Visual Modeler	SIM	NÃO
Compatível com Excel 2010, 2007, e 2003	SIM	SIM	SIM
Funções em Excel	SIM	SIM	NÃO
Línguas Estrangeiras	10	7	3
Latin Hypercube	SIM	SIM	SIM
Simulação Latin Hypercube	SIM	SIM	SIM
Checagem do Modelo e Verificação	SIM	SIM	NÃO
Simulação Monte Carlo	SIM	SIM	SIM
Simulação Multidimensional	SIM	SIM	SIM
Normal, T, Quasi-Normal Copula	SIM	NÃO	NÃO
Distribuições de Probabilidade	45	40	26
Gerador de Números Aleatórios	6	8	1
Versão em RUNTIME	SIM	NÃO	NÃO
Compatível com Windows 7, VISTA, e Windows XP	SIM	SIM	SIM

<b>ANALÍTICO</b>			
<b>FUNCIONALIDADE</b>	<b>RISK SIMULATOR 2011®</b>	<b>DECISION TOOLS Industrial 5.7</b>	<b>CRYSTAL BALL 11.1.2.1.000</b>
Tabelas ANOVA	SIM	SIM	NÃO
Testes de Independência Chi-Square	SIM	SIM	NÃO
Análise de Intervalo de Confiança	SIM	SIM	NÃO
Ferramenta de Diagnóstico (Autocorrelação, Lags distributiva, Correlação, micronumerosidade, Heteroscedasticidade, multicolinearidade, não linearidade, normalidade dos erros, não estacionariedade, Outliers, Estimação de Parâmetros Estocásticos, montagem de distribuição)	SIM	NÃO	NÃO
Extração de Dados de Simulação de Previsões	SIM	SIM	SIM
Extração da Sazonalidade e da Tendência	SIM	NÃO	NÃO
Análise das Distribuições (PDF, CDF, ICDF) de Probabilidade	SIM	SIM	NÃO
Gráficos e Tabelas das Distribuições (comparação de Múltiplas Distribuições e seus Momentos)	SIM	SIM	SIM
Designer de Distribuição (Distribuições Customizadas)	SIM	NÃO	NÃO
Montagem de distribuição de dados existentes (Variáveis simples ou múltipla com Correlações)	SIM	SIM	SIM
Ajuste de Distribuições usando Percentil	SIM	NÃO	NÃO
Testes de Hipóteses	SIM	SIM	NÃO
Gráficos de Previsão com histograma, distribuição cumulativa, ajuste da distribuição, e análise estatística dos resultados.	SIM	SIM	SIM
Simulação não Paramétrica Bootstrap	SIM	SIM	NÃO
Teste de hipóteses não Paramétrico	SIM	SIM	NÃO
Teste de Normalidade	SIM	SIM	NÃO
Sobreposição Gráfica (Comparação Gráfica de Múltiplas Previsões)	SIM	SIM	SIM
Ajuste Percentil de Dados	SIM	NÃO	NÃO
Controle de Precisão em sequências de Simulação	SIM	SIM	SIM
Análise de Componente Principal ou Análise Discriminante	SIM	SIM	NÃO
Análise de Cenários	SIM	SIM	SIM
Segmentação de Partições	SIM	NÃO	NÃO
Análise de Sensibilidade	SIM	SIM	SIM
Análise Seis Sigmas	<b>Modeling Toolkit</b>	SIM	NÃO
Análises Estatísticas	SIM	NÃO	NÃO
Análise Estatística de Dados (Estatística Descritiva, Ajuste das Distribuições, Gráficos e Histograma, Testes de Hipóteses, Extrapolação não linear, Teste de Normalidade), Estimação de Parâmetros em Processo Estocástico, Autocorrelação de Séries Temporais, Previsão de Séries Temporais, Projeção Linha de Tendência, e Linhas de Tendência Geral	SIM	NÃO	NÃO
Análise de Quebra Estrutural	SIM	NÃO	NÃO
Gráficos Tornado e Spider para Análise Estática de Sensibilidade	SIM	SIM	SIM

<b>FORECASTING</b>			
<b>FUNCIONALIDADE</b>	<b>RISK SIMULATOR 2011®</b>	<b>DECISION TOOLS Industrial 5.7</b>	<b>CRYSTAL BALL 11.1.2.1.000</b>
ARIMA P, D, Q (Autoregressive Integrated Moving Average Forecasting Models)	SIM	NÃO	NÃO
Modelos Auto ARIMA	SIM	NÃO	SIM
Auto Modelagem Econométrica	SIM	NÃO	NÃO
Modelagem Básica Econométrica	SIM	NÃO	NÃO
Lógica Fuzzy Combinatorial	SIM	NÃO	NÃO
Modelos Cubic Spline	SIM	NÃO	NÃO
Curvas: Exponencial J e Logística S	SIM	NÃO	NÃO
Previsão de Volatilidade GARCH (GARCH, GARCH-M, TGARCH, TGARCH-M, EGARCH, EGARCH-T, GJR GARCH, GJR TGARCH)	SIM	NÃO	NÃO
Modelos LOGIT, PROBIT, e TOBIT para Variáveis Dependentes Limitadas	SIM	NÃO (Logit Only)	NÃO
Cadeia de Markov	SIM	NÃO	NÃO
Análise de Múltipla Regressão	SIM	SIM	SIM
Previsões com Rede Neural	SIM	NÃO	NÃO
Extrapolação não Linear	SIM	NÃO	NÃO
Previsões Programáveis (XML)	SIM	NÃO	NÃO
Regressão Stepwise (Forward, Backward, Combination e Correlação)	SIM	SIM	NÃO
Processos Estocásticos (Random Walk, Movimento Browniano, Reversão à Média, Difusão por Saltos)	SIM	NÃO	NÃO
Previsão de Séries Temporais	SIM	SIM	SIM
Previsão de linhas de tendência	SIM	NÃO	NÃO

<b>OTIMIZAÇÃO</b>			
<b>FUNCIONALIDADE</b>	<b>RISK SIMULATOR 2011®</b>	<b>DECISION TOOLS Industrial 5.7</b>	<b>CRYSTAL BALL 11.1.2.1.000</b>
Otimização Dinâmica	SIM	SIM	SIM
Análise de Fronteira Eficiente	SIM	SIM	SIM
Otimização com Algoritmos Genéticos	SIM	SIM	NÃO
Atingir Meta - Goal Seek (Fast Search)	SIM	NÃO	NÃO
Otimização Linear	SIM	SIM	SIM
Otimização Multifase para Pesquisa do Ótimo Global	SIM	NÃO	NÃO
Otimização não-Linear	SIM	SIM	SIM
Otimização para Variáveis Binárias	SIM	SIM	SIM
Otimização para Variáveis Contínuas	SIM	SIM	SIM
Otimização para Variáveis Discretas	SIM	SIM	SIM
Controle de Convergência Precisão e Tolerância	SIM	SIM	SIM
Otimização única variável	SIM	NÃO	NÃO
Otimização Estática	SIM	SIM	SIM
Otimização Estocástica	SIM	NÃO	NÃO
Simulação Super Rápida com Otimização	SIM	NÃO	NÃO

## ESTATÍSTICAS

FUNCIONALIDADE	RISK SIMULATOR 2011®	DECISION TOOLS Industrial 5.7	CRYSTAL BALL 11.1.2.1.000
Línguas Estrangeiras	10	0	0
Modelos múltiplos em um Perfil	SIM	NÃO	NÃO
Resultados Gráficos e Estatísticas	SIM	NÃO	NÃO
Perfis de Modelos graváveis	SIM	NÃO	NÃO
Computação em Alta Velocidade	SIM	NÃO	NÃO
Ferramentas de Visualização	SIM	NÃO	NÃO
XML Editável e Perfis Programáveis	SIM	NÃO	NÃO

### Lista Detalhada de Métodos Estatísticos Suportados

ANOVA: Blocos aleatórios Múltiplos Tratamentos	SIM	NÃO	NÃO
ANOVA: Fator Simples Single Factor Múltiplos Tratamentos	SIM	NÃO	NÃO
ANOVA: Análise em Dois Caminhos	SIM	NÃO	NÃO
ARIMA	SIM	NÃO	NÃO
Auto ARIMA	SIM	NÃO	NÃO
Autocorrelação e autocorrelação parcial	SIM	NÃO	NÃO
Autoeconômico (Detalhado)	SIM	NÃO	NÃO
Autoeconômico (Rápido)	SIM	NÃO	NÃO
Média	SIM	NÃO	NÃO
Previsão por Lógica Fuzzy Combinatorial	SIM	NÃO	NÃO
Controle Gráficoot: C	SIM	NÃO	NÃO
Controle Gráficoot: NP	SIM	NÃO	NÃO
Controle Gráficoot: P	SIM	NÃO	NÃO
Controle Gráficoot: R	SIM	NÃO	NÃO
Controle Gráficoot: U	SIM	NÃO	NÃO
Controle Gráficoot: X	SIM	NÃO	NÃO
Controle Gráficoot: XMR	SIM	NÃO	NÃO
Correlação	SIM	NÃO	NÃO
Correlação (Linear)	SIM	NÃO	NÃO
Contagem	SIM	NÃO	NÃO
Covariância	SIM	NÃO	NÃO
Cubic Spline	SIM	NÃO	NÃO
Modelo Econômico Customizado	SIM	NÃO	NÃO
Estatística Descritiva dos Dados	SIM	NÃO	NÃO
Dessazonalização	SIM	NÃO	NÃO
Diferença	SIM	NÃO	NÃO
Ajuste de Distribuição	SIM	NÃO	NÃO
Curva Exponencial J	SIM	NÃO	NÃO
GARCH	SIM	NÃO	NÃO
Heterocedasticidade	SIM	NÃO	NÃO
Lag (atraso)	SIM	NÃO	NÃO
Lead (condução)	SIM	NÃO	NÃO
Variáveis Dependentes Limitadas (Logit)	SIM	NÃO	NÃO

## ESTATÍSTICAS

FUNCIONALIDADE	RISK SIMULATOR 2011®	DECISION TOOLS Industrial 5.7	CRYSTAL BALL 11.1.2.1.000
Variáveis Dependentes Limitadas (Probit)	SIM	NÃO	NÃO
Variáveis Dependentes Limitadas (Tobit)	SIM	NÃO	NÃO
Interpolação Linear	SIM	NÃO	NÃO
Regressão Linear	SIM	NÃO	NÃO
LN	SIM	NÃO	NÃO
Log	SIM	NÃO	NÃO
Curva Logistic S	SIM	NÃO	NÃO
Cadeia de Markov	SIM	NÃO	NÃO
Max	SIM	NÃO	NÃO
Mediana	SIM	NÃO	NÃO
Min	SIM	NÃO	NÃO
Moda	SIM	NÃO	NÃO
Rede Neural	SIM	NÃO	NÃO
Regressão não Linear	SIM	NÃO	NÃO
Modelos não Lineares	SIM	NÃO	NÃO
Não paramétrico: Qui-quadrado para adequação de ajuste	SIM	NÃO	NÃO
Não Paramétrico: Qui-quadrado para independência	SIM	NÃO	NÃO
Não Paramétrico: Qui-quadrado para Variância Populacional	SIM	NÃO	NÃO
Não Paramétrico: Teste Friedman	SIM	NÃO	NÃO
Não Paramétrico: Teste Kruskal-Wallis	SIM	NÃO	NÃO
Não Paramétrico: Teste Lilliefors	SIM	NÃO	NÃO
Não Paramétrico: Teste Runs	SIM	NÃO	NÃO
Não Paramétrico: Wilcoxon Signed-Rank (Uma Variável)	SIM	NÃO	NÃO
Não Paramétrico: Wilcoxon Signed-Rank (Duas Variáveis)	SIM	NÃO	NÃO
Paramétrico: Uma Variável (T) Média	SIM	NÃO	NÃO
Paramétrico: Uma Variável (Z) Média	SIM	NÃO	NÃO
Paramétrico: Uma Variável (Z) Proporção	SIM	NÃO	NÃO
Paramétrico: Duas Variáveis (F) Varianças	SIM	NÃO	NÃO
Paramétrico: Duas Variáveis (T), Médias Dependentes.	SIM	NÃO	NÃO
Paramétrico: Duas Variáveis (T) Independentes, variância iguais.	SIM	NÃO	NÃO
Paramétrico: Duas Variáveis (T) Independentes, variância diferentes.	SIM	NÃO	NÃO
Paramétrico: Duas Variáveis (Z) Independente, Médias.	SIM	NÃO	NÃO
Paramétrico: Duas Variáveis (Z) Independentes, Proporções.	SIM	NÃO	NÃO
Potência	SIM	NÃO	NÃO
Análise de Componentes Principais	SIM	NÃO	NÃO
Classificação Ascendente	SIM	NÃO	NÃO
Classificação Descendente	SIM	NÃO	NÃO
Retorno LN Relativo	SIM	NÃO	NÃO
Retorno Relativo	SIM	NÃO	NÃO
Sazonalidade	SIM	NÃO	NÃO
Partição Segmentada	SIM	NÃO	NÃO
Desvio Semi-Padrão (Inferior)	SIM	NÃO	NÃO
Desvio Semi-Padrão (Superior)	SIM	NÃO	NÃO
Padrão 2D: Area	SIM	NÃO	NÃO

## ESTATÍSTICAS

FUNCIONALIDADE	RISK SIMULATOR 2011®	DECISION TOOLS Industrial 5.7	CRYSTAL BALL 11.1.2.1.000
Padrão 2D: Barras	SIM	NÃO	NÃO
Padrão 2D: Linha	SIM	NÃO	NÃO
Padrão 2D: Pontos	SIM	NÃO	NÃO
Padrão 2D: Dispersão	SIM	NÃO	NÃO
Padrão 3D: Area	SIM	NÃO	NÃO
Padrão 3D: Barras	SIM	NÃO	NÃO
Padrão 3D: Linha	SIM	NÃO	NÃO
Padrão 3D: Pontos	SIM	NÃO	NÃO
Padrão 3D: Dispersão	SIM	NÃO	NÃO
Desvio Padrão (População)	SIM	NÃO	NÃO
Desvio Padrão (Amostra)	SIM	NÃO	NÃO
Stepwise Regression (Backward)	SIM	NÃO	NÃO
Stepwise Regression (Correlação)	SIM	NÃO	NÃO
Stepwise Regression (Forward)	SIM	NÃO	NÃO
Stepwise Regression (Forward-Backward)	SIM	NÃO	NÃO
Stochastic Processes (Movimento Browniano Exponencial)	SIM	NÃO	NÃO
Stochastic Processes (Movimento Browniano Geométrico)	SIM	NÃO	NÃO
Stochastic Processes (Jump Diffusion)	SIM	NÃO	NÃO
Stochastic Processes (Reversão à Média com Difusão por Salto)	SIM	NÃO	NÃO
Stochastic Processes (Reversão à Média)	SIM	NÃO	NÃO
Quebra Estrutural	SIM	NÃO	NÃO
Soma	SIM	NÃO	NÃO
Análise de Séries Temporais (Automática)	SIM	NÃO	NÃO
Análise de Séries Temporais (Amortecimento Exponencial Duplo)	SIM	NÃO	NÃO
Análise de Séries Temporais (Média Móvel Dupla)	SIM	NÃO	NÃO
Análise de Séries Temporais (Holt-Winter Aditivo)	SIM	NÃO	NÃO
Análise de Séries Temporais (Holt-Winter Multiplicativo)	SIM	NÃO	NÃO
Análise de Séries Temporais (Sazonal Aditivo)	SIM	NÃO	NÃO
Análise de Séries Temporais (Sazonal Multiplicativo)	SIM	NÃO	NÃO
Análise de Séries Temporais (Amortecimaneot Exponencial Simples)	SIM	NÃO	NÃO
Análise de Séries Temporais (Média Móvel Simples)	SIM	NÃO	NÃO
Linha de Tendência (Diferença Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Exponencial Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Exponencial)	SIM	NÃO	NÃO
Linha de Tendência (Linear Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Linear)	SIM	NÃO	NÃO
Linha de Tendência (Logaritmico Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Logaritmico)	SIM	NÃO	NÃO
Linha de Tendência (Média Móvel Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Média Móvel)	SIM	NÃO	NÃO
Linha de Tendência (Polinomial Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Polinomial)	SIM	NÃO	NÃO
Linha de Tendência (Potência Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Potência)	SIM	NÃO	NÃO

ESTATÍSTICAS			
FUNCIONALIDADE	RISK SIMULATOR 2011®	DECISION TOOLS Industrial 5.7	CRYSTAL BALL 11.1.2.1.000
Linha de Tendência (Razão Destendenciada)	SIM	NÃO	NÃO
Linha de Tendência (Média Destendenciada Estática)	SIM	NÃO	NÃO
Linha de Tendência (Mediana Destendenciada)	SIM	NÃO	NÃO
Variancia (População)	SIM	NÃO	NÃO
Variancia (Amostra)	SIM	NÃO	NÃO
Volatilidade: EGARCH	SIM	NÃO	NÃO
Volatilidade: EGARCH-T	SIM	NÃO	NÃO
Volatilidade: GARCH	SIM	NÃO	NÃO
Volatilidade: GARCH-M	SIM	NÃO	NÃO
Volatilidade: GJR GARCH	SIM	NÃO	NÃO
Volatilidade: GJR TGARCH	SIM	NÃO	NÃO
Volatilidade: Abordagem Log do Retorno	SIM	NÃO	NÃO
Volatilidade: TGARCH	SIM	NÃO	NÃO
Volatilidade: TGARCH-M	SIM	NÃO	NÃO
Curva de Dividendo (Bliss)	SIM	NÃO	NÃO
Curva de Dividendo (Nelson-Siegel)	SIM	NÃO	NÃO

Real Option Super Lattice Solver (SLS)	Opções Abandono, Contração, Expansão, e de Chooser.	★	Não há	Não há
	Opções American, Bermudan, Customizada e European .	★	Não há	Não há
	Opções com Volatilidade Variável	★	Não há	Não há
	Exemplos avançados com modelos SLS	★	Não há	Não há
	Opções Exóticas Simples e com Dupla Barreira	★	Não há	Não há
	Calculadora de Opções Exóticas com + de 300 modelos	★	Não há	Não há
	Opções Financeiras, Opções Reais e Opções de Participação Acionária de Empreendados	★	Não há	Não há
	Montagem de Árvore - Lattice Maker (Excel add-in)	★	Não há	Não há
	Opções com Múltiplos Ativos Subjacentes e Fases Múltiplas	★	Não há	Não há
	Opções Sequenciais Simultâneas e Multiplas Fases Compostas	★	Não há	Não há
	Opções Especializadoas (Reversão à Média, Difusão com Salto, Arco-íris)	★	Não há	Não há
	Software Independente com funcionalidades em add-in do Excel (simulação e otimização compatíveis com funções s em Excel)	★	Não há	Não há
	Árvore Trinomial, quadrinomial, pentanomial para reversão à média e Difusão com Salto para Ativos duplos rainbow options		Não há	Não há
	Equações Visíveis e Modelos Computacionais de funções de Volatilidade	★	Não há	Não há
Tipos de Opções de participação acionária para empregados empreendedores: <ul style="list-style-type: none"> <li>● Período de Blackout</li> <li>● Alterar as taxas de Caducidade</li> <li>● Alterar taxas Livre de Risco</li> <li>● Alterar Volatilidade</li> <li>● Taxas de Caducidade (Pre- e Post- aquisição)</li> <li>● Preço de Ações com requerimento de barreiras</li> <li>● Múltiplos Comportamentos com Exercício Subótimo</li> <li>● Períodos de Carência</li> <li>● TODOS OUTROS TIPOS DE VARIÁVEIS EXÓTICAS</li> </ul>	★	Não há	Não há	

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<b>Consultoria</b>	Serviços avançados de modelagem	★	Não há	Não há
	Serviços de Modelagem Básica	★	★	★
	Valoração de Opções de empregados 2004 FAS 123	★	Não há	Não há
	Instrumento de Valoração Financeira Exótica (Warrants, Convertíveis, Swaptions, CDO, MBS, e muitos outros instrumentos customizados)	★	Não há	Não há
	Análise Atuarial e Seguro	★	Não há	Não há
	Serviços de Valoração por Opções Reais	★	Não há	Não há
	Análise de Risco e Valoração Estratégica	★	Não há	Não há
	Serviços de Valoração	★	Não há	Não há

<b>Serviços de Treinamento</b>	Certificação em Gestão de Risco /Certified in Risk Management (CRM)	★	Não há	Não há
	Análise de Risco de Crédito e de Mercado para Basel II (apenas seminários locais)	★	Não há	Não há
	Cursos de Análise de Risco: <ul style="list-style-type: none"> <li>Ferramentas Analíticas</li> <li>Opções Reais – curso básico (SLS software)</li> <li>Previsão (Risk Simulator)</li> <li>Simulação Monte Carlo (Risk Simulator)</li> <li>Otimização (Risk Simulator)</li> </ul>	★	★	★
	Opções Reais para Analistas <ul style="list-style-type: none"> <li>Análises avançadas com Opções Reais</li> <li>Compreendendo o software SLS</li> <li>Montagem de Opções (árvores de Decisão)</li> </ul>	★	Não há	Não há
	Opções Reais para Executivos <ul style="list-style-type: none"> <li>Os conceitos básicos em opções reais</li> <li>Estratégias de decisão com opções reais</li> <li>Montagem de estratégias com opções</li> <li>Interpretando os resultados de opções</li> </ul>	★	Não há	Não há
	Valorando Opções de empregados empreendedores (ESO) <ul style="list-style-type: none"> <li>Aplicação de árvore binomial com uso da caixa de ferramenta ESO para valorar opções de empregados empreendedores baseado na Applying binomial lattices in the ESO Toolkit software to value employee stock options under the 2004 revised FAS 123</li> </ul>	★	Não há	Não há
	Seminário customizados <ul style="list-style-type: none"> <li>Cursos customizados para necessidades específicas</li> </ul>	★	★	★



# MODELING TOOLKIT

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

A Real Options Valuation, Inc. tem orgulho de apresentar sua mais recente inovação, a **Modelling Toolkit (Premium Edition)**. Este conjunto de ferramentas é composto por mais de **800** modelos analíticos, ferramentas e funções, e cerca de **300** modelo analítico Excel / SLS modelos e planilhas de exemplo, cobrindo as áreas de análise de risco, simulação, previsão, análise de risco Basileia II, risco de crédito padrão, modelos estatísticos, muito mais! Este toolkit é um conjunto de modelos matematicamente sofisticados escrito em C++ embutidos no Excel. Há mais de **1100** modelos, funções, com modelos de planilha e SLS neste toolkit e as áreas de análise abordados incluem:

## **Analytics**

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

## **Banking Models**

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

## **Credit Analysis**

26. Credit Default Swaps/Credit Spread Options
27. Credit Default Swaps Correlated Counterparty Defaults
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## Lista de Funções

Abaixo é apresentado uma lista completa das funções em **Modeling Toolkit** que podem ser acessados através de bibliotecas DLL analíticos ou no Excel. Por favor, volte sempre ao site para uma lista mais atualizada. O software está em constante evolução e novos modelos e aplicações são constantemente adicionadas. Finalmente, as ferramentas de Risco aplicável Simulator aplicável quando se utiliza o **Modeling Toolkit** também estão listados no final.

- |   |  |
|---|--|
| <p>1. B2AEPMarketValueAsset<br/>Market Value of Asset using the Asset-Equity Parity Model.</p>  | <p>16. B2BarrierDoubleUpInDownInPut<br/>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, e the payout is in the form of a put option on the underlying asset.</p> |
| <p>2. B2AEPMarketValueDebt<br/>Market Value of Debt using the Asset-Equity Parity Model.</p>  | <p>17. B2BarrierDoubleUpOutDownOutCall<br/>Valuable or stays in-the-money only if either barrier (upper or lower barrier) is not breached, e the payout is in the form of a call option on the underlying asset.</p>   |
| <p>3. B2AEPRequiredReturnDebt<br/>Required Return on Risky Debt using the Asset-Equity Parity Model.</p>  | <p>18. B2BarrierDoubleUpOutDownOutPut<br/>Valuable or stays in-the-money only if either barrier (upper or lower barrier) is not breached, e the payout is in the form of a put option on the underlying asset.</p>   |
| <p>4. B2AltDistributionCallOption<br/>Computes the European Call option for an underlying asset returns distribution com skew e kurtosis, e is not perfectly normal. May return an error for unsolvable inputs.</p>                               | <p>19. B2BarrierDownandInCall<br/>Becomes valuable or knocked in-the-money if the lower barrier is breached, e 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>5. B2AltDistributionPutOption<br/>Computes the European Put option for an underlying asset returns distribution com skew e kurtosis, e is not perfectly normal. May return an error for unsolvable inputs.</p>                                 | <p>20. B2BarrierDownandInPut<br/>Becomes valuable or knocked in-the-money if the lower barrier is breached, e 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>6. B2AnnuityRate<br/>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>21. B2BarrierDownandOutCall<br/>Valuable or in-the-money only if the lower barrier is not breached, e 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>7. B2AsianCallwithArithmeticAverageRate<br/>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 e a fixed strike.</p> | <p>22. B2BarrierDownandOutPut<br/>Valuable or in-the-money only if the lower barrier is not breached, e 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>8. B2AsianCallwithGeometricAverageRate<br/>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 e a fixed strike.</p>   | <p>23. B2BarrierUpandInCall<br/>Becomes valuable or knocked in-the-money if the upper barrier is breached, e 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>9. B2AsianPutwithArithmeticAverageRate<br/>An average rate option is a cash-settled option whose payoff is based on the difference between a fixed strike e the arithmetic average value of the underlying during the life of the option.</p>  | <p>24. B2BarrierUpandInPut<br/>Becomes valuable or knocked in-the-money if the upper barrier is breached, e 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>10. B2AsianPutwithGeometricAverageRate<br/>An average rate option is a cash-settled option whose payoff is based on the difference between a fixed strike e the geometric average value of the underlying during its life.</p>                 | <p>25. B2BarrierUpandOutCall<br/>Valuable or in-the-money only if the upper barrier is not breached, e 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>11. B2AssetExchangeAmericanOption<br/>Option holder has the right at up to e including expiration to swap out Asset 2 e receive Asset 1, com predetermined quantities.</p>   | <p>26. B2BarrierUpandOutPut<br/>Valuable or in-the-money only if the upper barrier is not breached, e 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>12. B2AssetExchangeEuropeiaOption<br/>Option holder has the right at expiration to swap out Asset 2 e receive Asset 1, com predetermined quantities.</p>   | <p>27. B2BDTAmericanCallonDebtLattice<br/>Computes the American Call option on interest-based</p>  |
| <p>13. B2AssetOrNothingCall<br/>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<br/>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<br/>Valuable or knocked in-the-money only if either barrier (upper or lower) is breached, i.e., asset value is above the</p>   |  |

- instruments e debt or bonds, e creates the entire pricing lattice.
28. B2BDTAmericanCallonDebtValue  
Computes the American Call option value on interest-based instruments e debt or bonds, e returns only one value instead of the entire lattice.
  29. B2BDTAmericanPutonDebtLattice  
Computes the American Put option on interest-based instruments e debt or bonds, e creates the entire pricing lattice.
  30. B2BDTAmericanPutonDebtValue  
Computes the American Put option value on interest-based instruments e debt or bonds, e 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 e 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. B2BDTEuropeiaCallonDebtLattice  
Computes the European Call option on interest-based instruments e debt or bonds, e creates the entire pricing lattice.
  35. B2BDTEuropeiaCallonDebtValue  
Computes the European Call option value on interest-based instruments e debt or bonds, e returns only one value instead of the entire lattice.
  36. B2BDTEuropeiaPutonDebtLattice  
Computes the European Put option on interest-based instruments e debt or bonds, e creates the entire pricing lattice.
  37. B2BDTEuropeiaPutonDebtValue  
Computes the European Put option value on interest-based instruments e debt or bonds, e returns only one value instead of the entire lattice.
  38. B2BDTFloatingCouponPriceLattice  
Value of the floater bond's lattice (coupon rate is floating e can be directly or inversely related to interest rates; e.g., rates drop, coupon increases, the bond appreciates in price e the yield increases).
  39. B2BDTFloatingCouponPriceValue  
Value of the floater bond (coupon rate is floating e can be directly or inversely related to interest rates; e.g., rates drop, coupon increases, the bond appreciates in price e 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 e 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 com 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 e 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 e changing interest volatilities, as a means to compute interest-based option values. Returns the same results as the B2BDTZeroPriceLattice function but requires interest rates e 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 e 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

- 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 com the payoff  $[\text{Max}(Q2S2-X2, Q1S1-X1)] e$  valued using a 3D binomial lattice model.
76. B2Binomial3DAmericanDualStrikePutOption  
Returns the American option com the payoff  $[\text{Max}(X2-Q2S2, X1-Q1S1)] e$  valued using a 3D binomial lattice model.
77. B2Binomial3DEuropeiaDualStrikeCallOption  
Returns the European option com the payoff  $[\text{Max}(Q2S2-X2, Q1S1-X1)] e$  valued using a 3D binomial lattice model.
78. B2Binomial3DEuropeiaDualStrikePutOption  
Returns the European option com the payoff  $[\text{Max}(X2-Q2S2, X1-Q1S1)] e$  valued using a 3D binomial lattice model.
79. B2Binomial3DAmericanExchangeOption  
Returns the American e European call e put option (same values exist for all types) com the payoff  $[Q2S2-Q1S1] e$  valued using a 3D binomial lattice model.
80. B2Binomial3DAmericanMaximumTwoAssetsCallOption  
Returns the American option com the payoff  $[\text{Max}(Q2S2, Q1S1)-X] e$  valued using a 3D binomial lattice model.
81. B2Binomial3DAmericanMaximumTwoAssetsPutOption  
Returns the American option com the payoff  $[X-\text{Max}(Q2S2, Q1S1)] e$  valued using a 3D binomial lattice model.
82. B2Binomial3DEuropeiaMaximumTwoAssetsCallOption  
Returns the European option com the payoff  $[\text{Max}(Q2S2, Q1S1)-X] e$  valued using a 3D binomial lattice model.
83. B2Binomial3DEuropeiaMaximumTwoAssetsPutOption  
Returns the European option com the payoff  $[X-\text{Max}(Q2S2, Q1S1)] e$  valued using a 3D binomial lattice model.
84. B2Binomial3DAmericanMinimumTwoAssetsCallOption  
Returns the American option com the payoff  $[\text{Min}(Q2S2, Q1S1)-X] e$  valued using a 3D binomial lattice model.
85. B2Binomial3DAmericanMinimumTwoAssetsPutOption  
Returns the American option com the payoff  $[X-\text{Min}(Q2S2, Q1S1)] e$  valued using a 3D binomial lattice model.
86. B2Binomial3DEuropeiaMinimumTwoAssetsCallOption  
Returns the European option com the payoff  $[\text{Min}(Q2S2, Q1S1)-X] e$  valued using a 3D binomial lattice model.
87. B2Binomial3DEuropeiaMinimumTwoAssetsPutOption  
Returns the European option com the payoff  $[X-\text{Min}(Q2S2, Q1S1)] e$  valued using a 3D binomial lattice model.
88. B2Binomial3DAmericanPortfolioCallOption  
Returns the American option com the payoff  $[Q2S2+Q1S1-X] e$  valued using a 3D binomial lattice model.
89. B2Binomial3DAmericanPortfolioPutOption

- Returns the American option com the payoff  $[X - Q2S2 + Q1S1]$  e valued using a 3D binomial lattice model.
90. B2Binomial3DEuropeiaPortfolioCallOption  
Returns the European option com the payoff  $[Q2S2 + Q1S1 - X]$  e valued using a 3D binomial lattice model.
91. B2Binomial3DEuropeiaPortfolioPutOption  
Returns the European option com the payoff  $[X - Q2S2 + Q1S1]$  e valued using a 3D binomial lattice model.
92. B2Binomial3DAmericanReverseDualStrikeCallOption  
Returns the American option com the payoff  $[\text{Max}(X2 - Q2S2, Q1S1 - X1)]$  e valued using a 3D binomial lattice model.
93. B2Binomial3DAmericanReverseDualStrikePutOption  
Returns the American option com the payoff  $[\text{Max}(Q2S2 - X2, X1 - Q1S1)]$  e valued using a 3D binomial lattice model.
94. B2Binomial3DEuropeiaReverseDualStrikeCallOption  
Returns the European option com the payoff  $[\text{Max}(X2 - Q2S2, Q1S1 - X1)]$  e valued using a 3D binomial lattice model.
95. B2Binomial3DEuropeiaReverseDualStrikePutOption  
Returns the American option com the payoff  $[\text{Max}(Q2S2 - X2, X1 - Q1S1)]$  e valued using a 3D binomial lattice model.
96. B2Binomial3DAmericanSpreadCallOption  
Returns the American option com the payoff  $[Q1S1 - Q2S2 - X]$  e valued using a 3D binomial lattice model.
97. B2Binomial3DAmericanSpreadPutOption  
Returns the American option com the payoff  $[X + Q2S2 - Q1S1]$  e valued using a 3D binomial lattice model.
98. B2Binomial3DEuropeiaSpreadCallOption  
Returns the European option com the payoff  $[Q1S1 - Q2S2 - X]$  e valued using a 3D binomial lattice model.
99. B2Binomial3DEuropeiaSpreadPutOption  
Returns the European option com the payoff  $[X + Q2S2 - Q1S1]$  e valued using a 3D binomial lattice model.
100. B2BinomialAdjustedBarrierSteps  
Computes the correct binomial lattice steps to use for convergence e barrier matching when running a barrier option.
101. B2BinomialAmericanCall  
Returns the American call option com a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to e including maturity.
102. B2BinomialAmericanPut  
Returns the American put option com a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to e including maturity.
103. B2BinomialBermudanCall  
Returns the American call option com a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to e including maturity except during the vesting period.
104. B2BinomialBermudanPut  
Returns the American put option com a continuous dividend yield using a binomial lattice, where the option can be exercised at any time up to e including maturity except during the vesting period.
105. B2BinomialEuropeiaCall  
Returns the European call option com a continuous dividend yield using a binomial lattice, where the option can be exercised only at maturity.
106. B2BinomialEuropeiaPut  
Returns the European put option com a continuous dividend yield using a binomial lattice, where the option can be exercised only at maturity.
107. B2BlackCallOptionModel  
Returns the Black model (modified Black-Scholes-Merton) for forward contracts e interest-based call options.
108. B2BlackPutOptionModel  
Returns the Black model (modified Black-Scholes-Merton) for forward contracts e interest-based put options.
109. B2BlackFuturesCallOption  
Computes the value of commodities futures call option given the value of the futures contract.
110. B2BlackFuturesPutOption  
Computes the value of commodities futures put option given the value of the futures contract.
111. B2BlackScholesCall  
European Call Option using Black-Scholes-Merton Model.
112. B2BlackScholesProbabilityAbove  
Computes the expected probability the stock price will rise above the strike price under a Black-Scholes paradigm.
113. B2BlackScholesPut  
European Put Option using Black-Scholes-Merton Model.
114. B2BondCIRBondDiscountFactor  
Returns the discount factor on a bond or risky debt using the Cox-Ingersoll-Ross model, accounting for mean-reverting interest rates.
115. B2BondCIRBondPrice  
Cox-Ross model on Zero Coupon Bond Pricing assuming no arbitrage e mean-reverting interest rates.
116. B2BondCIRBondYield  
Cox-Ross model on Zero Coupon Bond Yield assuming no arbitrage e mean-reverting interest rates.
117. B2BondConvexityContinuous  
Returns the debt's Convexity of second order sensitivity using a series of cash flows e current interest rate, com continuous discounting.
118. B2BondConvexityDiscrete  
Returns the debt's Convexity of second order sensitivity using a series of cash flows e current interest rate, com discrete discounting.
119. B2BondConvexityYTMContinuous  
Returns debt's Convexity or second order sensitivity using an internal Yield to Maturity of the cash flows, com continuous discounting.
120. B2BondConvexityYTMDiscrete  
Returns debt's Convexity or second order sensitivity using an internal Yield to Maturity of the cash flows, com discrete discounting.
121. B2BondDurationContinuous  
Returns the debt's first order sensitivity Duration measure using continuous discounting.
122. B2BondDurationDiscrete  
Returns the debt's first order sensitivity Duration measure using discrete discounting.
123. B2BondHullWhiteBondCallOption  
Values a European call option on a bond where the interest rates are stochastic e mean-reverting. Make sure Bond Maturity > Option Maturity.
124. B2BondHullWhiteBondPutOption  
Values a European put option on a bond where the interest rates are stochastic e mean-reverting. Make sure Bond Maturity > Option Maturity.
125. B2BondMacaulayDuration  
Returns the debt's first order sensitivity Macaulay's Duration measure.
126. B2BondMertonBondPrice  
Bond Price using Merton Stochastic Interest e 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 e discount rate, using Continuous discounting.
129. B2BondPriceDiscrete  
Returns the Bond Price of a cash flow series given the time e discount rate, using discrete discounting.

130. **B2BondVasicekBondCallOption**  
Values a European call option on a bond where the interest rates are stochastic e mean-reverting to a long-term rate. Make sure Bond Maturity > Option Maturity.
131. **B2BondVasicekBondPrice**  
Vasicek Zero Coupon Price assuming no arbitrage e mean-reverting interest rates.
132. **B2BondVasicekBondPutOption**  
Values a European put option on a bond where the interest rates are stochastic e mean-reverting to a long-term rate. Make sure Bond Maturity > Option Maturity.
133. **B2BondVasicekBondYield**  
Vasicek Zero Coupon Yield assuming no arbitrage e 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 e 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 e 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. **B2EscolhaBasicOption**  
Holder chooses if the option is a call or a put by the chooser time, com the same strike price e maturity. Typically cheaper than buying a call e a put together while providing the same level of hedge.
146. **B2EscolhaComplexOption**  
Holder gets to choose if the option is a call or a put within the Chooser Time, com different strike prices e maturities. Typically cheaper than buying a call e a put, while providing the same level of hedge.
147. **B2ClosedFormAmericanCall**  
Returns the American option approximation model com a continuous dividend yield call option.
148. **B2ClosedFormAmericanPut**  
Returns the American option approximation model com 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 e 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 e dispersion
151. **B2CommodityCallOptionModel**  
Computes the value of a commodity-based call option based on spot e futures market, e accounting for volatility of the forward rate.
152. **B2CommodityPutOptionModel**  
Computes the value of a commodity-based put option based on spot e futures market, e accounting for volatility of the forward rate.
153. **B2CompoundOptionsCallonCall**  
A compound option allowing the holder to buy (call) a call option com 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 com 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 com 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 com 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 e spot price e a real-life fair market value of the futures price.
158. **B2ConvertibleBondAmerican**  
Computes the value of a convertible bond using binomial lattices, e accounting for the stock's volatility e dividend yield, as well as the bond's credit spread above risk-free.
159. **B2ConvertibleBondEuropeia**  
Computes the value of a convertible bond using binomial lattices, e accounting for the stock's volatility e 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 com a probability of default.
161. **B2CreditAssetSpreadCallOption**  
Provides protection from an increase in spread but ceases to exist if the underlying asset defaults e is based on the price of the asset.
162. **B2CreditAssetSpreadPutOption**  
Provides protection from an decrease in spread but ceases to exist if the underlying asset defaults e is based on the price of the asset.
163. **B2CreditDefaultSwapSpread**  
Returns the valuation of a credit default swap CDS spread, allowing the holder to sell a bond/debt at par value when a credit event occurs.
164. **B2CreditDefaultSwapCorrelatedBondandSwapPrice**  
Computes the valuation of a bond com a credit default swap where both parties are correlated e each has a probability of default e possible recovery rates. At default, the holder receives the notional principal or par value of the bond.
165. **B2CreditDefaultSwapCorrelatedBondPrice**



	Computes the valuation of a bond without any credit default swap where the bond or debt has a probability of default e possible recovery rate.				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 e each has a probability of default e 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 e 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 com 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 e 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 e 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 com CDSs).		187.	B2DistributionBernoulliStdev
					Returns the Bernoulli distribution's theoretical standard deviation (second moment), measuring the width e 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 com CDSs).		188.	B2DistributionBetaKurtosis
					Returns the Beta distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution e its extreme tail events. An excess kurtosis of 0 implies a normal tail.
172.	B2CubicSpline	Interpolates e extrapolates the unknown Y values (based on the required X value) given some series of known X e Y values, e 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 e 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 e 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 e 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 e 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 e 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.		196.	B2DistributionCauchyKurtosis
					Returns the Cauchy distribution's theoretical excess kurtosis (fourth moment), measuring the peakedness of the distribution e its extreme tail events. An excess kurtosis of 0 implies a normal tail.
180.	B2DeltaGammaHedgeSharesBought	Computes the total value of stocks that has to be bought to perform a Delta-Gamma neutral hedge. Returns a negative value indicating cash outflow.		197.	B2DistributionCauchyMean
					Returns the Cauchy distribution's theoretical mean or expected value (first moment), measuring the central
181.	B2DeltaHedgeCallSold	Computes the single unit of call value that has to be sold to perform a Delta-neutral hedge. Returns a positive value indicating cash inflow.			
182.	B2DeltaHedgeMoneyBorrowed	Computes the amount of money that has to be borrowed to			

- 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 e the tail points to the right (left).
199. B2DistributionCauchyStdev  
Returns the Cauchy distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
203. B2DistributionChiSquareStdev  
Returns the Chi-Square distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
207. B2DistributionDiscreteUniformStdev  
Returns the Discrete Uniform distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
211. B2DistributionExponentialStdev  
Returns the Exponential distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
215. B2DistributionFStdev  
Returns the F distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
219. B2DistributionGammaStdev  
Returns the Gamma distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
223. B2DistributionGeometricStdev  
Returns the Geometric distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
227. B2DistributionGumbelMaxStdev  
Returns the Gumbel Max distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
231. **B2DistributionGumbelMinStdev**  
Returns the Gumbel Min distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
235. **B2DistributionHypergeometricStdev**  
Returns the Hypergeometric distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
239. **B2DistributionLogisticStdev**  
Returns the Logistic distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
243. **B2DistributionLognormalStdev**  
Returns the Lognormal distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
247. **B2DistributionNegativeBinomialStdev**  
Returns the Negative Binomial distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
251. **B2DistributionNormalStdev**  
Returns the Normal distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
255. **B2DistributionParetoStdev**  
Returns the Pareto distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
259. B2DistributionPoissonStdev  
Returns the Poisson distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
263. B2DistributionRayleighStdev  
Returns the Rayleigh distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
267. B2DistributionTStdev  
Returns the Student's T distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
271. B2DistributionTriangularStdev  
Returns the Triangular distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
275. B2DistributionUniformStdev  
Returns the Uniform distribution's theoretical standard deviation (second moment), measuring the width e 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 e 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 e the tail points to the right (left).
279. B2DistributionWeibullStdev  
Returns the Weibull distribution's theoretical standard deviation (second moment), measuring the width e 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.





- 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 e 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 e 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 e 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 e 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 e 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 e 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 e 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 e not exact probabilities.
346. B2EquityLinkedFXCallOptionDomesticValue  
Call options whose underlying asset is in a foreign equity market, e 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, e 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 e 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 e changes in stock returns in the previous period.
350. B2ExtremeSpreadCallOption  
Maturities are divided into two segments, e the call option pays the difference between the max assets from segment two e max of segment one.
351. B2ExtremeSpreadPutOption  
Maturities are divided into two segments, e the put option pays the difference between the min of segment two's asset value e the min of segment one's asset value.
352. B2ExtremeSpreadReverseCallOption  
Maturities are divided into two segments, e a reverse call pays the min from segment one less the min of segment two.
353. B2ExtremeSpreadReversePutOption  
Maturities are divided into two segments, e 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, e lattices.
355. B2FiniteDifferenceAmericanPut  
Computes the American put option using finite differencing methods, as an alternative to simulation, closed-form approximation models, e lattices.
356. B2FiniteDifferenceEuropeiaCall  
Computes the European call option using finite differencing methods, as an alternative to simulation, closed-form approximation models, e lattices.
357. B2FiniteDifferenceEuropeiaPut  
Computes the European put option using finite differencing methods, as an alternative to simulation, closed-form approximation models, e 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 e 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 e 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 e 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 e 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 e accounting for the exchange rate volatility.
376. B2ForeignEquityDomesticCurrencyPut  
Computes the value of a foreign-based equity put option struck in a domestic currency e accounting for the exchange rate volatility.
377. B2ForeignEquityFixedFXRateDomesticValueQuantoCall  
Quanto call options are denominated in another currency than the underlying asset, com expanding or contracting protection coverage of the foreign exchange rates.
378. B2ForeignEquityFixedFXRateDomesticValueQuantoPut  
Quanto put options are denominated in another currency than the underlying asset, com 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, com 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, com 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, e 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, e 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 e information.
387. B2GapCallOption  
The call option is knocked in if the asset exceeds the reference Strike 1, e 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 com 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 e time are required.
391. B2GeneralizedBlackScholesPut  
Returns the Black-Scholes Model com 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 e time are required.
393. B2GraduatedBarrierDownandInCall  
Barriers are graduated ranges between lower e upper values. The option is knocked in the money proportionally depending on how low the asset value is in the range.
394. B2GraduatedBarrierDownandOutCall  
Barriers are graduated ranges between lower e upper values. The option is knocked out of the money proportionally depending on how low the asset value is in the range.
395. B2GraduatedBarrierUpandInPut  
Barriers are graduated ranges between lower e upper values. The option is knocked in the money proportionally depending on how high the asset value is in the range.
396. B2GraduatedBarrierUpandOutPut  
Barriers are graduated ranges between lower e upper values. The option is knocked out of the money proportionally depending on how high the asset value is in the range.
397. B2ImpliedVolatilityBestCase  
Computes the implied volatility given an expected value of an asset, e an alternative best case scenario value e its corresponding percentile (must be above 50%).
398. B2ImpliedVolatilityCall  
Computes the implied volatility in a European call option given all the inputs parameters e option value.
399. B2ImpliedVolatilityPut  
Computes the implied volatility in a European put option given all the inputs parameters e option value.
400. B2ImpliedVolatilityWorstCase



- Computes the implied volatility given an expected value of an asset,  $e$  an alternative worst case scenario value  $e$  its corresponding percentile (must be below 50%).
401. B2InterestAnnualtoPeriodic  
Computes the periodic compounding rate based on the annualized compounding interest rate per year.
402. B2InterestCaplet  
Computes the interest rate caplet (sum all the caplets into the total value of the interest rate cap)  $e$  acts like an interest rate call option.
403. B2InterestContinuousToDiscrete  
Returns the corresponding discrete compounding interest rate given the continuous compounding rate.
404. B2InterestContinuousToPeriodic  
Computes the periodic compounding interest rate based on a continuous compounding rate.
405. B2InterestDiscreteToContinuous  
Returns the corresponding continuous compounding interest rate given the discrete compounding rate.
406. B2InterestFloorlet  
Computes the interest rate floorlet (sum all the floorlets into the total value of the interest rate floor)  $e$  acts like an interest rate put option.
407. B2InterestPeriodictoAnnual  
Computes the annualized compounding interest rate per year based on a periodic compounding rate.
408. B2InterestPeriodictoContinuous  
Computes the continuous compounding rate based on the periodic compounding interest rate.
409. B2InverseGammaCallOption  
Computes the European Call option assuming an inverse Gamma distribution, rather than a normal distribution,  $e$  is important for deep out-of-the-money options.
410. B2InverseGammaPutOption  
Computes the European Put option assuming an inverse Gamma distribution, rather than a normal distribution,  $e$  is important for deep out-of-the-money options.
411. B2IRRContinuous  
Returns the continuously discounted Internal Rate of Return for a cash flow series com its respective cash flow times in years.
412. B2IRRDiscrete  
Returns the discretely discounted Internal Rate of Return for a cash flow series com its respective cash flow times in years.
413. B2LinearInterpolation  
Interpolates  $e$  fills in the missing values of a time series.
414. B2MarketPriceRisk  
Computes the market price of risk used in a variety of options analysis, using market return, risk-free return, volatility of the market  $e$  correlation between the market  $e$  the asset.
415. B2MathIncompleteGammaQ  
Returns the result from an incomplete Gamma Q function.
416. B2MathIncompleteGammaP  
Returns the result from an incomplete Gamma P function.
417. B2MathIncompleteBeta  
Returns the result from an incomplete Beta function.
418. B2MathGammaLog  
Returns the result from a log gamma function.
419. B2MatrixMultiplyAxB  
Multiplies two compatible matrices, such as  $M \times N$  com  $N \times M$  to create an  $M \times M$  matrix. Copy  $e$  paste function  $e$  use Ctrl+Shift Enter to obtain the matrix.
420. B2MatrixMultiplyAxTransposeB  
Multiplies the first matrix com the transpose of the second matrix (multiplies  $M \times N$  com  $M \times N$  matrix by transposing the second matrix to  $N \times M$ , generating an  $M \times M$  matrix). Copy  $e$  paste function  $e$  use Ctrl+Shift Enter to obtain the matrix.
421. B2MatrixMultiplyTransposeAxB  
Multiplies the transpose of the first matrix com the second matrix (multiplies  $M \times N$  com  $M \times N$  matrix by transposing the first matrix to  $N \times M$ , generating an  $N \times N$  matrix). Copy  $e$  paste function  $e$  use Ctrl+Shift Enter to obtain the matrix.
422. B2MatrixTranspose  
Transposes a matrix, from  $M \times N$  to  $N \times M$ . Copy  $e$  paste function  $e$  use Ctrl+Shift Enter to obtain the matrix.
423. B2MertonJumpDiffusionCall  
Call value of an underlying whose asset returns are assumed to follow a Poisson Jump Diffusion process, i.e., prices jump several times a year,  $e$  cumulatively, these jumps explain a percentage of the total asset volatility.
424. B2MertonJumpDiffusionPut  
Put value of an underlying whose asset returns are assumed to follow a Poisson Jump Diffusion process, i.e., prices jump several times a year,  $e$  cumulatively, these jumps explain a percentage of the total asset volatility.
425. B2NormalTransform  
Converts values into a normalized distribution.
426. B2NPVContinuous  
Returns the Net Present Value of a cash flow series given the time  $e$  discount rate, using Continuous discounting.
427. B2NPVDiscrete  
Returns the Net Present Value of a cash flow series given the time  $e$  discount rate, using discrete discounting.
428. B2OptionStrategyLongBearCreditSpread  
Returns the matrix [stock price, buy put, sell put, profit] of a long bearish crebit spread (buying a higher strike put com a high price  $e$  selling a lower strike put com 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  $e$  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 com a low price  $e$  selling a lower strike call com 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  $e$  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  $e$  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  $e$  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  $e$  calls com identical strike price  $e$  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  $e$  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  $e$  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  $e$  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 e calls com identical strike price e 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 e sell low strike put at low price (close expirations), profits from low volatility.
440. B2Payback  
Computes the payback in years given some initial investment e 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 e 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 e a perpetual European has no value).
443. B2PortfolioReturns  
Computes the portfolio weighted average expected returns given individual asset returns e allocations.
444. B2PortfolioRisk  
Computes the portfolio risk given individual asset allocations e variance-covariance matrix.
445. B2PortfolioVariance  
Computes the portfolio variance given individual asset allocations e 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, e percentile Value at Risk for the portfolio.
448. B2ProbabilityDefaultCorrelation  
Computes the correlations of default probabilities given the probabilities of default of each asset e 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 e 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 e 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 e accounting for a recovery rate.
452. B2ProbabilityDefaultMertonDefaultDistance  
Distance to Default (does not require market returns e correlations but requires the internal growth rates).
453. B2ProbabilityDefaultMertonI  
Probability of Default (without regard to Equity Value or Equity Volatility, but requires Asset, Debt, e market values).
454. B2ProbabilityDefaultMertonII  
Probability of Default (does not require market returns e correlations but requires the internal growth rates).
455. B2ProbabilityDefaultMertonImputedAssetValue  
Returns the imputed market value of asset given external equity value, equity volatility, e 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, e 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 e 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 e 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, e the Cap Rate at Purchase Date (Net Operating Income/Sale Price).
464. B2PutCallParityCallToPut  
Computes the European put option value given the value of a corresponding European call option com identical input assumptions.
465. B2PutCallParityCallToPutCurrencyOptions  
Computes the European currency put option value given the value of a corresponding European currency call option on futures e forwards com identical input assumptions.
466. B2PutCallParityCallToPutFutures  
Computes the European put option on futures e forwards value given the value of a corresponding European call option on futures e forwards com identical input assumptions.
467. B2PutCallParityPuttoCall  
Computes the European call option value given the value of a corresponding European put option com identical input assumptions.
468. B2PutCallParityPuttoCallCurrencyOptions  
Computes the European currency call option value given the value of a corresponding European currency put option on futures e forwards com identical input assumptions.
469. B2PutCallParityPuttoCallFutures  
Computes the European call option on futures e forwards value given the value of a corresponding European put option on futures e forwards com identical input assumptions.
470. B2PutDelta  
Returns the option valuation sensitivity Delta (a put option value's sensitivity to changes in the asset value).
471. B2PutGamma  
Returns the option valuation sensitivity Gamma (a put option value's sensitivity to changes in the delta value).
472. B2PutOptionOnTheMax  
The maximum values at expiration of both assets are used in

- option exercise, where the call option payoff at expiration is the strike price against the maximum price between Asset 1 e Asset 2.
473. B2PutOptionOnTheMin  
The minimum values at expiration of both assets are used in option exercise, where the call option payoff at expiration is the strike price against the minimum price between Asset 1 e Asset 2.
474. B2PutRho  
Returns the option valuation sensitivity Rho (a put option value's sensitivity to changes in the interest rate).
475. B2PutTheta  
Returns the option valuation sensitivity Theta (a put option value's sensitivity to changes in the maturity).
476. B2PutVega  
Returns the option valuation sensitivity Vega (a put option value's sensitivity to changes in the volatility).
477. B2QueuingMCAveCustomersinSystem  
Average number of customers in the system using a multiple channel queuing model assuming a Poisson arrival rate com Exponential distribution of service times.
478. B2QueuingMCAveCustomersWaiting  
Average number of customers in the waiting line using a multiple channel queuing model assuming a Poisson arrival rate com Exponential distribution of service times.
479. B2QueuingMCAveTimeinSystem  
Average time a customer spends in the system using a multiple channel queuing model assuming a Poisson arrival rate com Exponential distribution of service times.
480. B2QueuingMCAveTimeWaiting  
Average time a customer spends in the waiting line using a multiple channel queuing model assuming a Poisson arrival rate com Exponential distribution of service times.
481. B2QueuingMCPProbHaveToWait  
Probability an arriving customer has to wait using a multiple channel queuing model assuming a Poisson arrival rate com Exponential distribution of service times.
482. B2QueuingMCPProbNoCustomer  
Probability that no customers are in the system using a multiple channel queuing model assuming a Poisson arrival rate com Exponential distribution of service times.
483. B2QueuingMGKAveCustomersinSystem  
Average number of customers in the system using a multiple channel queuing model assuming a Poisson arrival rate com unknown distribution of service times.
484. B2QueuingMGKCostPerPeriod  
Total cost per time period using a multiple channel queuing model assuming a Poisson arrival rate com unknown distribution of service times.
485. B2QueuingMGKProbBusy  
Probability a channel will be busy using a multiple channel queuing model assuming a Poisson arrival rate com unknown distribution of service times.
486. B2QueuingSCAAveCustomersinSystem  
Average number of customers in the system using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate com unknown distribution of service times.
487. B2QueuingSCAAveCustomersWaiting  
Average number of customers in the waiting line using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate com unknown distribution of service times.
488. B2QueuingSCAAveTimeinSystem  
Average time a customer spends in the system using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate com unknown distribution of service times.
489. B2QueuingSCAAveTimeWaiting  
Average time a customer spends in the waiting line using an
- MG1 single channel arbitrary queuing model assuming a Poisson arrival rate com unknown distribution of service times.
490. B2QueuingSCAProbHaveToWait  
Probability an arriving customer has to wait using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate com unknown distribution of service times.
491. B2QueuingSCAProbNoCustomer  
Probability that no customers are in the system using an MG1 single channel arbitrary queuing model assuming a Poisson arrival rate com unknown distribution of service times.
492. B2QueuingSCAveCustomersinSystem  
Average number of customers in the system using a single channel queuing model.
493. B2QueuingSCAveCustomersWaiting  
Returns the average number of customers in the waiting line using a single channel queuing model.
494. B2QueuingSCAveTimeinSystem  
Average time a customer spends in the system using a single channel queuing model.
495. B2QueuingSCAveTimeWaiting  
Average time a customer spends in the waiting line using a single channel queuing model.
496. B2QueuingSCProbHaveToWait  
Probability an arriving customer has to wait using a single channel queuing model.
497. B2QueuingSCProbNoCustomer  
Returns the probability that no customers are in the system using a single channel queuing model.
498. B2RatiosBasicEarningPower  
Computes the basic earning power (BEP) by accounting for earnings before interest e taxes (EBIT) e the amount of total assets employed.
499. B2RatiosBetaLevered  
Computes the levered beta from an unlevered beta level after accounting for the tax rate, total debt e equity values.
500. B2RatiosBetaUnlevered  
Computes the unlevered beta from a levered beta level after accounting for the tax rate, total debt e equity values.
501. B2RatiosBookValuePerShare  
Computes the book value per share (BV) by accounting for the total common equity amount e 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, e 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 e 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 e taxes).
506. B2RatiosCashFlowtoFirm  
Cash flow to the firm (accounting for earnings before interest e taxes EBIT, tax rate, depreciation, capital expenditures e change in working capital).
507. B2RatiosCashFlowtoFirm2  
Cash flow to the firm (accounting for net operating profit after taxes (NOPAT), depreciation, capital expenditures e 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 e 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, e current equity price.
511. B2RatiosCurrentRatio  
Computes the current ratio by accounting for the individual asset e liabilities.
512. B2RatiosDaysSalesOutstanding  
Computes the days sales outstanding by looking at the accounts receivables value, total annual sales, e number of days per year.
513. B2RatiosDebtAssetRatio  
Computes the debt to asset ratio by accounting for the total debt e total asset values.
514. B2RatiosDebtEquityRatio  
Computes the debt to equity ratio by accounting for the total debt e total common equity levels.
515. B2RatiosDebtRatio1  
Computes the debt ratio by accounting for the total debt e total asset values.
516. B2RatiosDebtRatio2  
Computes the debt ratio by accounting for the total equity e total asset values.
517. B2RatiosDividendsPerShare  
Computes the dividends per share (DPS) by accounting for the dividend payment amount e number of shares outstanding.
518. B2RatiosEarningsPerShare  
Computes the earnings per share (EPS) by accounting for the net income amount e number of shares outstanding.
519. B2RatiosEconomicProfit1  
Computes the economic profit using invested capital, return on invested capital (ROIC) e weighted average cost of capital (WACC).
520. B2RatiosEconomicProfit2  
Computes the economic profit using net operating profit after tax (NOPAT), return on invested capital (ROIC) e weighted average cost of capital (WACC).
521. B2RatiosEconomicProfit3  
Computes the economic profit using net operating profit after tax (NOPAT) e capital charge.
522. B2RatiosEconomicValueAdded  
Computes the economic value added using earnings before interest e taxes (EBIT), total capital employed, tax rate, e 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 e net fixed assets.
525. B2RatiosInventoryTurnover  
Computes the inventory turnover using sales e inventory levels.
526. B2RatiosMarketBookRatio1  
Computes the market to book value per share by accounting for the share price e 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, e the number of shares outstanding.
528. B2RatiosMarketValueAdded  
Computes the market value added by accounting for the stock price, total common equity, e number of shares outstanding.
529. B2RatiosNominalCashFlow  
Computes the nominal cash flow amount assuming some inflation rate, real cash flow, e the number of years in the future.
530. B2RatiosNominalDiscountRate  
Computes the nominal discount rate assuming some inflation rate e real discount rate.
531. B2RatiosPERatio1  
Computes the price to earnings ratio (PE) using stock price e earnings per share (EPS).
532. B2RatiosPERatio2  
Computes the price to earnings ratio (PE) using stock price, net income, e number of shares outstanding.
533. B2RatiosPERatio3  
Computes the price to earnings ratio (PE) using growth rates, rate of return, e 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 e liabilities.
536. B2RatiosRealCashFlow  
Computes the real cash flow amount assuming some inflation rate, nominal cash flow (Nominal CF), e the number of years in the future.
537. B2RatiosRealDiscountRate  
Computes the real discount rate assuming some inflation rate e nominal discount rate.
538. B2RatiosReturnonAsset1  
Computes the return in asset using net income amount e total assets employed.
539. B2RatiosReturnonAsset2  
Computes the return in asset using net profit margin percentage e total asset turnover ratio.
540. B2RatiosReturnonEquity1  
Computes return on equity using net income e total common equity values.
541. B2RatiosReturnonEquity2  
Computes return on equity using return on asset (ROA), total asset, e total equity values.
542. B2RatiosReturnonEquity3  
Computes return on equity using net income, total sales, total asset, e total common equity values.
543. B2RatiosReturnonEquity4  
Computes return on equity using net profit margin, total asset turnover, e 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 e preferred stocks.
546. B2SimulatedEuropeiaCall  
Returns the Monte Carlo simulated European call option (only European options can be approximated well com simulation). This function is volatile.
547. B2SimulatedEuropeiaPut  
Returns the Monte Carlo simulated European put option (only European options can be approximated well com simulation). This function is volatile.

548. B2RatiosTimesInterestEarned  
Computes the times interest earned ratio by accounting for earnings before interest e taxes (EBIT) e the amount of interest payment.
549. B2RatiosTotalAssetTurnover  
Computes the total asset turnover by accounting for the annual sales levels e total assets.
550. B2RatiosWACC1  
Computes the weighted average cost of capital (WACC) using market values of debt, preferred equity, e 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 e contract using a binomial lattice model.
553. B2ROBinomialAmericanAbandonContractExpand  
Returns the American option to abandon, contract e expand using a binomial lattice model.
554. B2ROBinomialAmericanAbandonExpand  
Returns the American option to abandon e expand using a binomial lattice model.
555. B2ROBinomialAmericanAbandonContract  
Returns the American option to abandon using a binomial lattice model.
556. B2ROBinomialAmericanCall  
Returns the American call option com dividends using a binomial lattice model.
557. B2ROBinomialAmericanChangingRiskFree  
Returns the American call option com dividends e assuming the risk-free rate changes over time, using a binomial lattice model.
558. B2ROBinomialAmericanChangingVolatility  
Returns the American call option com dividends e 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 e expand using a binomial lattice model.
560. B2ROBinomialAmericanContração  
Returns the American option to contract using a binomial lattice model.
561. B2ROBinomialAmericanCustomCall  
Returns the American option call option com changing inputs, vesting periods, e suboptimal exercise multiple using a binomial lattice model.
562. B2ROBinomialAmericanExpanção  
Returns the American option to expand using a binomial lattice model.
563. B2ROBinomialAmericanPut  
Returns the American put option com dividends using a binomial lattice model.
564. B2ROBinomialBermudanAbandonContract  
Returns the Bermudan option to abandon e 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 e expand, using a binomial lattice model, where there is a vesting/blackout period the option cannot be executed.
566. B2ROBinomialBermudanAbandonExpand  
Returns the Bermudan option to abandon e expand using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
567. B2ROBinomialBermudanAbandonContract  
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 com dividends, where there is a vesting/blackout period where the option cannot be executed.
569. B2ROBinomialBermudanContractExpand  
Returns the Bermudan option to contract e expand, using a binomial lattice model, where there is a vesting/blackout period where the option cannot be executed.
570. B2ROBinomialBermudanContração  
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. B2ROBinomialBermudanExpanção  
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 com dividends, where there is a vesting/blackout period where the option cannot be executed.
573. B2ROBinomialEuropeiaAbandonContract  
Returns the European option to abandon e contract, using a binomial lattice model, where the option can only be executed at expiration.
574. B2ROBinomialEuropeiaAbandonContractExpand  
Returns the European option to abandon, contract e expand, using a binomial lattice model, where the option can only be executed at expiration.
575. B2ROBinomialEuropeiaAbandonExpand  
Returns the European option to abandon e expand, using a binomial lattice model, where the option can only be executed at expiration.
576. B2ROBinomialEuropeiaAbandonContract  
Returns the European option to abandon using a binomial lattice model, where the option can only be executed at expiration.
577. B2ROBinomialEuropeiaCall  
Returns the European call option com dividends, where the option can only be executed at expiration.
578. B2ROBinomialEuropeiaContractExpand  
Returns the European option to contract e expand, using a binomial lattice model, where the option can only be executed at expiration.
579. B2ROBinomialEuropeiaContração  
Returns the European option to contract using a binomial lattice model, where the option can only be executed at expiration.
580. B2ROBinomialEuropeiaExpanção  
Returns the European option to expand using a binomial lattice model, where the option can only be executed at expiration.
581. B2ROBinomialEuropeiaPut  
Returns the European put option com 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 com two underlying assets (these are typically price e quantity, e are multiplied together to form a new combinatorial pentanomial lattice).
587. B2ROPentanomialAmericanPut  
Returns the Rainbow American put option com two underlying assets (these are typically price e quantity, e are multiplied together to form a new combinatorial pentanomial lattice).
588. B2ROPentanomialEuropeiaCall  
Returns the Rainbow European call option com two underlying assets (these are typically price e quantity, e are multiplied together to form a new combinatorial pentanomial lattice).
589. B2ROPentanomialEuropeiaPut  
Returns the Rainbow European put option com two underlying assets (these are typically price e quantity, e 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. B2ROQuadrnomialJumpDiffusionEuropeiaCall  
Returns the European call option whose underlying asset follows a Poisson jump-diffusion process, using a combinatorial quadrnomial lattice.
593. B2ROQuadrnomialJumpDiffusionEuropeiaPut  
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 e 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 e 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 e down states can be asymmetrical, solved in a lattice model, e 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 e down states can be asymmetrical, solved in a lattice model, e where the option cannot be exercised at certain vesting/blackout periods.
598. B2ROStateEuropeiaCall  
Returns the Bermudan call option using a state jump function, where the up e down states can be asymmetrical, solved in a lattice model, e where the option can only be exercised at maturity.
599. B2ROStateEuropeiaPut  
Returns the Bermudan put option using a state jump function, where the up e down states can be asymmetrical, solved in a lattice model, e where the option can only be exercised at maturity.
600. B2ROTrinomialAmericanCall  
Returns the American call option com dividend, solved using a trinomial lattice.
601. B2ROTrinomialAmericanMeanRevertingCall  
Returns the American call option com dividend, assuming the underlying asset is mean-reverting, e solved using a trinomial lattice.
602. B2ROTrinomialAmericanMeanRevertingPut  
Returns the American call option com dividend, assuming the underlying asset is mean-reverting, e solved using a trinomial lattice.
603. B2ROTrinomialAmericanPut  
Returns the American put option com dividend, solved using a trinomial lattice.
604. B2ROTrinomialBermudanCall  
Returns the Bermudan call option com dividend, solved using a trinomial lattice, where during certain vesting/blackout periods, the option cannot be exercised.
605. B2ROTrinomialBermudanPut  
Returns the Bermudan put option com dividend, solved using a trinomial lattice, where during certain vesting/blackout periods, the option cannot be exercised.
606. B2ROTrinomialEuropeiaCall  
Returns the European call option com dividend, solved using a trinomial lattice, where the option can only be exercised at maturity.
607. B2ROTrinomialEuropeiaMeanRevertingCall  
Returns the European call option com dividend, solved using a trinomial lattice, assuming the underlying asset is mean-reverting, e where the option can only be exercised at maturity.
608. B2ROTrinomialEuropeiaMeanRevertingPut  
Returns the European put option com dividend, solved using a trinomial lattice, assuming the underlying asset is mean-reverting, e where the option can only be exercised at maturity.
609. B2ROTrinomialEuropeiaPut  
Returns the European put option com 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 e paste the function e use Ctrl+Shift+Enter to obtain the matrix.
611. B2TrinomialImpliedArrowDebreuValue  
Computes the single value of implied Arrow-Debreu price (for a specific step/column e 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 e paste the function e use Ctrl+Shift+Enter to obtain the matrix.
614. B2TrinomialImpliedDownProbabilityValue  
Computes the single value of implied DOWN probability (for a specific step/column e 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 e paste the function e use Ctrl+Shift+Enter to obtain the matrix.
616. B2TrinomialImpliedLocalVolatilityValue  
Computes the single value of localized volatility (for a specific

- step/column e 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 e paste the function e use Ctrl+Shift+Enter to obtain the matrix.
618. B2TrinomialImpliedUpProbabilityValue  
Computes the single value of implied UP probability (for a specific step/column e 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 e a market benchmark series of prices.
621. B2SCurveValue  
Computes the S-Curve extrapolation's next forecast value based on previous value, growth rate e maximum capacity levels.
622. B2SCurveValueSaturation  
Computes the S-Curve extrapolation's saturation level based on previous value, growth rate e 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





- charts are applicable when number of defects are important,  $e$  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,  $e$  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,  $e$  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,  $e$  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 com only a single measurement for each sample  $e$  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 com only a single measurement for each sample  $e$  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 com only a single measurement for each sample  $e$  a time-series of moving ranges is the variable plotted.
684. B2SixSigmaDeltaPrecision  
Computes the error precision given specific levels of Type I  $e$  Type II errors, as well as the sample size  $e$  variance.
685. B2SixSigmaSampleSize  
Computes the required minimum sample size given Type I  $e$  Type II errors, as well as the required precision of the mean  $e$  the error tolerances.
686. B2SixSigmaSampleSizeDPU  
Computes the required minimum sample size given Type I  $e$  Type II errors, as well as the required precision of the defects per unit  $e$  the error tolerances.
687. B2SixSigmaSampleSizeProportion  
Computes the required minimum sample size given Type I  $e$  Type II errors, as well as the required precision of the proportion of defects  $e$  the error tolerances.
688. B2SixSigmaSampleSizeStdev  
Computes the required minimum sample size given Type I  $e$  Type II errors, as well as the required precision of the standard deviation  $e$  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  $e$  beta of 0.10.
690. B2SixSigmaStatCP  
Computes the potential process capability index Cp given the actual mean  $e$  sigma of the process, including the upper  $e$  lower specification limits.
691. B2SixSigmaStatCPK  
Computes the process capability index Cpk given the actual mean  $e$  sigma of the process, including the upper  $e$  lower specification limits.
692. B2SixSigmaStatDPMO  
Computes the defects per million opportunities (DPMO) given the actual mean  $e$  sigma of the process, including the upper  $e$  lower specification limits.
693. B2SixSigmaStatDPU  
Computes the proportion of defective units (DPU) given the actual mean  $e$  sigma of the process, including the upper  $e$  lower specification limits.
694. B2SixSigmaStatProcessSigma  
Computes the process sigma level given the actual mean  $e$  sigma of the process, including the upper  $e$  lower specification limits.
695. B2SixSigmaStatYield  
Computes the nondefective parts or the yield of the process given the actual mean  $e$  sigma of the process, including the upper  $e$  lower specification limits.
696. B2SixSigmaUnitCPK  
Computes the process capability index Cpk given the actual counts of defective parts  $e$  the total opportunities in the population.
697. B2SixSigmaUnitDPMO  
Computes the defects per million opportunities (DPMO) given the actual counts of defective parts  $e$  the total opportunities in the population.
698. B2SixSigmaUnitDPU  
Computes the proportion of defective units (DPU) given the actual counts of defective parts  $e$  the total opportunities in the population.
699. B2SixSigmaUnitProcessSigma  
Computes the process sigma level given the actual counts of defective parts  $e$  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  $e$  the total opportunities in the population.
701. B2StandardNormalBivariateCDF  
Given the two Z-scores  $e$  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  $e$  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  $e$  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  $e$  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  $e$  lower barriers,  $e$  at expiration, provides a payoff equivalent to the stock or asset price divided by the lower strike price (S/X Lower).
708. B2SwaptionEuropeiaPayer  
European Call Interest Swaption.
709. B2SwaptionEuropeiaReceiver  
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 e 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 e 252).
715. B2TwoAssetBarrierDownandInCall  
Valuable or knocked in-the-money only if the lower barrier is breached (reference Asset 2 goes below the barrier), e 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), e 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), e 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), e 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), e 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), e 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), e 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), e 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, e 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, e 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, e 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, e 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 e Correlação method, accounting for a specific VaR percentile e 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 e warrants outstanding.
734. B2WriterExtendibleCallOption  
The call option is extended beyond the initial maturity to an extended date com 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 com 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 Curva de Dividendo at various points in time using the Bliss model.
737. B2YieldCurveNS  
Returns the Curva de Dividendo at various points in time using the Nelson-Siegel approach.
738. B2ZEOB  
Returns the Economic Order Batch or the optimal quantity to be manufactured on each production batch.
739. B2ZEOBBatch  
Returns the Economic Order Batch analysis' optimal number of batches to be manufactured per year.
740. B2ZEOBHoldingCost  
Returns the Economic Order Batch analysis' cost of holding excess units per year if manufactured at the optimal level.
741. B2ZEOBProductionCost  
Returns the Economic Order Batch analysis' total cost of setting up production per year if manufactured at the optimal level.
742. B2ZEOBTotalCost  
Returns the Economic Order Batch analysis' total cost of

- production e 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 e 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 Ferramentas de Modelagem:](#)

773. Monte Carlo Simulation using 25 statistical distributions
774. Monte Carlo Simulation : Simulations com Correlations
775. Monte Carlo Simulation : Simulations com Precision Control
776. Monte Carlo Simulation : Simulations com 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: Análise de Séries Temporais
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: Customizadas Options
805. SLS Single Asset and Single Phase: European Options
806. SLS Multiple Asset and Multiple Phases
807. SLS Multinomial Lattices: Trinomials
808. SLS Multinomial Lattices: Trinomial Mean-Reversion
809. SLS Multinomial Lattices: Quadranomials
810. SLS Multinomial Lattices: Pentanomials