

LossStats[®] Model

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February 25, 2009

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Importance of Recoveries

- **The value of debt security depends largely on two factors:**
 - Probability of default (PD)
 - Probability distribution of recovery given default (LGD)
- **Less effort has been expended on a rigorous understanding of recoveries**
- **Relationship to default and current market conditions with a high degree of defaults**

Overview of Recovery Analysis (LGD) Products and Services

Product	Description	Benefits	Users
LossStat Database	Provide Loss Given Default benchmarks, data and analysis in support of: building recovery criteria for bank loan ratings, corporate research, structured research, soliciting custom service assignments,	<ul style="list-style-type: none"> • Supplement internal loss data • Benchmark internal loss models • Supplement lending decisions/pricing • Develop internal facility risk ratings 	<ul style="list-style-type: none"> • Commercial banks • Investment banks • High Yield managers/investors • Hedge Funds
LossStat Model	A model that applies an advanced mathematical framework and data to forecast a distribution of loss given default (LGD) values.	<ul style="list-style-type: none"> • Capital optimization under Basel II accord • Credit portfolio management • Syndication and securitization • Loan origination and surveillance • Pricing, provisioning, and capital allocation 	<ul style="list-style-type: none"> • Commercial banks • Investment banks • High Yield managers/investors • Hedge Funds
LGD Data Consortia	Pooled LGD data when individual banks cannot provide historical data to support assumptions	<ul style="list-style-type: none"> • Data is collected, cleansed and analyzed in a standard and consistent format • Participants' individual results are analyzed and presented • Definitions and rules are agreed upon by all participants • Confidentiality of participants and their data are strictly maintained 	<ul style="list-style-type: none"> • Commercial Banks

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Loss Stats Model - Description

- **Flexible application - that allows the user to input other variables or change any of the input, for example; industry default factors, debt positions and collateral quality. In addition:**
 - Choose the number of months after default
 - Conduct stress tests. For example, users can define “stressed values” for variables from their own historical.
 - The default rates and industry factors are updated monthly.
 - Can generate individual or multiple scores
- **The Loss Stats Model contains two analytical modules:**
 - **Module I** – is based upon an ultimate recovery value dataset and estimates the probability distribution for ultimate loss given default as defined in terms of ultimate recovery
 - **Module II** – is based upon a 30-day distressed debt trading price training dataset and estimates the probability distribution for “30-day” loss given default as defined in terms of 30 day trading prices.

Methodology

- **Loss Stats Model uses an industry proven Maximum Expected Utility (MEU) methodology to produce probabilistic models. This approach seeks to find the probability distribution that maximizes the expected utility for an investor making investment decisions.**
- **The model calculates the probability distribution of loss rates based in a number of explanatory variables:**
 - Collateral Quality
 - Debt Position (Seniority)
 - Aggregate Default Rate
 - Industry Default Factor
- **The loss calculations are based on test dataset from Standard & Poor's LossStats database.**

Comparison of Model vs. Actual Results

Debt Type	Actual Recovery 2008	Model Results	
		24% Mean LGD	76% Mean Recovery
Bank Debt	73%	24% Mean LGD	76% Mean Recovery
Sr Secured Bonds	70%	38%	62%
Sr Subordinated Bonds	37%	62%	38%
Sr Unsecured Bonds	56%	62%	38%
Subordinated Bonds	58%	71%	29%

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Reference Dataset

- The reference dataset which the model is trained on is Risk Solutions proprietary Loss Stat database. Most comprehensive ultimate and price recovery database available –
- Includes more than 3,700 defaulted US-issued bank loans and bonds broken down as follows:

Debt Type	Instrument Count	Percentage of Debt	Total Defaulted Amount
Bank Debt	1,422	30.36	181,448,417,928.51
Senior Secured Bonds	344	7.91	47,260,599,512.49
Senior Unsecured Bonds	1,020	43.2	258,204,842,936.53
Senior Subordinated Bonds	507	11.5	68,724,728,887.72
Subordinated Bonds	411	6.03	36,025,641,085.00
Junior Subordinated Bonds	54	1	5,976,556,828.38
Grand Total	3,758		597,640,787,178.63

- **800 obligors/issuers spanning across all industry classes**

LossStats Models Features and Functionalities

The user has the ability to change the input to the model, for example;

- Industry default factors
- Aggregate default rates
- Collateral quality
- Debt positions

The model can generate individual or multiple scores

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LossStats Model

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User: ANTENSMILLER

Select LGD calculation
Distressed Debt Prices

Analysis
>>Portfolio
>>Individual
Administration
>>Portfolio Status

Individual Loan Analysis Based Upon Distressed Debt Prices

Time Since Default (in months)

Please enter either debt type or debt above and debt below class
Check the box to enter debt above and debt below class

Debt Type
<Please select debt type.....>

Debt Above Class (in %)

Debt Below Class (in %)

Collateral Type

Regional Default Rate (in %) 0.62

<Please select an industry.....>

Industry Factor

Probability Of Default (PD) (in %)

Historically Observed Default Rates

Get Model Results

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LossStatsModel and practical application

- Standalone measure of LGD risk
 - **Capital optimization under Basel II accord**
 - **Credit portfolio management**
 - **Syndication and securitization**
 - **Loan origination and surveillance**
 - **Pricing, provisioning, and capital allocation**
- Input into broader LGD rating system
- Benchmarking of existing LGD model or rating system output
- Source of much needed LGD data
 - **Importance of robust dataset in LGD modeling**

The LossStats Model accommodates many needs

Estimating LGD's based on Distressed Debt Prices may be more relevant for users that are looking to trade their instruments/positions.

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Select LGD calculation
Distressed Debt Prices

Analysis

- >>Portfolio
- >>Individual

Administration

- >>Portfolio Status

Import Results For Distressed Debt Prices

Click on [View Charts](#) for details in chart form.

Time Since Default (in months)	Collateral Type	Debt Above Class (in %)	Debt Below Class (in %)	Regional Default Rate (in %)	Industry Factor	PD (in %)	Mean LGD	Std. Dev of LGD	Mean Loss	Std. Dev of Loss
12.00	All Assets	20.00	20.00	0.62	0.00	0.19	0.30	0.25	0.00	0.02

To download and print model results please use the following links:
[LGD Summary](#) [LGD Detail](#) [Loss Summary](#) and [LossDetail](#)

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Example of LGD based on Ultimate Recovery Value Calculation

Ultimate recoveries are more relevant when the firm's practice is to measure recoveries typically used by Risk Management departments

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Select LGD calculation
 Ultimate Recovery Values

Analysis

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- >>Portfolio Status

Import Results For Ultimate Recovery Values (Pre-petition Rate Discounting)

Click on [View Charts](#) for details in chart form.

Debt Type	Regional Default Rate (in %)	Industry Factor	PD (in %)	Mean LGD	Std. Dev of LGD	Mean Loss	Std. Dev of Loss
Senior Unsecured Bank Debt	0.62	0.00	0.19	0.24	0.29	0.00	0.02

To download and print model results please use the following links:
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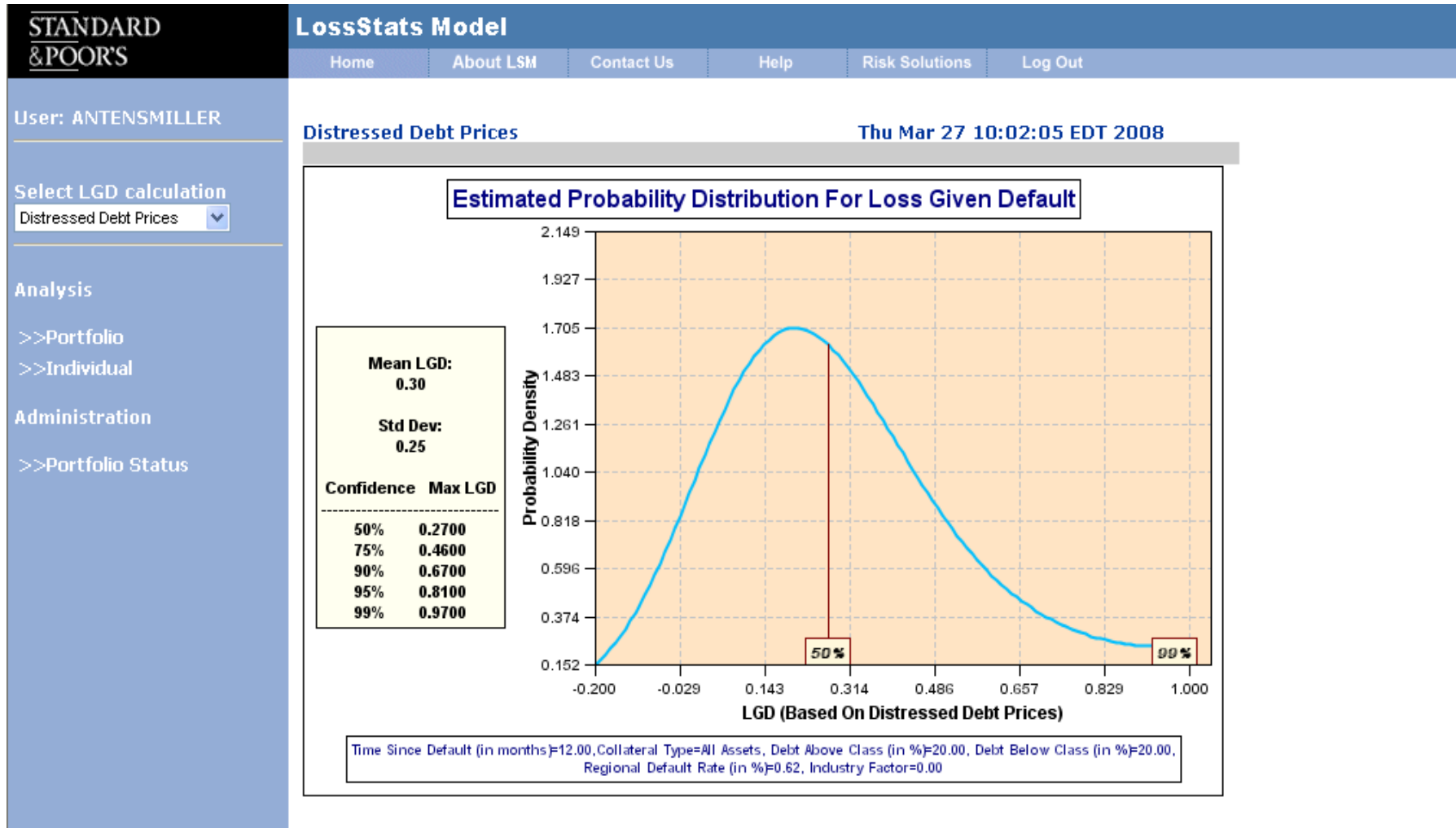
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Estimated Probability Distribution

Loss Stats Model can be used to estimate conditional probabilities for loss given default and if PD is provided in the input, also estimate the loss distribution.



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Example: Trading Price LGD



LossStats Model

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User: JZENNARIO

Select LGD calculation

Distressed Debt Prices

Loan Analysis

>>Portfolio

>>Individual

Administration

>>Portfolio Status

Distressed Debt Prices

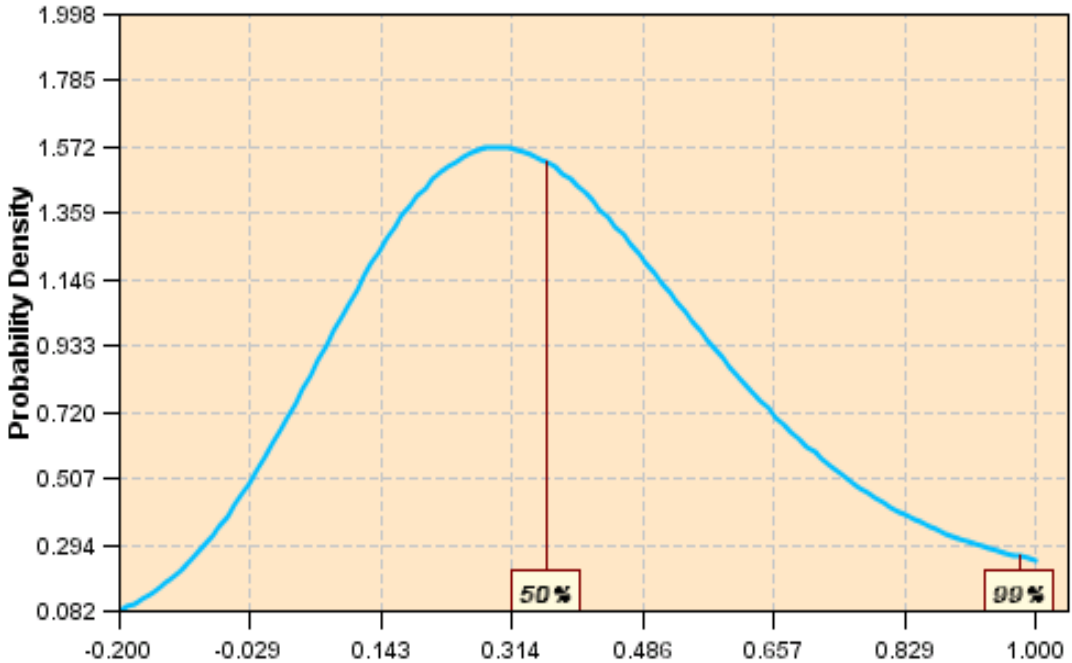
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Mean LGD:
0.37

Std Dev:
0.25

Confidence	Max LGD
50%	0.3600
75%	0.5500
90%	0.7400
95%	0.8500
99%	0.9800

Estimated Probability Distribution For Loss Given Default



LGD (Based On Distressed Debt Prices)

Time Since Default (in months)=3.00, Collateral Type=All Assets, Debt Above Class (in %)=20.00, Debt Below Class (in %)=40.00, Regional Default Rate (in %)=0.92, Industry Factor=0.91

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LossStats Model: Delivery and Support

- **Technical delivery is an ASP model: S&P hosted web-based application**
- **Username and password provided by client support staff**
- **Customer support center 24 x 7 for technical help**
- **Non-technical help provided by Risk Solutions product staff**

www.lossstatsmodel.com

Contacts

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