



Company
Watch

Lorenz Curve analysis

**of H-Score[®]
performance**



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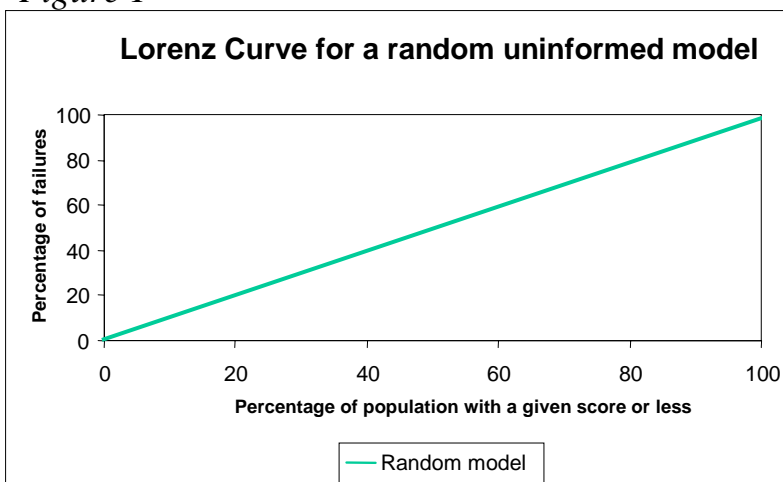
“A good model”

A good corporate risk model separates the companies most likely to fail from those least likely to fail.

If the model were totally uninformative - if, for example, it assigned risk scores randomly - we would expect to capture no more than a fraction of failures equal to the fraction of the whole population with a given score or less. We can represent this as a straight line (the Lorenz Curve for a random model) on the graph in *Figure 1*.

Now let us construct the Lorenz Curve for the H-Score[®] model. Choose an H-Score[®], say 20, and plot the point representing the percentage of all companies

Figure 1



which have an H-Score[®] of 0-20 (horizontal axis) versus the percentage of failed companies which have an H-Score[®] of 0-20 (vertical axis).

The Lorenz Curve is constructed by joining all such points for every score, not just 20, in the

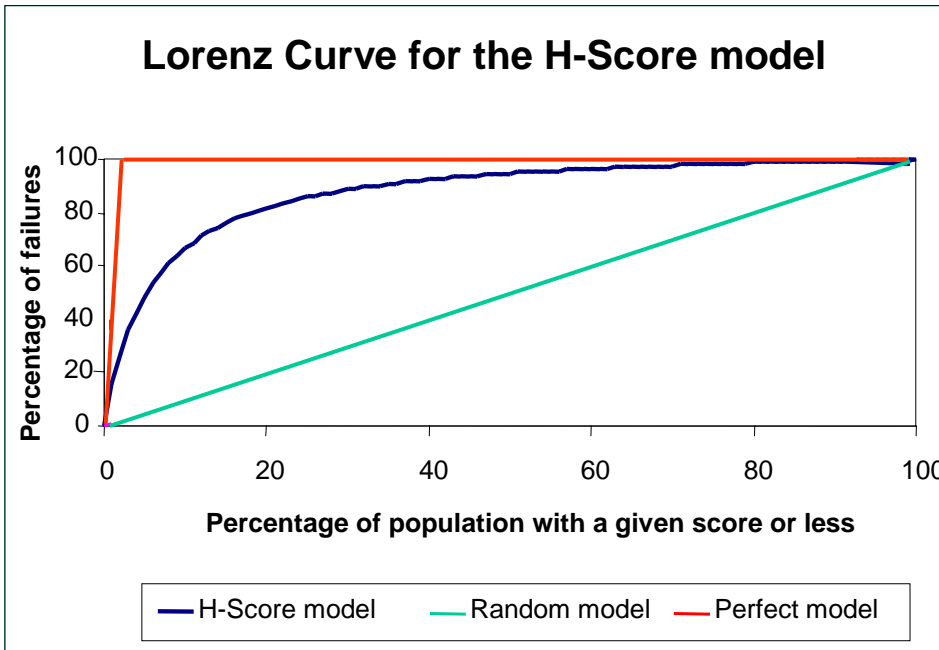
H-Score[®] range 0-100. (See *Figure 2*)

Definition

Lorenz Curve

In the context of corporate risk evaluation, a Lorenz Curve (sometimes known as a Power Curve) can be used to illustrate the overall performance of a risk scoring model. It shows how well the model separates good from bad. Choose a risk score, say 20, and plot the point on a graph representing the percentage of all companies which have a score of up to 20 (horizontal axis) versus the percentage of failed companies which have a score of up to 20 (vertical axis). The Lorenz Curve is constructed by joining all such points for every score, not just 20, in the risk score range.

Figure 2



Gini Performance Rating

The Gini Performance Rating of a model is a percentage measure of performance in terms of discriminatory power. It is the area enclosed by the Lorenz Curves for the model and for a random uninformed model, as a proportion of the area enclosed by the Lorenz Curves for a perfect model and a random model.

“The H-Score achieves a Gini rating of 76%”

The two extreme variations of the Lorenz Curve correspond with a random uninformed model (a straight line) and a theoretical perfect model (a curve joining the bottom left to the top right of the graph, with its corner pushed so far into the top left of the graph that it forms a near right-angled triangle with the straight line). A measure of the performance of a risk model is the proportion, defined by its Lorenz Curve, of the right-angled triangle, defined by a perfect model and a random model. This measure is known as the Gini performance rating, a term used in economics and statistics. The H-Score[®] model achieves a Gini performance rating of 76%.

A Gini performance rating of 76% compares favourably with other risk models in the field, such as:

1. Univariate statistical model based on return on assets
2. Z-Score statistical model
3. A variant of the Merton model based on "distance to default"
4. A hybrid model using Merton and statistical approaches

Figure 3

Gini Performance ratings	
ROA model	53%
Z-Score model	56%
Merton model variant	67%
Hybrid model	73%
H-Score [®]	76%

Note:

Gini ratings information on alternative models was taken from the March 2000 report by J.R. Sobehart, S.C.Keenan and R.M.Stein entitled “*Benchmarking Quantitative Default Risk Models*”

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