

## **Market Pricing Models Seminar**

A Seminar to the Marketing Models Group

by

Gene Lieb

Custom Decision Support, Inc.

(610) 793-3520 [genelieb@lieb.com](mailto:genelieb@lieb.com)

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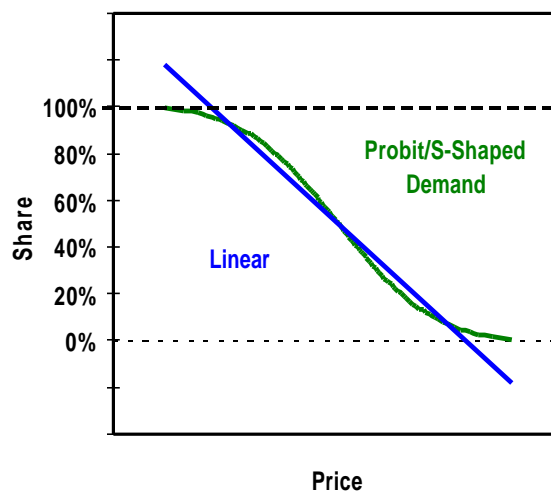
## **Some Sayings Around the Lieb House**

- **There is no universally best method.**
- **There is nothing too complex that it can't be made worse**
- **The foundation of all modeling is built on the quicksand of their assumptions.**
- **To get the job, agree to do what the client wants, not what he needs.**
- **No one is lazier than your client.**
- **100% compatible, isn't!.**
- **While Ignorance may be universal, true stupidity is restricted to management (your client's client).**
- **Culture eats strategy for lunch.**

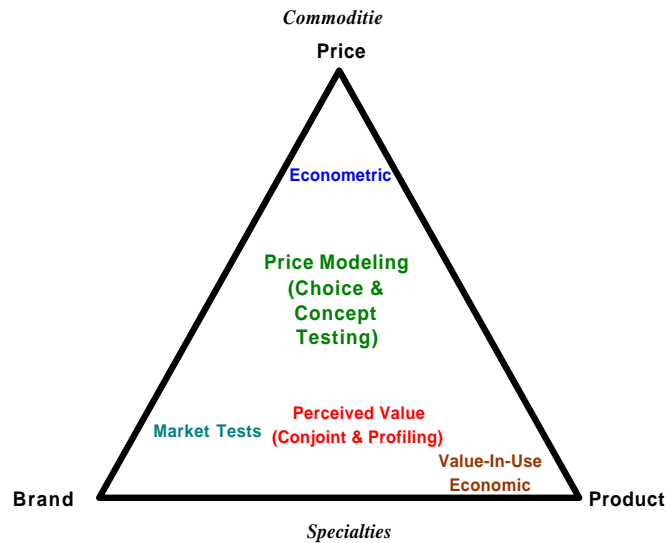
## Agenda

- Nature of Pricing
- Methods of Measuring Price Sensitivity
- Market Pricing Models Built in Excel<sup>â</sup>
  - Simple Product Optimum Price
  - Multiple Products Optimum Price
  - Pricing Under Uncertainty
  - Equilibrium Pricing

## Demand Curve



## The Strategic Marketing Triangle



## Measuring the Price Sensitivity

$$\text{Share} = f \{ \text{Product Price} | \text{Competitive Price, Features} \}$$

- Nature of the Market
- Required Information
- Simulate the Buying Process (*Bill Cook*)
- Complete Information (On the Respondent Level)
- Fault Tolerant
- Simple as Possible (Easily Executed)

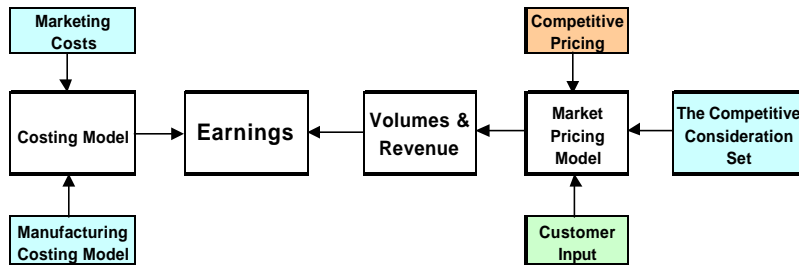
## Methods

Method	Market	Considerations
Econometrics (Industrial Modeling)	Commodities	Historical Data Always Questionable
Value-In-Use (Economic Modeling)	Segment Pricing	Only Normative
Conjoint (Full Profile, Compositional, Hybrid)	Feature Dominated Products	Split Populations, Inaccurate for Pricing
Profiling (Simalto)	Collective Offerings	Crude for Pricing
Market Tests	Consumer Products	Very Expensive
Concept Testing (Van Westendorp Method)	Mainly Consumer Targeted	Impact of Quality Perception
Choice Analysis (Discrete & Partial)	Fixed Consideration Set	Focuses on Price Comparisons

## Price- Market Modeling and Simulation

- Industrial Products (Pesticides, Equipment, Pharmaceuticals)
- Price Sensitivity Measured Mainly with Choice Modeling
- Models - Aggregation of Data for the Market > Model
- Simulators - Model Individual > Aggregate to the Market
- Optimum - Local "Best" based on an Objective

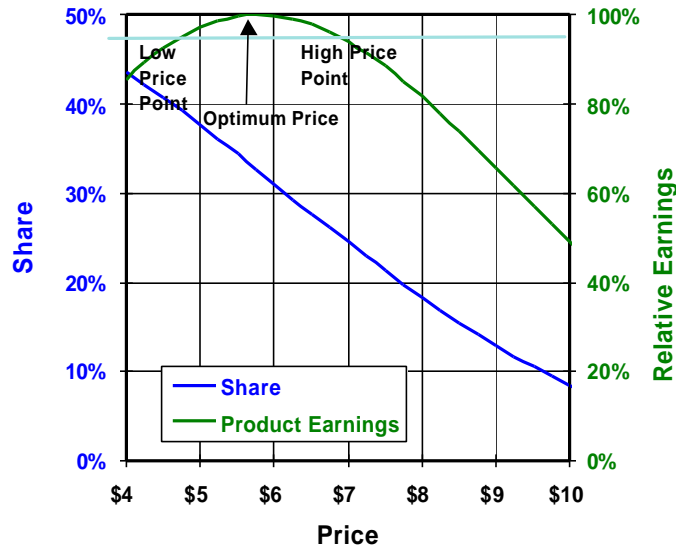
# Modeling the Market



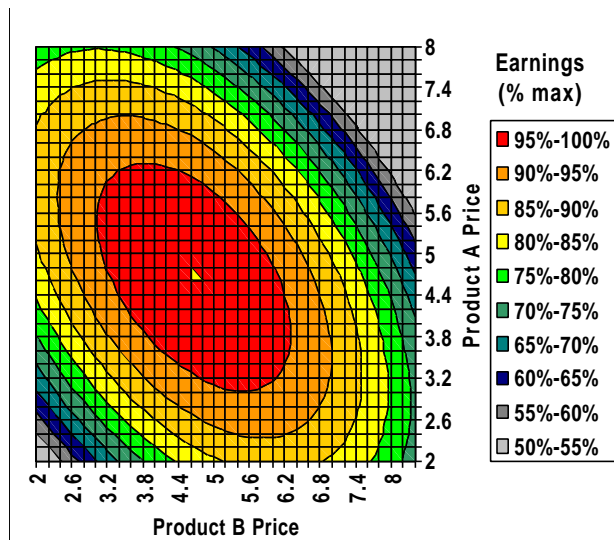
	New Price	Share		Standard Price
		Estimate	Previous	
Product A	\$24.00	6.8%	0.0%	\$24.00
Product B	\$20.00	1.1%	0.0%	\$20.00
Product C	\$9.00	39.4%	37.9%	\$9.00
Product D	\$20.00	0.5%	0.6%	\$20.00
Product E	\$13.00	9.6%	13.6%	\$13.00
Product F	\$7.00	28.0%	28.8%	\$7.00
Product G	\$19.00	14.6%	19.1%	\$19.00

	Cost	Earnings
Product A	\$6.85	1.16
Product E	\$5.00	0.77
Total		1.93

## Single Product Price Optimization



## Two Products Joint Pricing



## Multiple Products and Conditions

- **Joint Optimum Prices for Multiple Products Obtained using SOLVER**
  - Values may exceed range of experimental data
  - Unconstrained values may go to plus or minus infinity
  - Usually constrain values within reasonable range.
  - However, extreme values imply removal of products

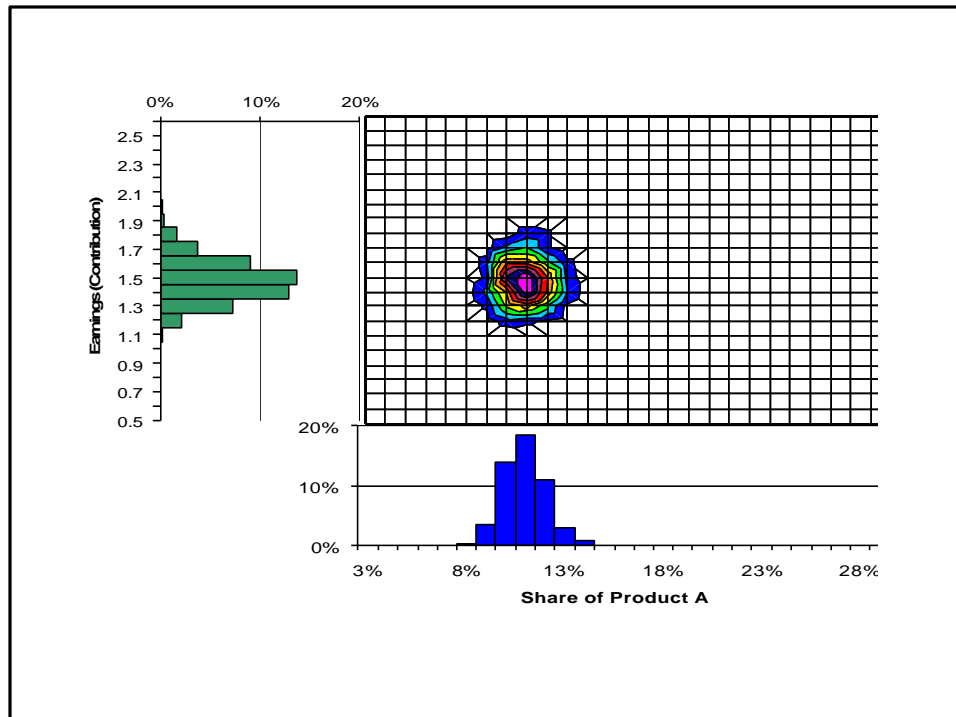
## Risk and Uncertainty

- **Risk is assumed to be reflected in the uncertainty of competitive product prices and costs.**
- **Assumed Variable Distributions - Monte Carlo**
- **Extreme Values Only Known - Minimum Regret**

## Pricing Model Goal - Risk Optimum Price

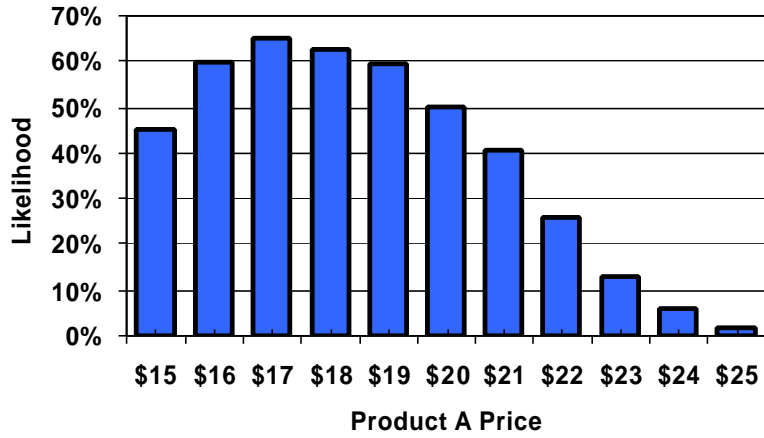
Variability		10%			
Normal Distribution					Standard
Mean	Std/Mean		Price	Estimate	Price
		Product A	\$21.00	9.2%	\$24.00
\$20.00	10.0%	Product B	\$15.02	1.2%	\$20.00
\$9.00	10.0%	Product C	\$9.34	38.6%	\$9.00
\$20.00	10.0%	Product D	\$21.98	0.5%	\$20.00
\$13.00	10.0%	Product E	\$12.50	8.7%	\$13.00
\$7.00	10.0%	Product F	\$6.41	28.9%	\$7.00
\$19.00	10.0%	Product G	\$19.64	13.0%	\$19.00

	Cost	Earnings	Optimum	Earnings Goal
Product A	\$6.85	1.30	\$17.53	1.5

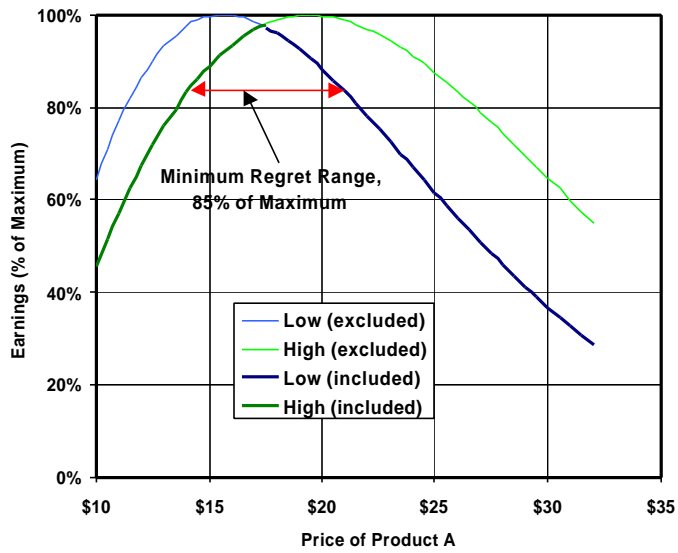




### Likelihood to Meet Earnings Goal



### Optimum Minimum Regret



## Equilibrium Pricing

	New Price	Share (S-Shaped)	Previous Share	Standard Price	Equilibrium	
					Shares	Price
Product A	\$24.00	7.4%	0.0%	\$24.00	7.3%	\$27.12
Product B	\$20.00	0.7%	0.0%	\$20.00	2.0%	\$13.88
Product C	\$9.00	38.7%	37.9%	\$9.00	37.0%	\$10.46
Product D	\$20.00	0.8%	0.6%	\$20.00	4.4%	\$8.47
Product E	\$13.00	9.3%	13.6%	\$13.00	10.9%	\$15.55
Product F	\$7.00	28.5%	28.8%	\$7.00	22.8%	\$15.38
Product G	\$19.00	14.5%	19.1%	\$19.00	15.6%	\$21.14

Sum of Square Deviations	0.005449	Minimization Objective
Average Price	\$16.00	Constraint

## Uses and Users of Decision Support Systems

- Enthusiastic Users Usually Have Analytical Backgrounds (Economists, Engineers, Finance, etc.)
- Unfortunately "Marketing" & "Sales" Types Usually are Reluctant Users
- Most Users are not Computer-phob's Nor Power Users
- Often Driven by Assuring Upper Management of "best practices"
- Need to convince "Sales" to Raise prices
- Need to Set over all Strategy
- View tactically

## Tools and Platforms to Develop Systems

Development Platform	Costs		Availability	
	Develop't	Maintain	For Use	Tools
Procedural Languages	High	High	Ubiquitous	Available
Case Tools and Visual Packages	Very High	Moderate	Ubiquitous	Available
Database Managers	Moderate	Moderate	Limited	Limited
Statistical Packages	High	Moderate	Available	Available
Special Packages	Moderate	Moderate	Limited	Limited
<b>Excel</b>	<b>Low</b>	<b>Low</b>	<b>Ubiquitous</b>	<b>Ubiquitous</b>
Macros	High	Moderate	Ubiquitous	Ubiquitous
Add-in's	Low	Low	Limited	Limited
Scripting and Java	High	High	Ubiquitous	Available
Server Based	High	Moderate	Ubiquitous	Available
Database (XML)	High	Moderate	Limited	Available

## Building DSS in Excel

- **Ubiquitous Windows Platform**
  - Do not use third party Add-In's
  - Avoid "Macros" (Internal Procedural Programming)
- **Perception of User Control**
- **Keeping the Logic and Data Open**
- **No "Black Boxes"**
- **Leverage High Machine Speed to Poorer Software Performance**

## How to Do It!

- **"Forms" and Validated Entry for Input and Segmentation**
  - Buttons, Menus, Lists, Check Boxes, Slides
- **Segmentation (Data Extractions) Database functions and table commands**
- **Dynamic Graphs by Linking to Tables (Automatically Recalculated)**
- **Matrix and Array Functions for computation**
  - Regression Dynamically & Single cell aggregations)
- **"Solver" for Complex Optimizations**
- **Color and Graphics to Customize**

## Doing Monte Carlo in Excel

- **No Need for Add-In's (@Risk)**
  - Maintains Ubiquitousness
  - No New Learnings
- **Use native Random Number Generators with Distribution Functions to set variables**
- **Use a Data Table command without margin (column variable) to generate scenarios**
- **Lookup Command to select any set of values to be stored.**

## Things I Can't Do or Are Difficult In Excel

- **Multivariate Procedures**
  - **Factor Analysis (Perceptual Maps)**
  - **Cluster Analysis**
  - **Stepwise Regression**
  - **Non-Linear Regression (Can Use "Solver")**
  - **Logit Regression**
- **Large Scale Linear Optimization (w/o Add-in)**

## Faster, Cheaper, Better

- Turn around on Pricing Models has been as short as 5 hours from receipt of the data to the finished models were sent to the client (e:mail)
- Merging Analytical Tools and Models with Qualitative Research Techniques, Small Sample Sizes ~ 50 respondents.
- Corresponding reduction in costs led to Universal use with all client's product lines.
- Become the Standard Tools with Any and All marketplace initiatives.