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Optimizing Discretion in Financial Services Pricing Decisions

Credit Scoring and Credit Control XIII

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Agenda

- **Price Optimization for List Prices**
- **Use of discretion in financial services pricing decisions**
- **Optimizing discretion and list price**
- **Implementation considerations**

Evolution of Pricing in Financial Services

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One-Price	One size fits all
Cost-Price	Aggregation of the costs associated with the product (marketing, operations, overhead, risk, etc.) with an added mark up for profit.
Market-Based	Establishing pricing for a product or service based on what the market will bear. Competitors are surveyed to understand the established pricing of a product or service in the market.
Index-Based	Pegging the pricing of a product or service to a moving index.
Risk-Based	A variation on cost-plus pricing, a risk assessment is added into the costs of a product or service based on the customer's credit score. Lending orientation.
Adjusted-Risk Based	A variation on risk-based pricing, where supplemental information is factored in. Multidimensional scoring that factor in debt to income ratios and other stuff.
Profit-Based	Sets the pricing based on a profit maximizing combination of costs, risk, and customer price elasticity
Pricing & Profitability Management	Rates differentiated by unique borrower characteristics, customer relationships, and dealer/ agent performance. Multi-portfolio optimization to align portfolio goals with corporate strategies

TOWERGROUP Leading Financial Services Research and Consulting Firm

Source: "Using Innovative Pricing Strategies to Improve Portfolio Performance" presentation Bobbie Britting, CBA Conference, Sept 24, 2007

Using statistical models to optimize pricing

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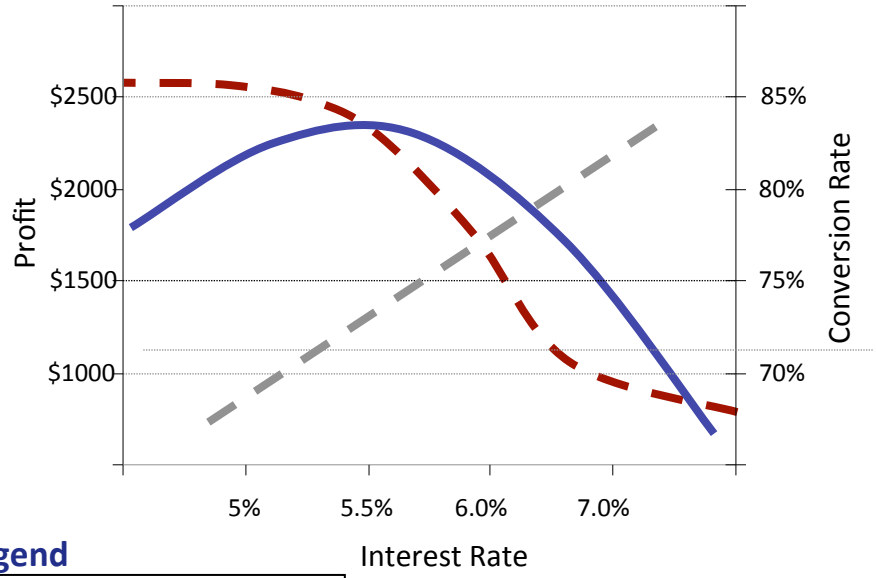
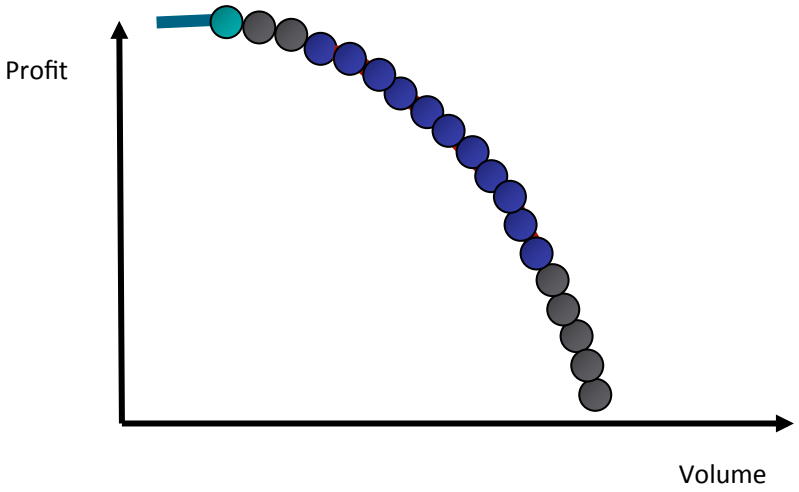
For each pricing segment, fit a price-response model in order to **predict customer behavior as a function of rate**

Compute the **optimal rate for each pricing cell** based on the **expected volume impact and expected profit**

Loan, $50K, California, Low Credit Risk (Illustrative)





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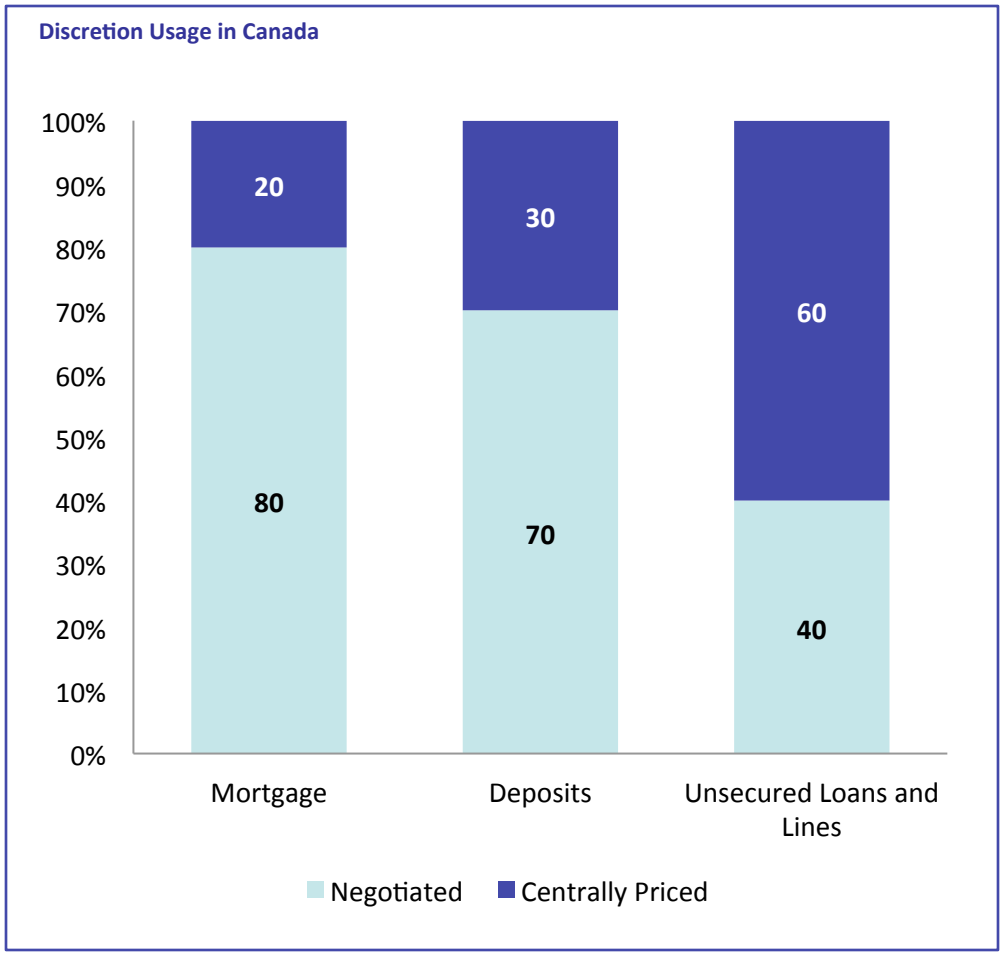
Discretion in the Market

- **Discretion is widespread but has been deployed unevenly,**

- **… even with a highly trained sales forces, discretion can be a significant source of margin erosion due to:**

1. Discretion decision driven by behavioral bias
2. Front line adding no new information or overriding list price optimization
3. Discretionary discounts generally too large
4. Doesn't necessarily reflect underlying price sensitivity



Common problems with use of discretion

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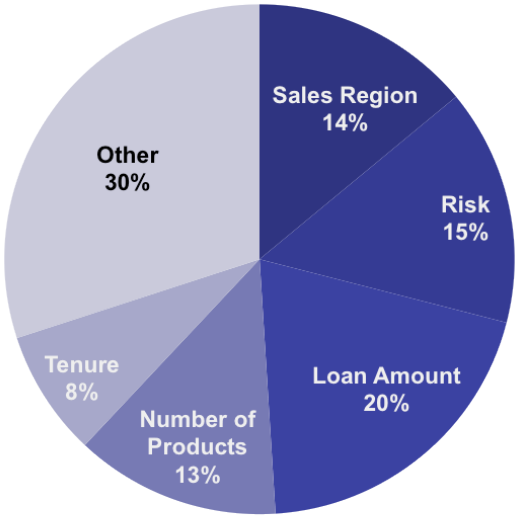
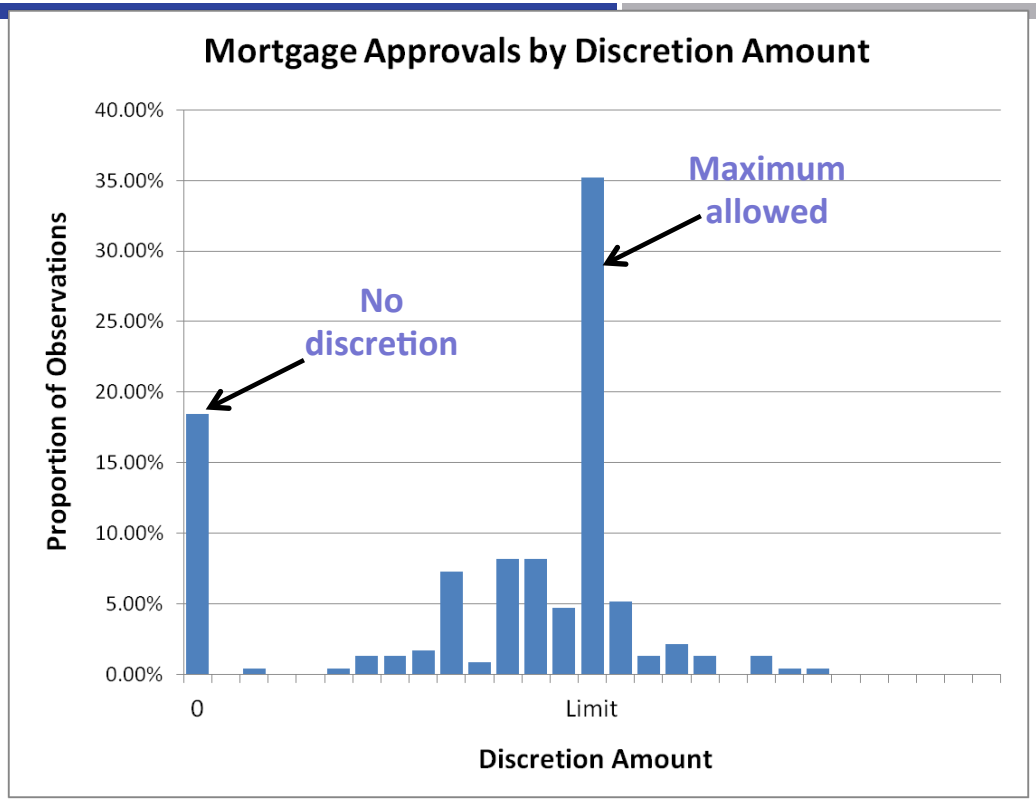
1. *Driven by behavioral bias*
   - *Binary– none or maximum allowed*
   - *Unit bias (typically 5 or 10bp increments)*
   - *Recency bias (influenced by previous negotiations)*





2. *Driven by factors already taken into account in list price optimization (e.g., region, risk, loan amount) or contrary to actual price sensitivity (e.g., greater discretion for longer tenure despite lower price sensitivity)*

Common problems with use of discretion *(continued)*

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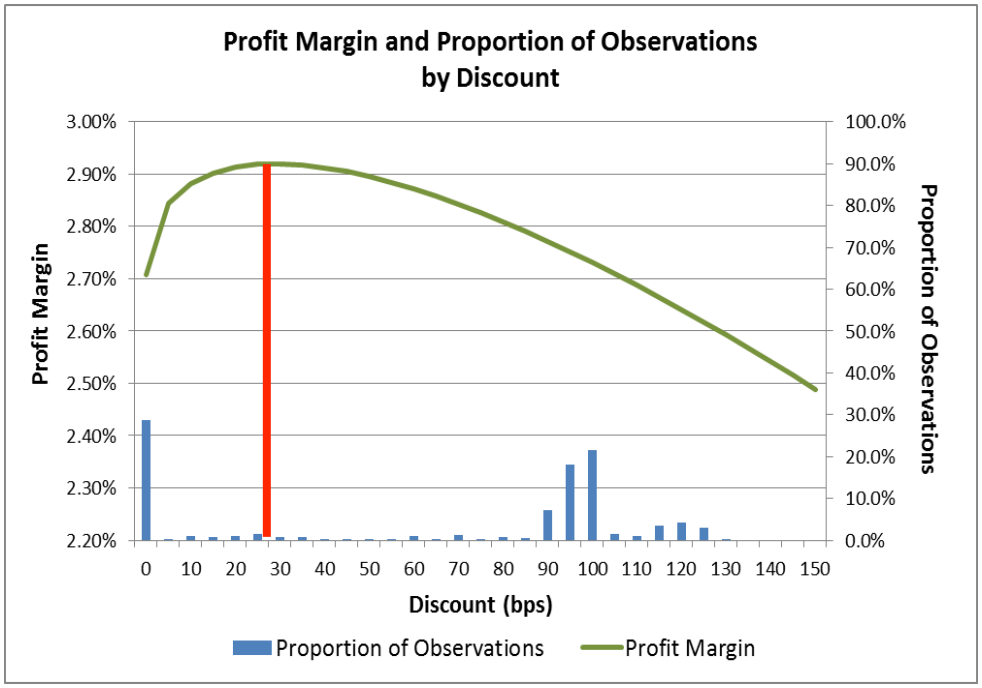

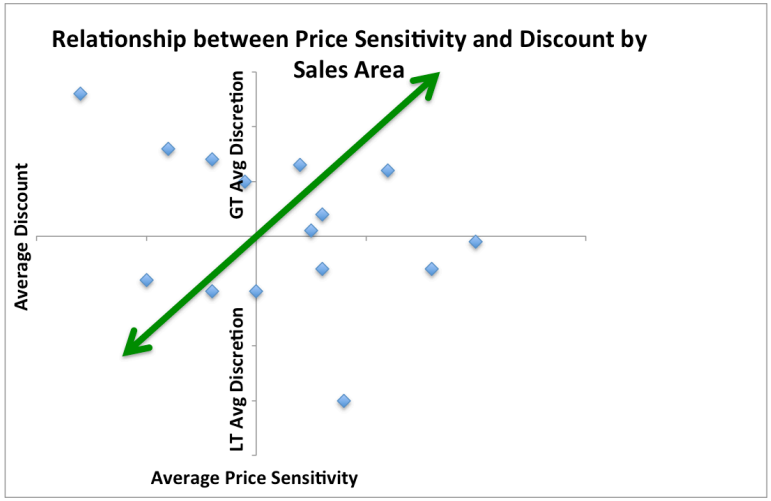

3. Discretion amount generally too large relative to amount need to realize optimal expected profit (red line)

4. Discretion behavior does not take into account the relationship between list price and discretion sensitivity

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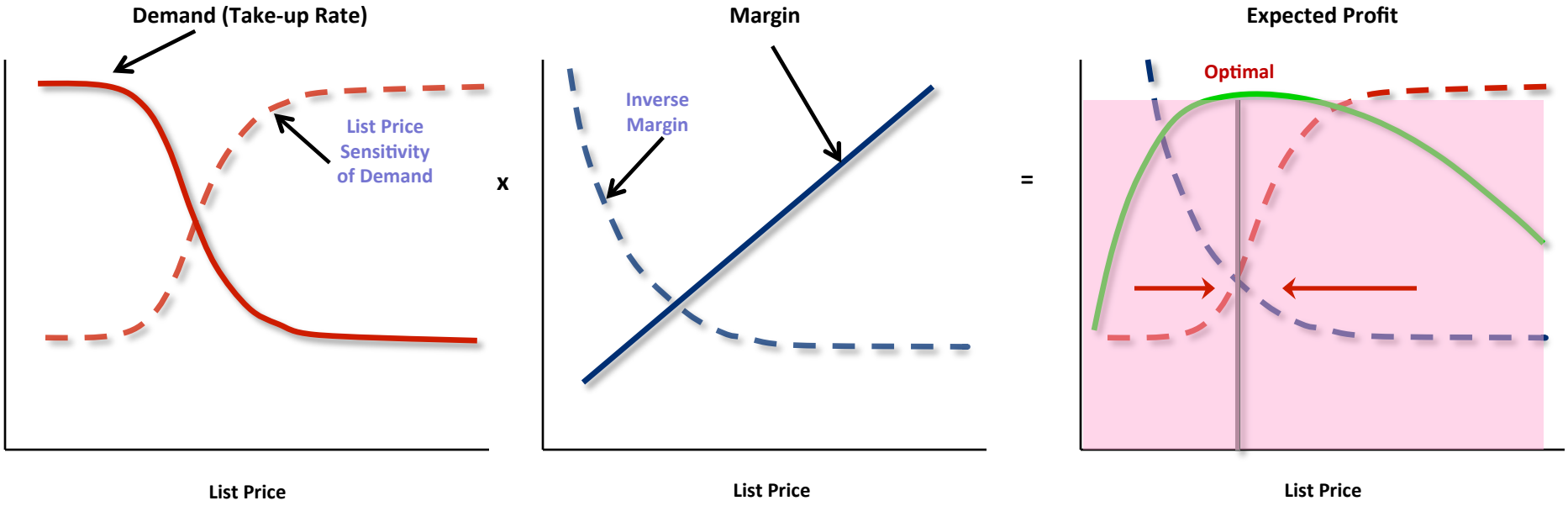
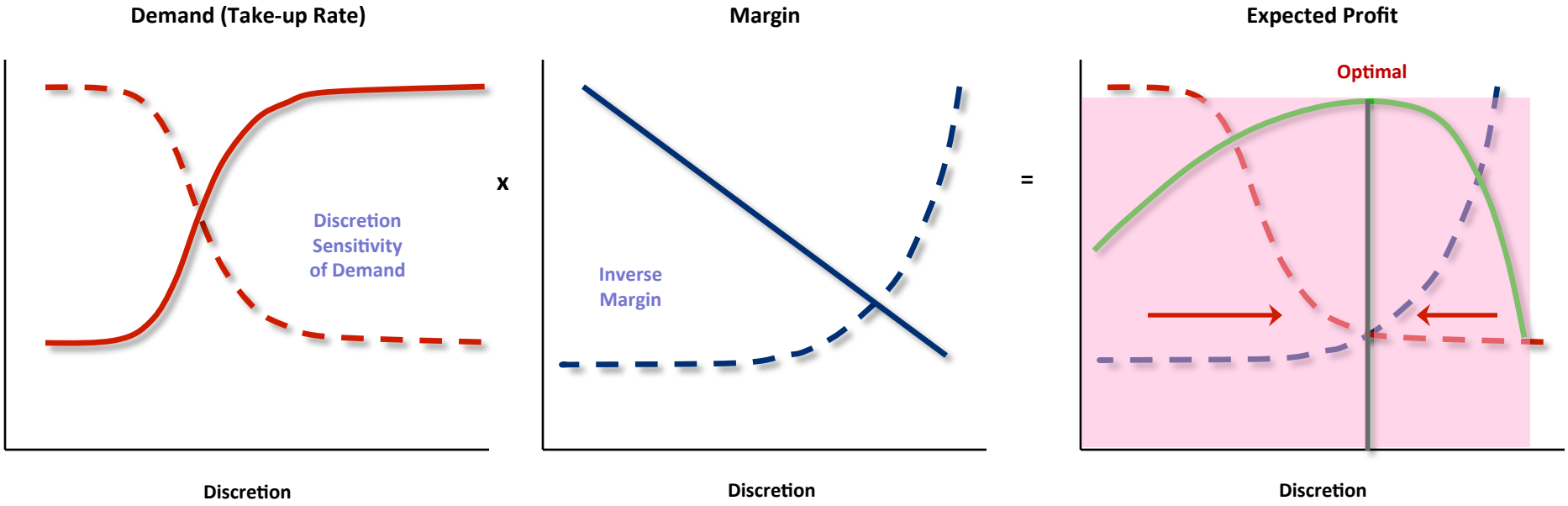
List Price Optimization (No Discretion)



- Shape of **profit curve** and your **decision** to increase/decrease price depends on:
  - *List price sensitivity of demand*
  - *List price sensitivity of margin—inverse margin*
- **Margin** more sensitive to list price, then **increase** list price
- **Demand** more sensitive to list price, then **decrease** list price
- **Optimal** point occurs where **demand and margin** are **equally sensitive** to list price, i.e.:

List Price Sensitivity of Demand = Inverse Margin

Discretion Optimization (Given List Price)



- Shape of **profit curve** and your **decision** to increase/decrease discretion depends on
  - *Discretion sensitivity of demand*
  - *Discretion sensitivity of margin—inverse margin*
- **Demand** more sensitive to discretion, then **increase** discretion
- **Margin** more sensitive to discretion, then **decrease** discretion
- **Optimal** point occurs where **demand and margin** are **equally sensitive** to discretion, i.e.:

Discretion Sensitivity of Demand = Inverse Margin

List Price and Discretion Optimization Scenario 1

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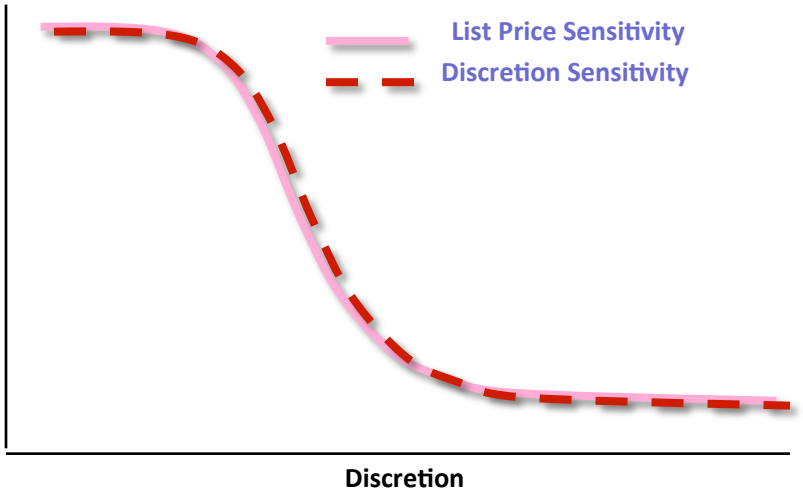
Discretion sensitivity always equal to list price sensitivity

Customers indifferent between list price and discretion—only care for final price

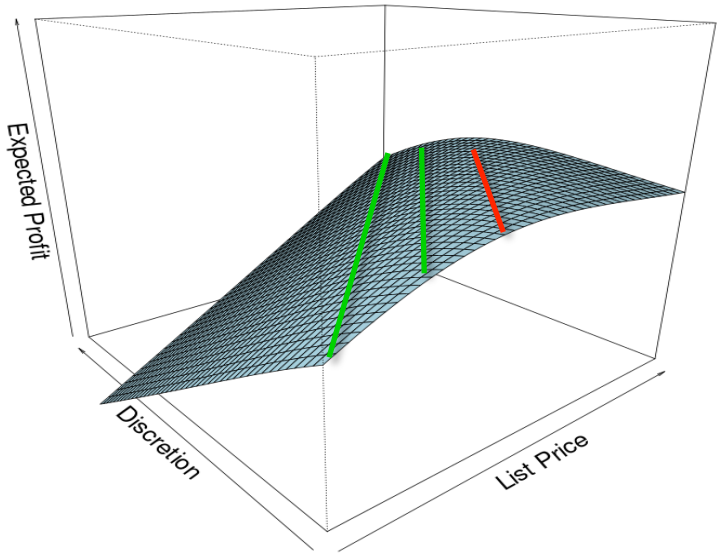
E.g., indifferent between:

List Price	Discretion	Final Price
5.00%	0 bps	5.00%
5.50%	50 bps	5.00%



Equal profit for same final price

Infinite number of optimal points



List Price and Discretion Optimization Scenario 2

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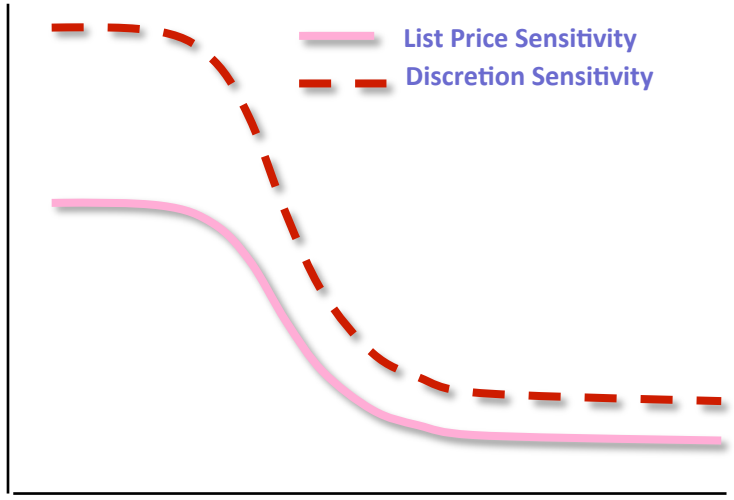
Discretion sensitivity always greater (or less than) than list price sensitivity

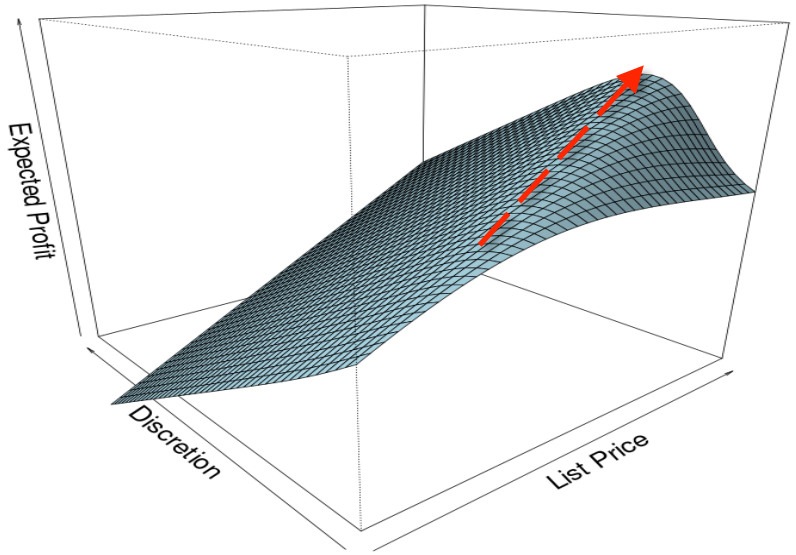
Customers always prefer discretion to list price

Prefers second choice below:

List Price	Discretion	Final Price
5.00%	0 bps	5.00%
5.50%	50 bps	5.00%



No optimal point—infinite amount of discretion required to satisfy customer



List Price and Discretion Optimization Scenario 3

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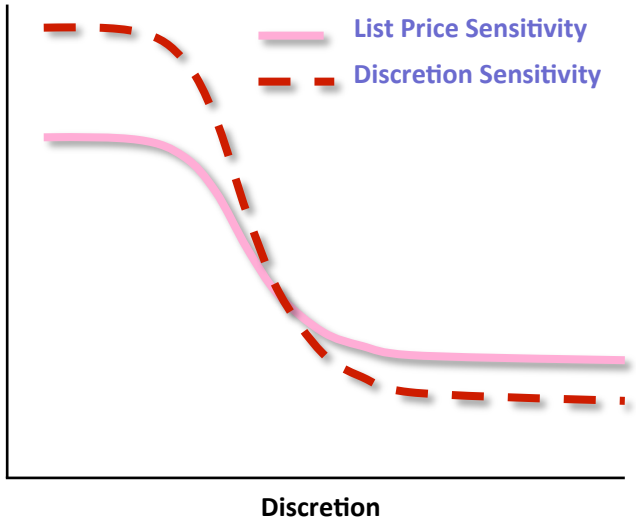
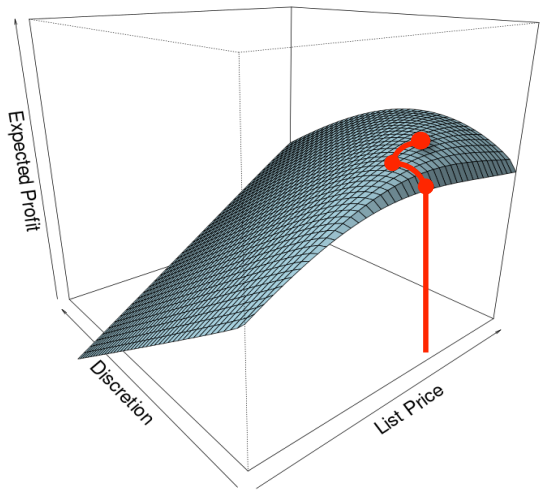
Discretion sensitivity is **greater than** list price sensitivity for **small amounts of discretion**

Customers prefer **small amounts of discretion**

Prefers second choice below

List Price	Discretion	Final Price
5.00%	0 bps	5.00%
5.25%	25 bps	5.00%
6.00%	100 bps	5.00%





Single optimal point on profit surface

Typical case

Ideally optimize discretion and list price together but operationally difficult to measure from data

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List Price vs Discretion Optimization

Both move final prices as close as possible to optimal price

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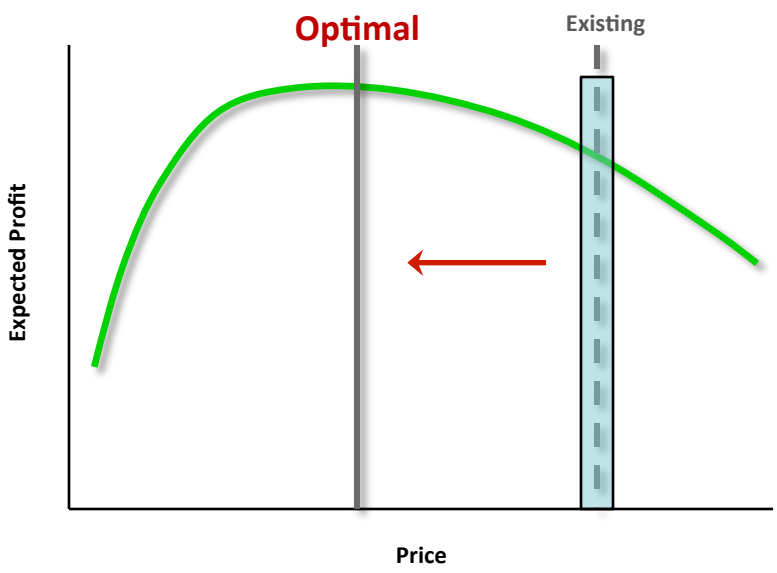
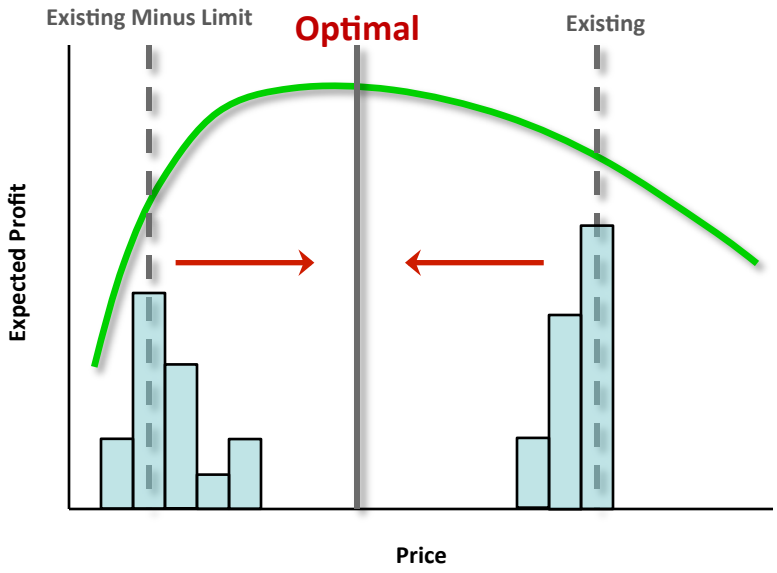
Optimizing List Price (No Discretion)



- Profit curve with sensitivity—driven by customer behavior—requires **measurement**
- Final price distribution (due to list price)
  - *Single-point distribution*
  - *Completely determined by bank*
  - *Bank has full control*

Optimizing Discretion (List Price Given)



- Profit curve with sensitivity—driven by customer behavior—requires **measurement**
- Final price distribution (due to discretion)
  - Varied—usually bimodal
  - Driven by sales rep behavior
  - Bank has limited control
  - Requires **measurement** and **guidance**

Discretion Optimization
Types of Control and Guidance

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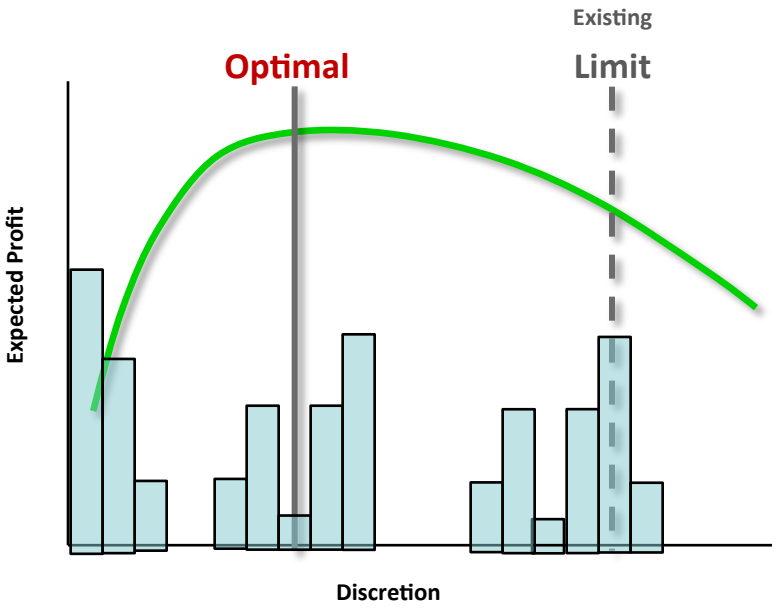
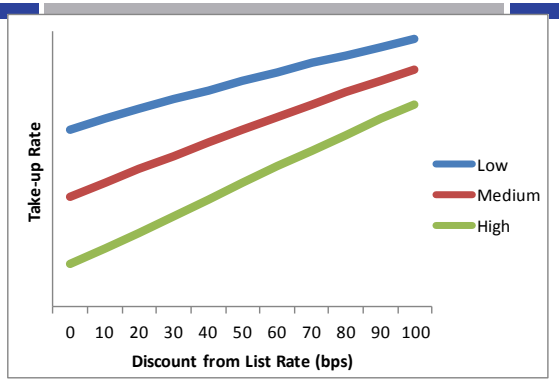
Discretion limit

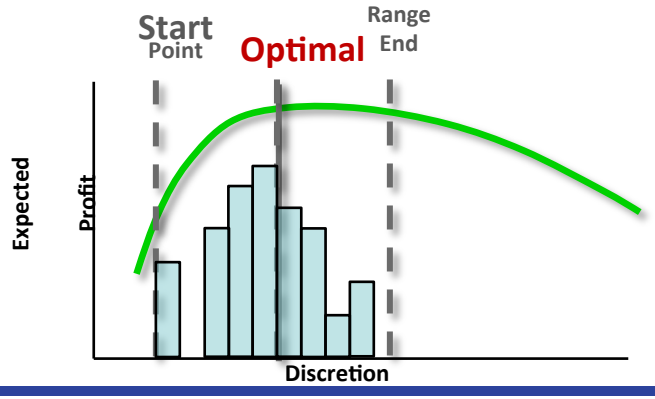


Recommended discretion starting points for negotiation



Discretion Amount	Product 1	Product 2	Product 3
0	L	L	L
10	L	L	L
20	L	L	L
30	M	L	L
40	M	M	L
50	M	M	M
60	H	M	M
70	H	H	M
80	H	H	H
90	H	H	H
100	H	H	H

Recommended discretion ranges



Conclusions

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1. **Optimization** - Optimizing discretion and list price simultaneously is a difficult analytical problem
   - *Number of pricing cells and multivariate optimizations scales quickly*
   - *Collecting enough data points is difficult*
   - *Dynamic market conditions may require frequent re-optimization*

2. **Guidance** – Providing effective discretion guidance is critical, yet there are many challenges in existing culture, processes and technology
   - *Change management effort is significant*
   - *Range of methods available*

3. **Measurement** – Refinement of existing approaches are currently limited by the the ability to accurately measure how discretion is applied today
   - *Need enough data to develop demand as well as price distribution models*
   - *Essential to isolate model behavior as well as sales force adherence*

Even with current limitations, deployments of discretion management solutions have yielded significant benefits