

Ratemaking and Product Management (RPM) Seminar Price Optimization Outside the U.S.

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Distribution and Use

- This presentation is intended solely for the CAS Ratemaking and Product Management Seminar for discussing and understanding price optimization outside of the US
- The document is incomplete without the accompanying discussion
- It is not intended nor necessarily suitable for any other purpose

Contents

- What is price optimization?
- Price optimization inputs
- Implementation methodologies and strategies
- Business benefits and wider implications
- Q&A

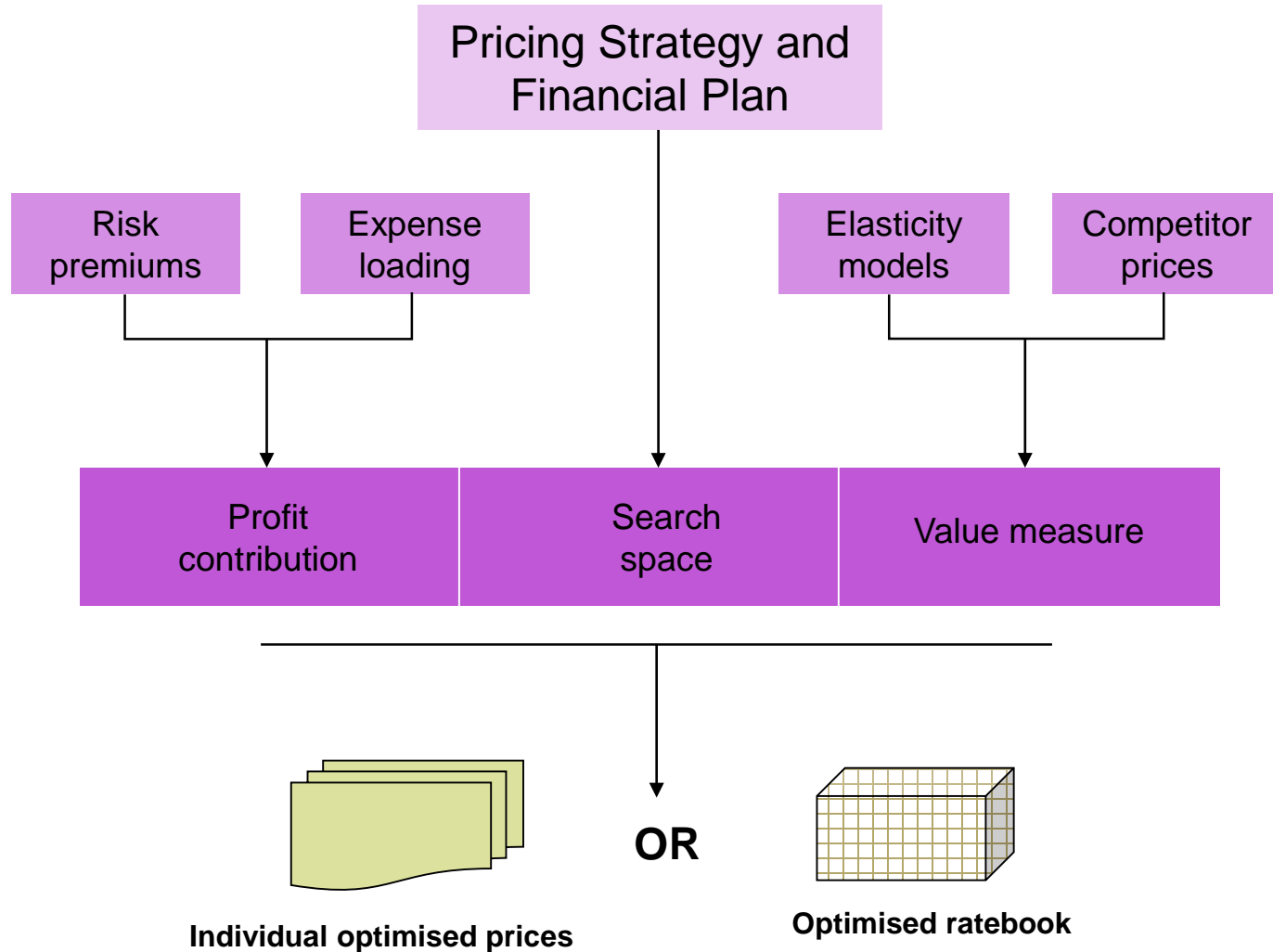
What is price optimization?

Price optimization is . . . “a process for adjusting prices away from a benchmark basis to better achieve business objectives”

- Key observations:
 - these “objectives” are often but not always around profit maximisation
 - the “adjustments” will typically reflect profitability, price elasticity, price competitiveness, and longer-term customer value considerations
 - there are many ways of “doing” optimisation, from simple to sophisticated
 - best practice optimisation approaches require high-quality data and accurate customer behavioural and value models



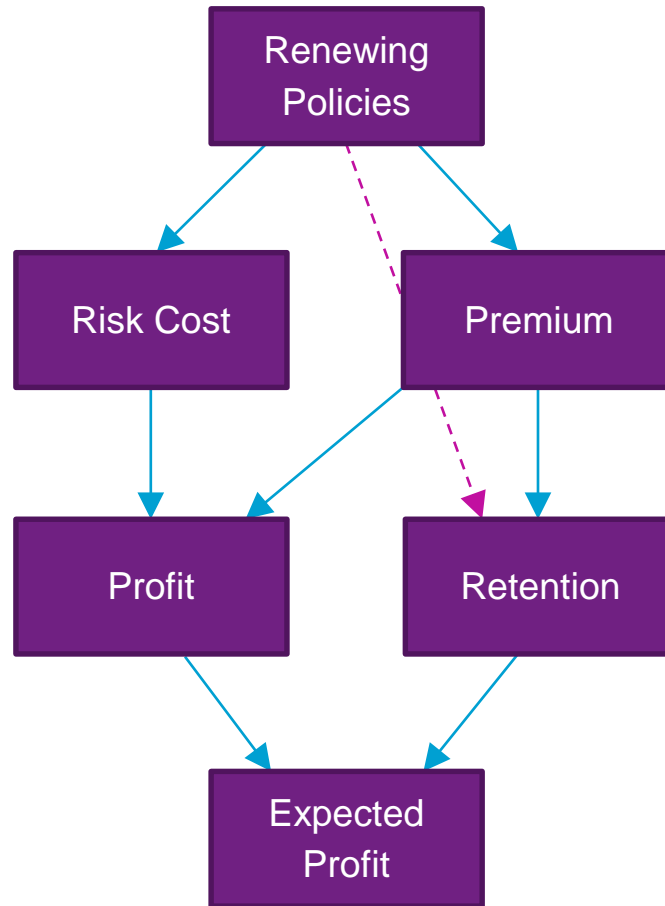
Price optimization





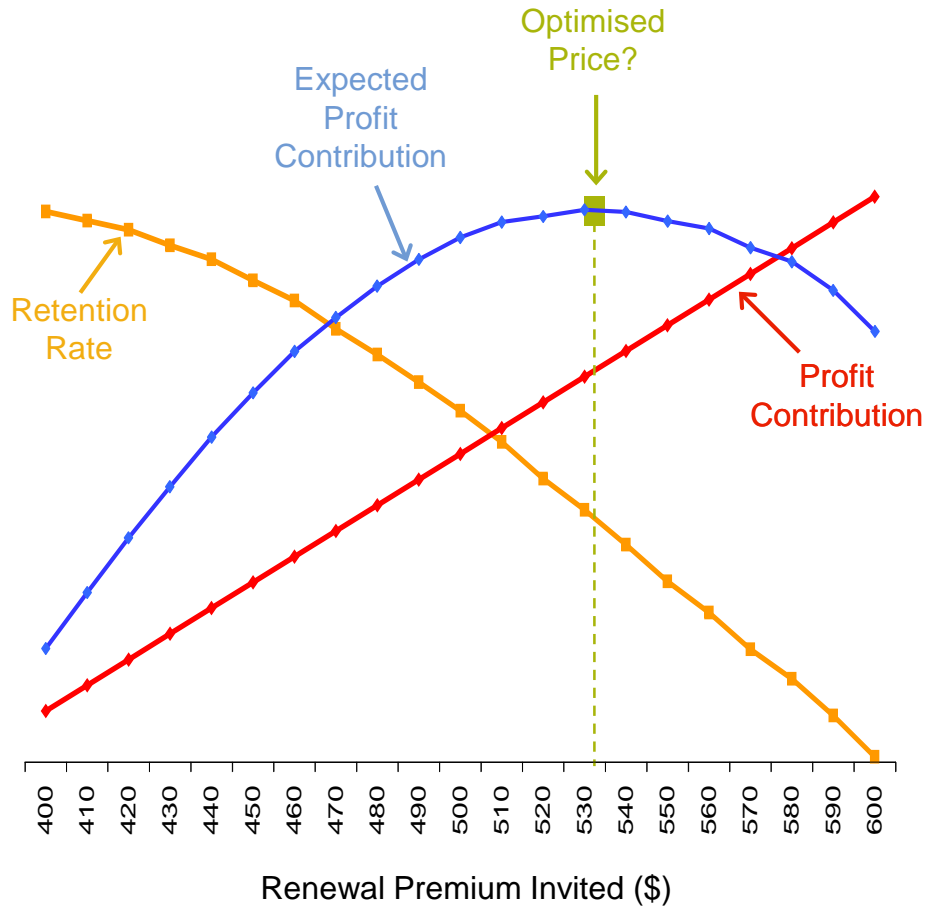
Price optimization

“Simple” one year renewals optimization

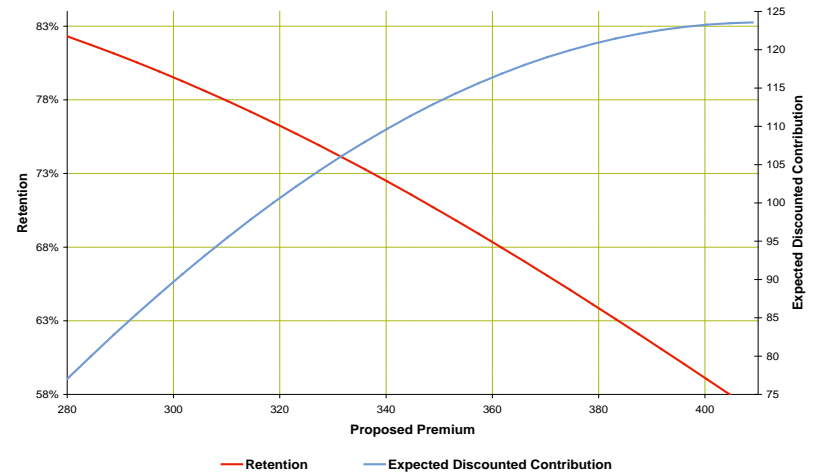
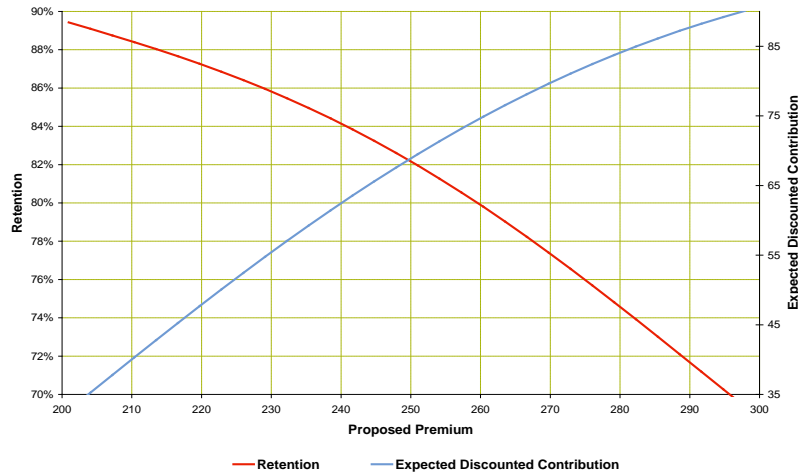
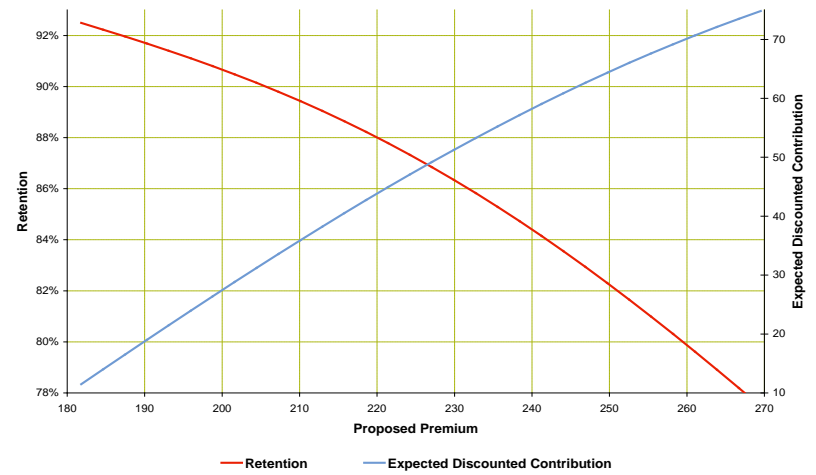
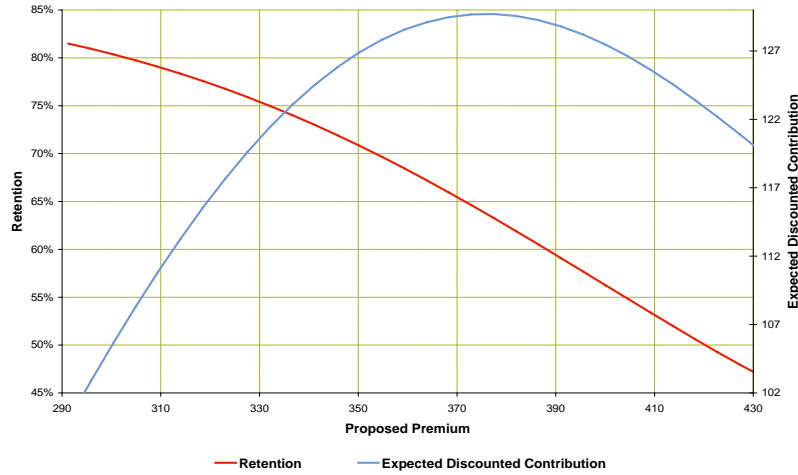


Price optimization

Traditional individual policy, one-year view

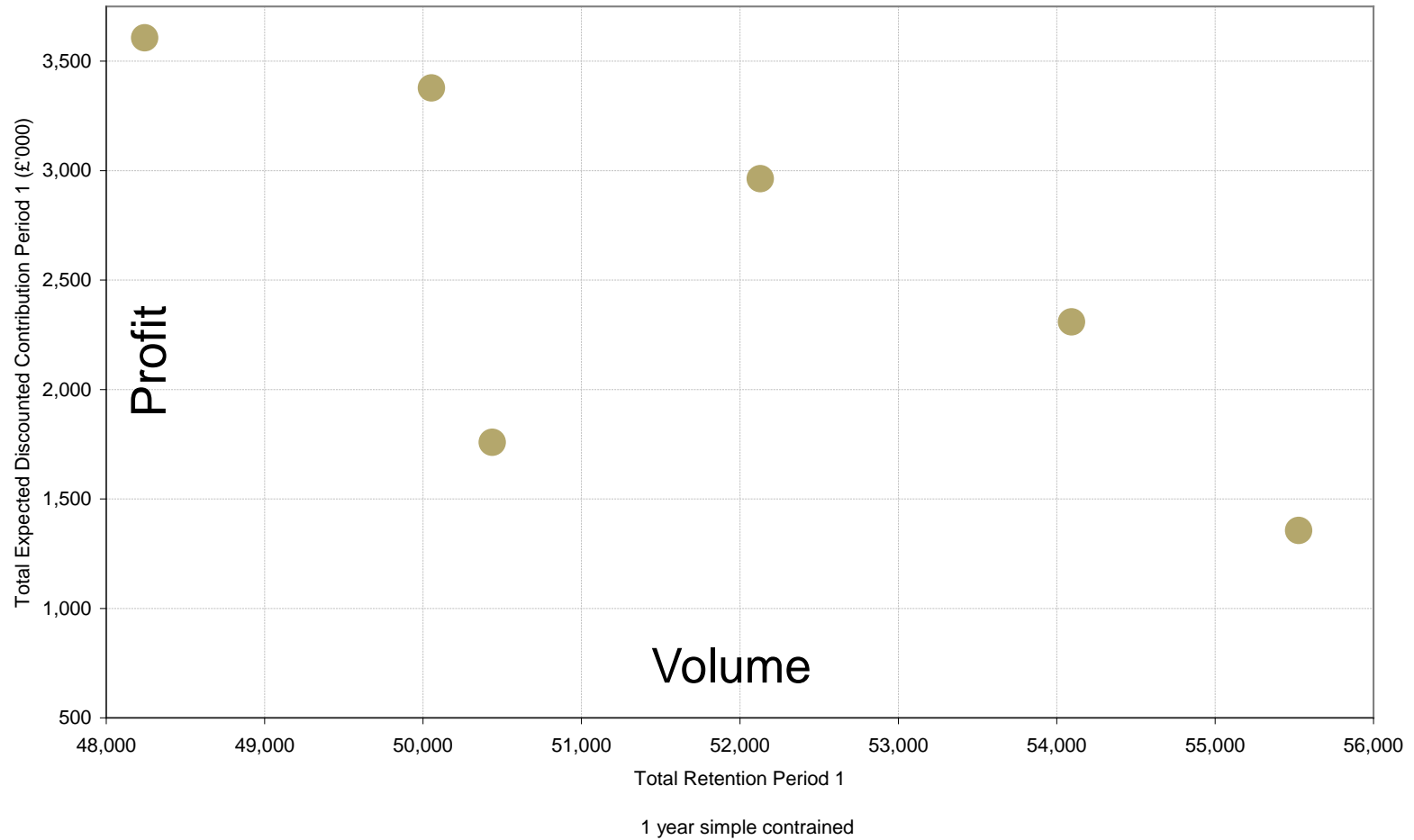


Price optimization



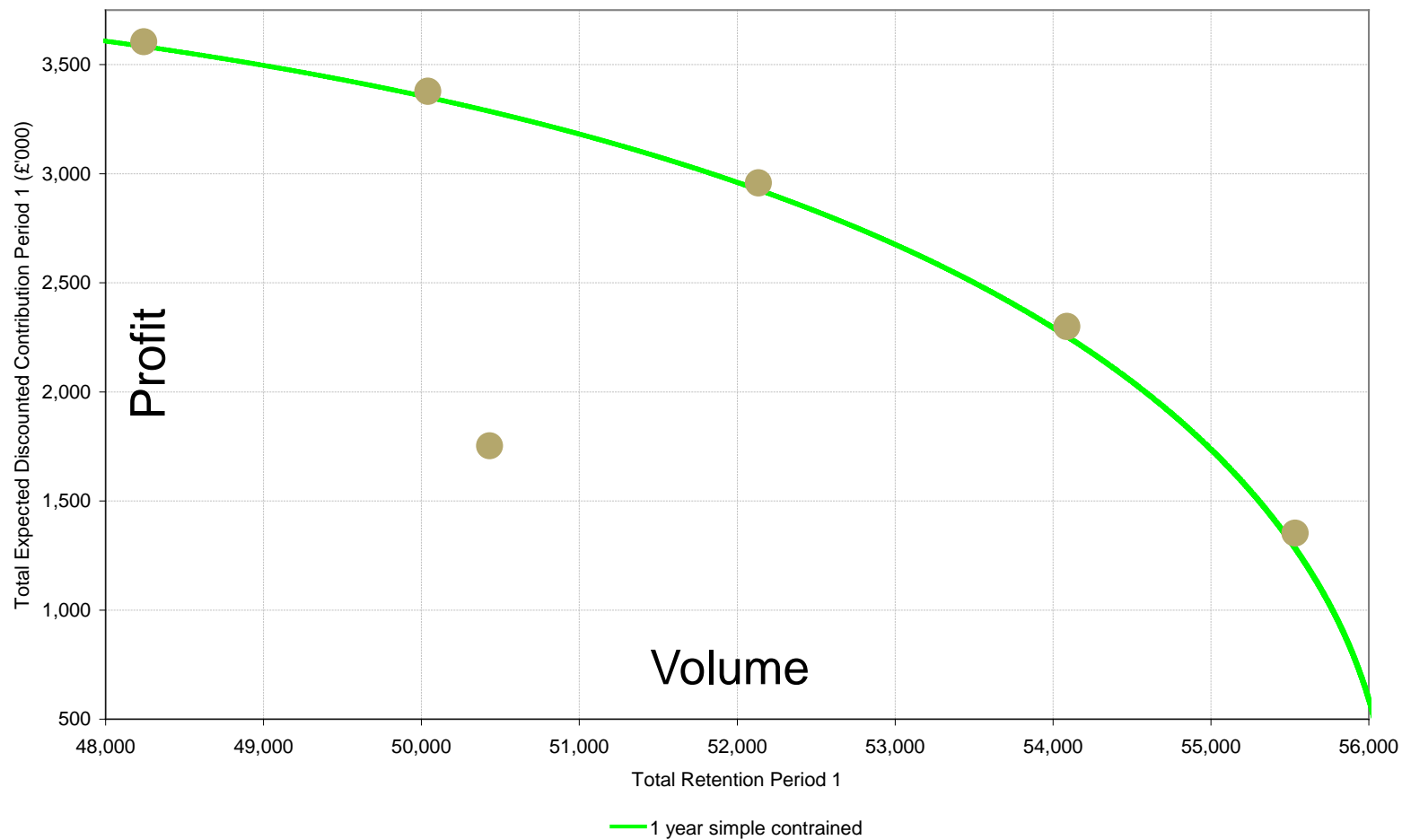


Price optimization





Price optimization – Efficient Frontier

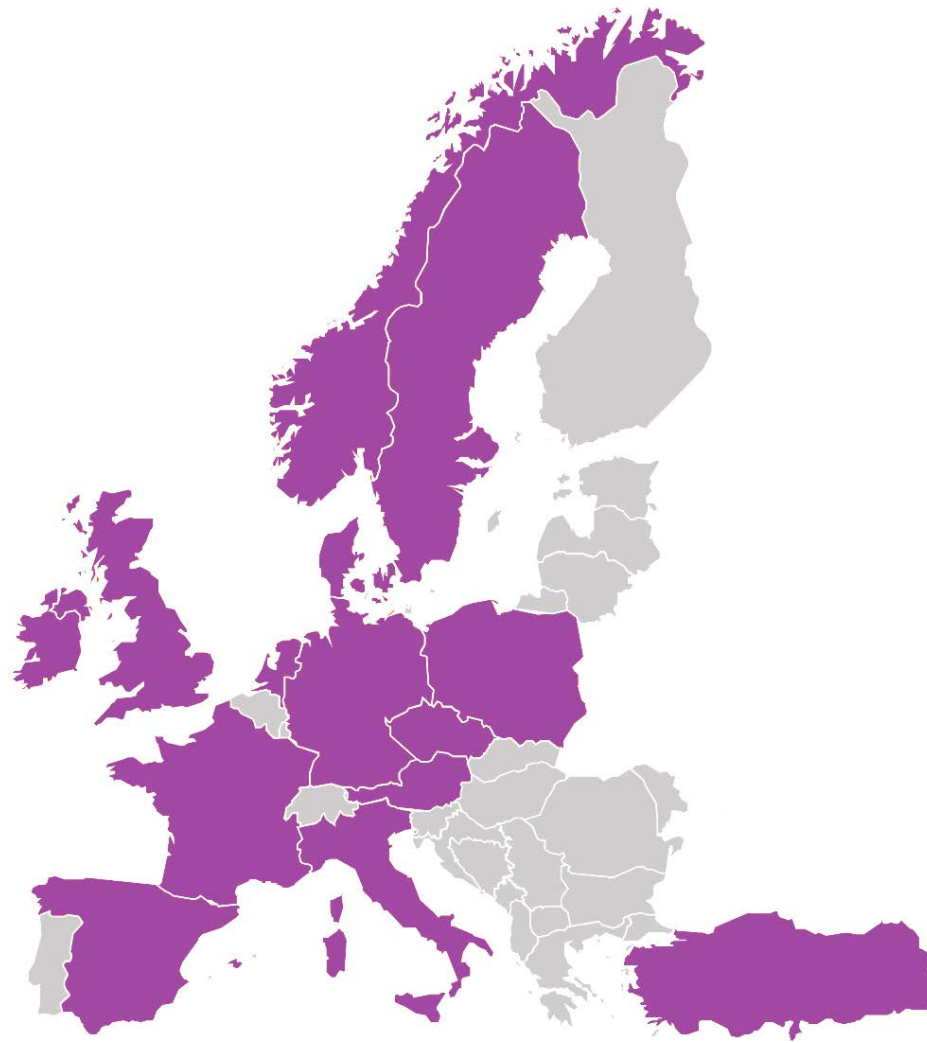




Price optimization in the UK

- Price optimization techniques are extremely widespread and embedded in pricing “business as usual” for the vast majority of major direct writers and panel intermediaries. Increasingly common for intermediated writers.
- Where optimisation is taking place
 - Cultural and treating customers fairly (TCF) inhibitions overcome and resolved
 - Pricing management fully conversant with optimisation concepts and its role in KPI targeting
 - Current focus on automation and on alignment with marketing
 - Early-adopters now considering “second generation” solutions
 - Increasing use of point of sale real-time price optimization and multi-product optimisation

Price optimization in Europe

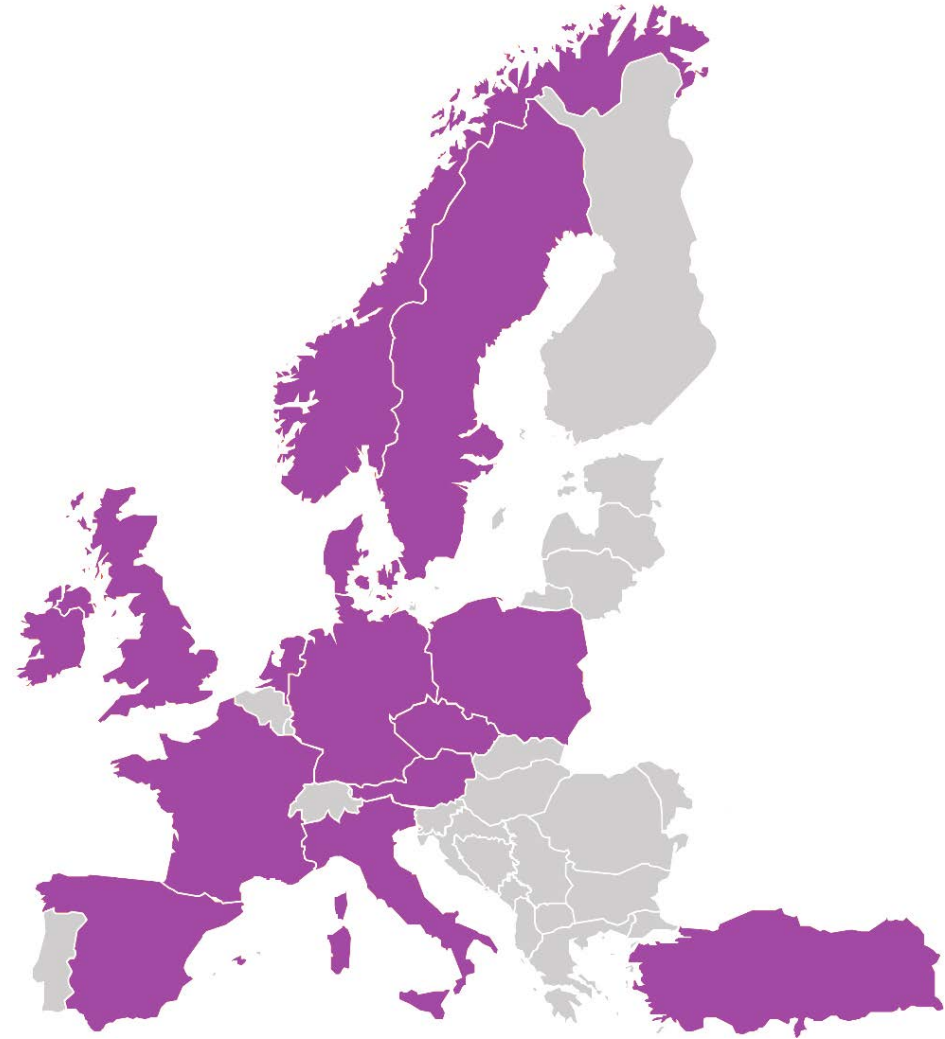


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Price optimization - Inputs

- The necessary inputs differ significantly depending on:
 - Line of business
 - New Business vs Renewals
 - Territory
 - Different structure of products
 - Distribution channels
 - Buying behaviour
 - Regulation





Price optimization – Time horizons

Advantages

More certain short-term profitability

Protects long-standing customers

Time Horizon



Short

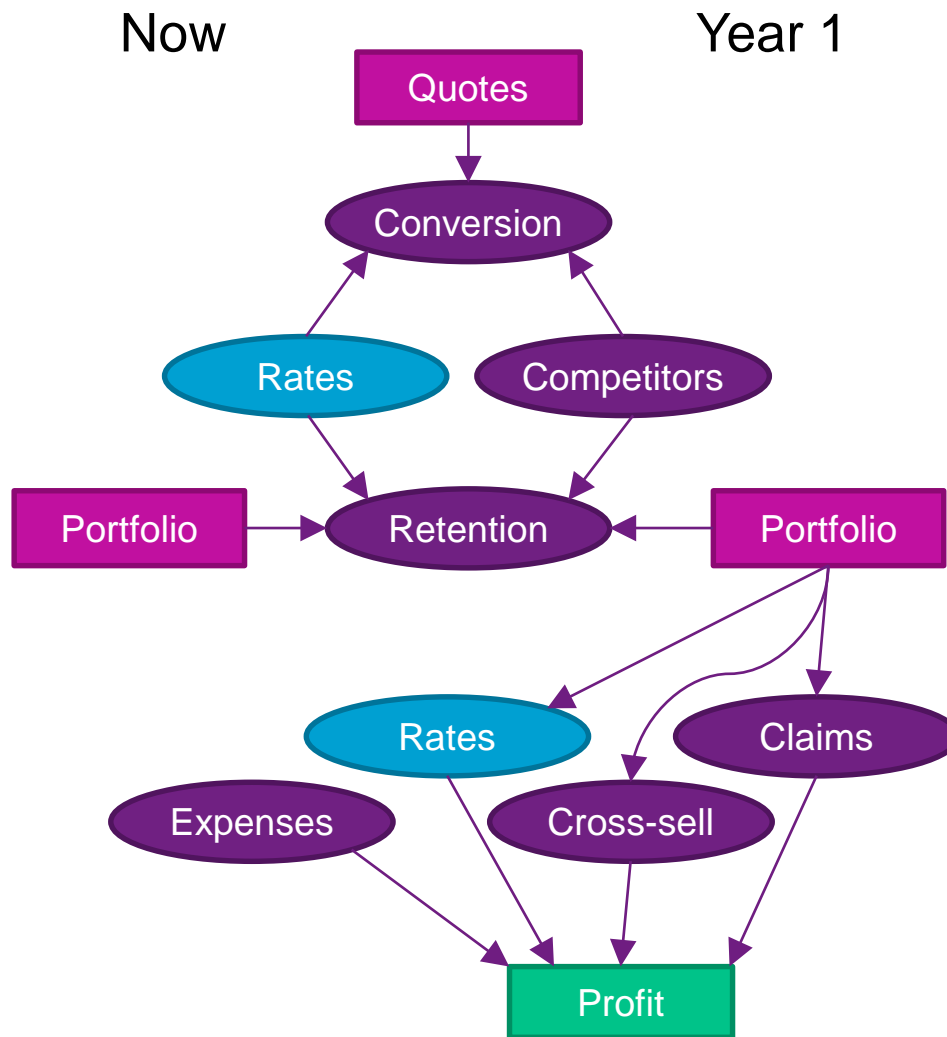
Long

Disadvantages

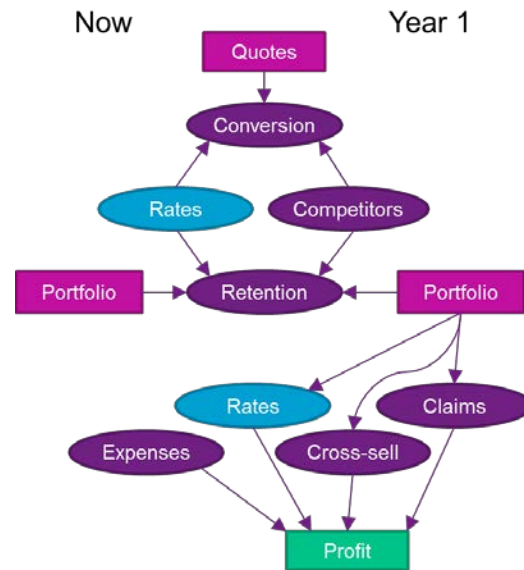
"Milks" the most inelastic customers leads to a reducing quality portfolio

Profits anticipated in future years may be "illusory" (predicting future market prices?)

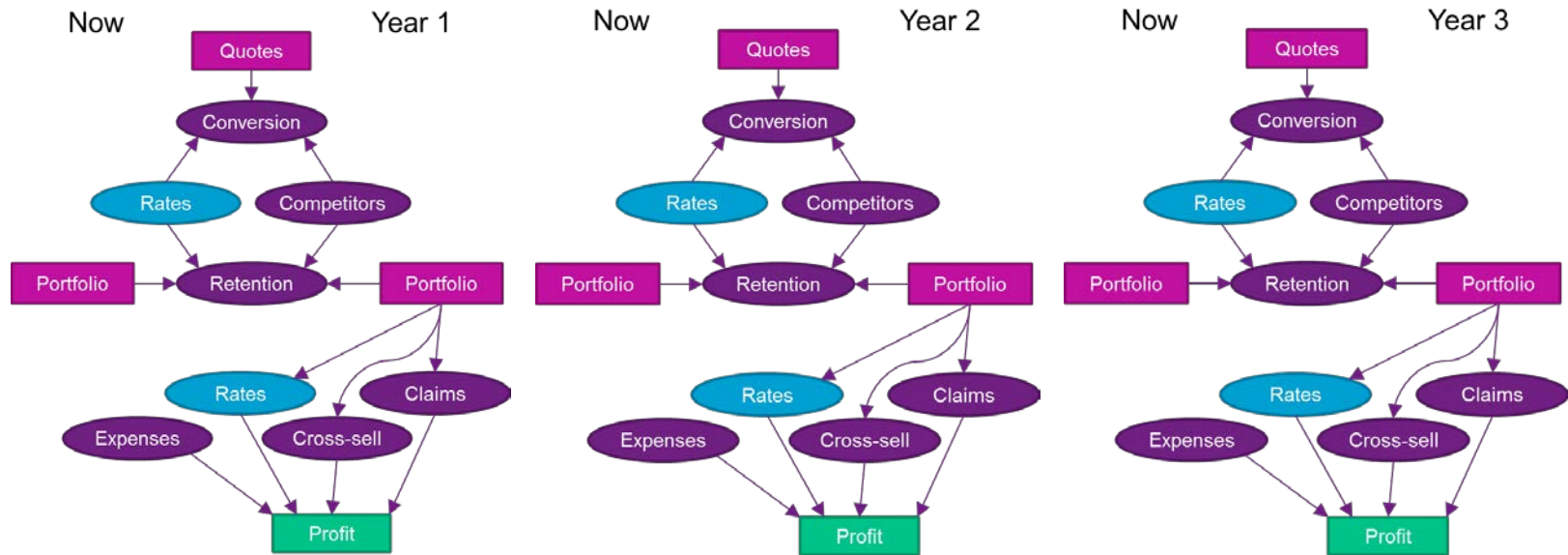
Scenario Testing - Projections



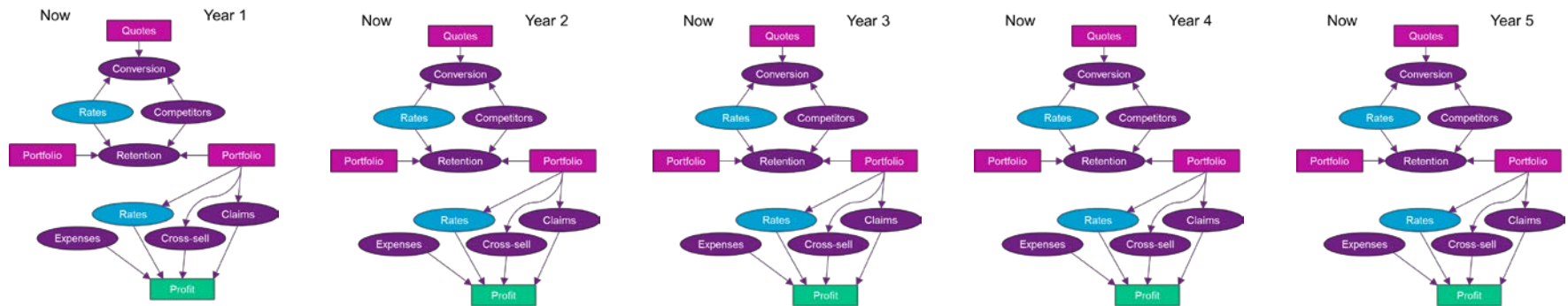
Scenario Testing - Projections



Scenario Testing - Multi-Year Projections

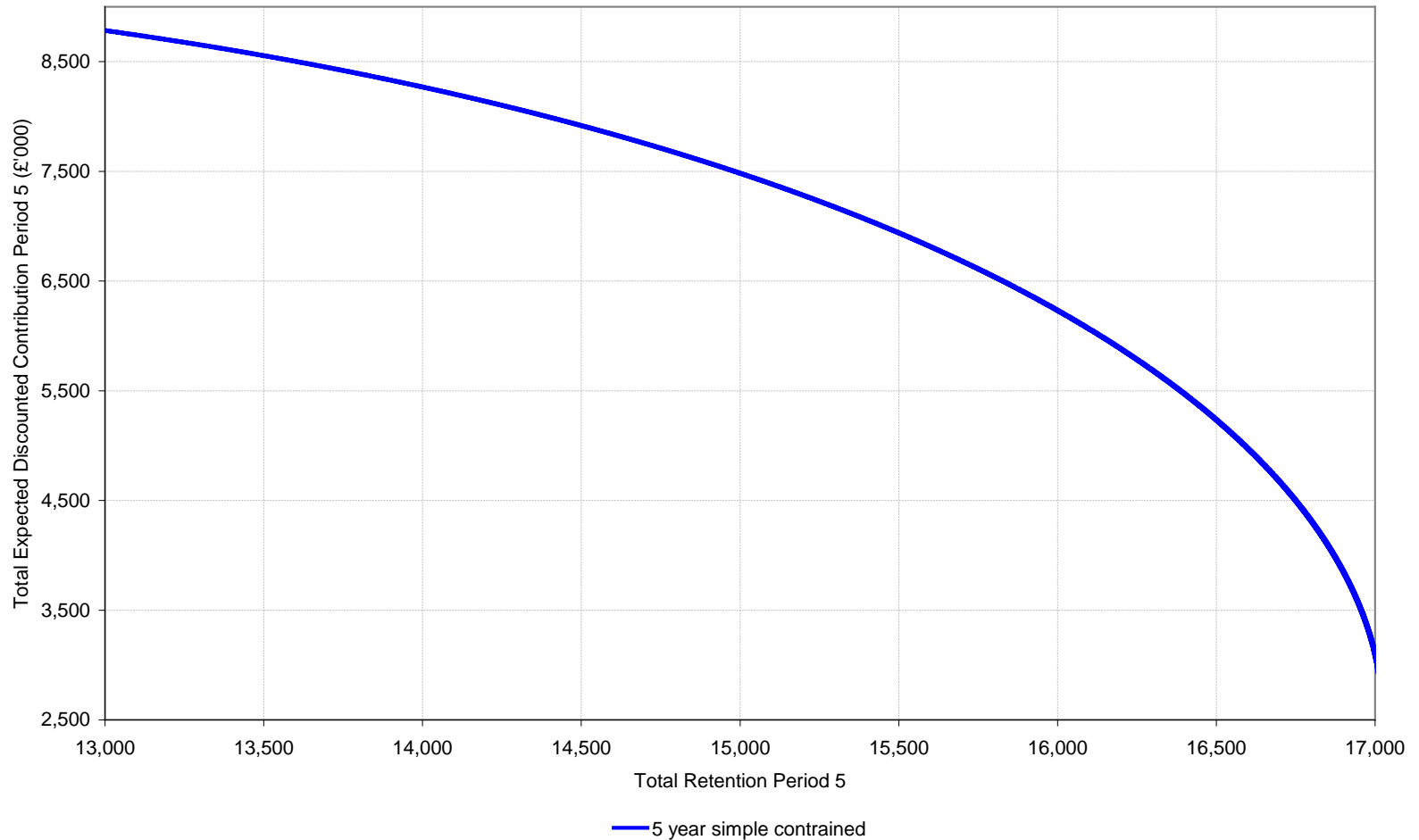


Scenario Testing - Multi-Year Projections

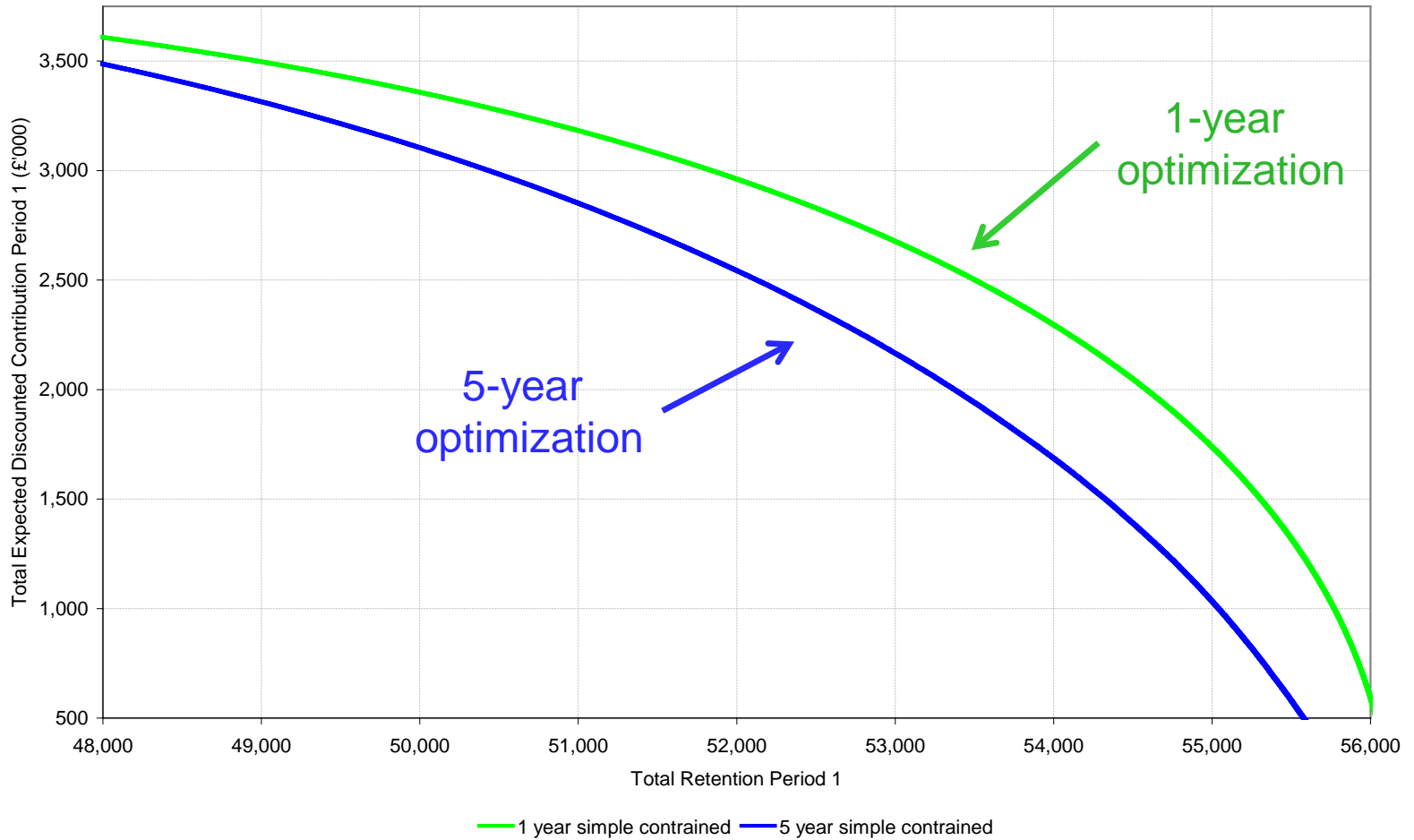




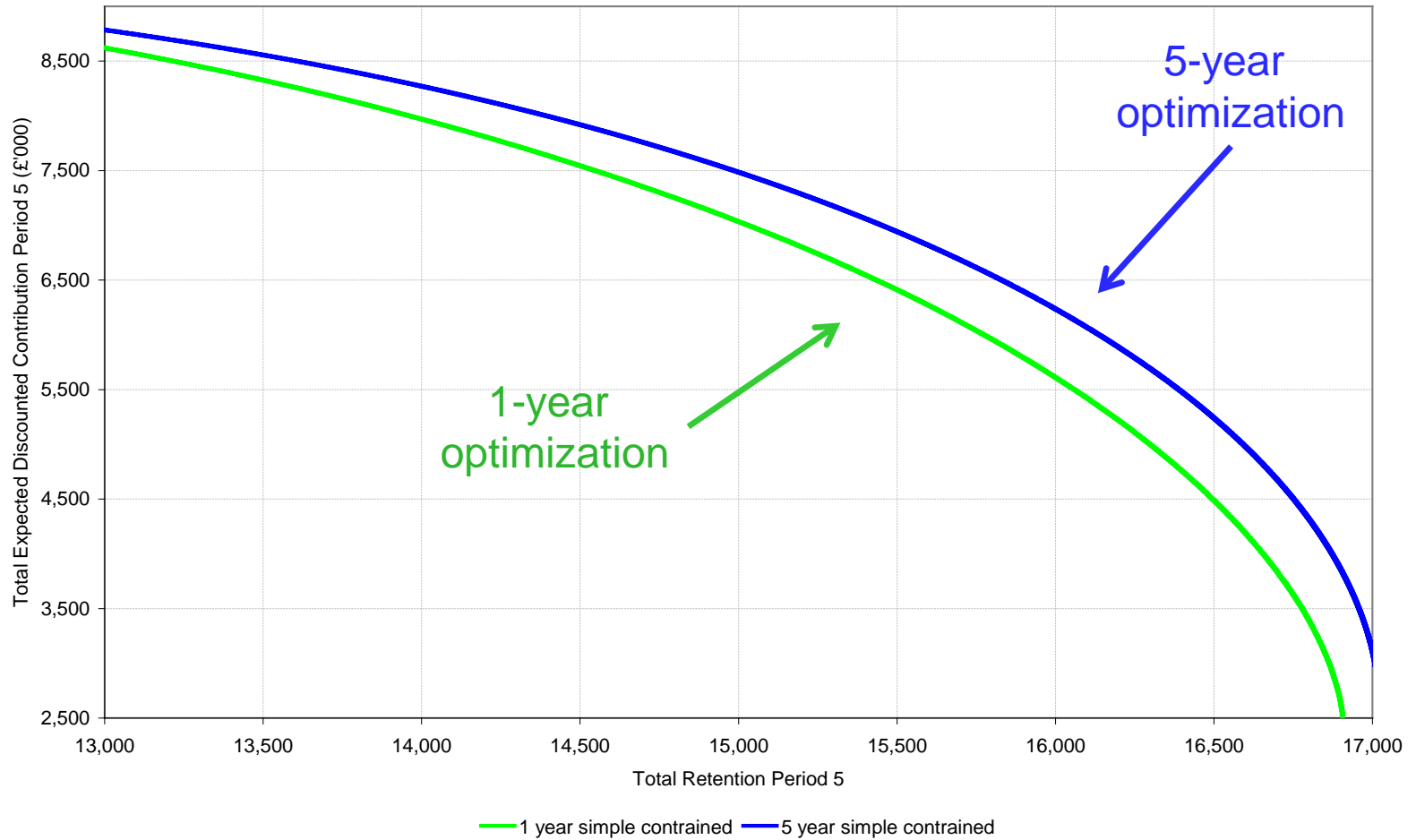
Five year efficient frontier



One year efficient frontier

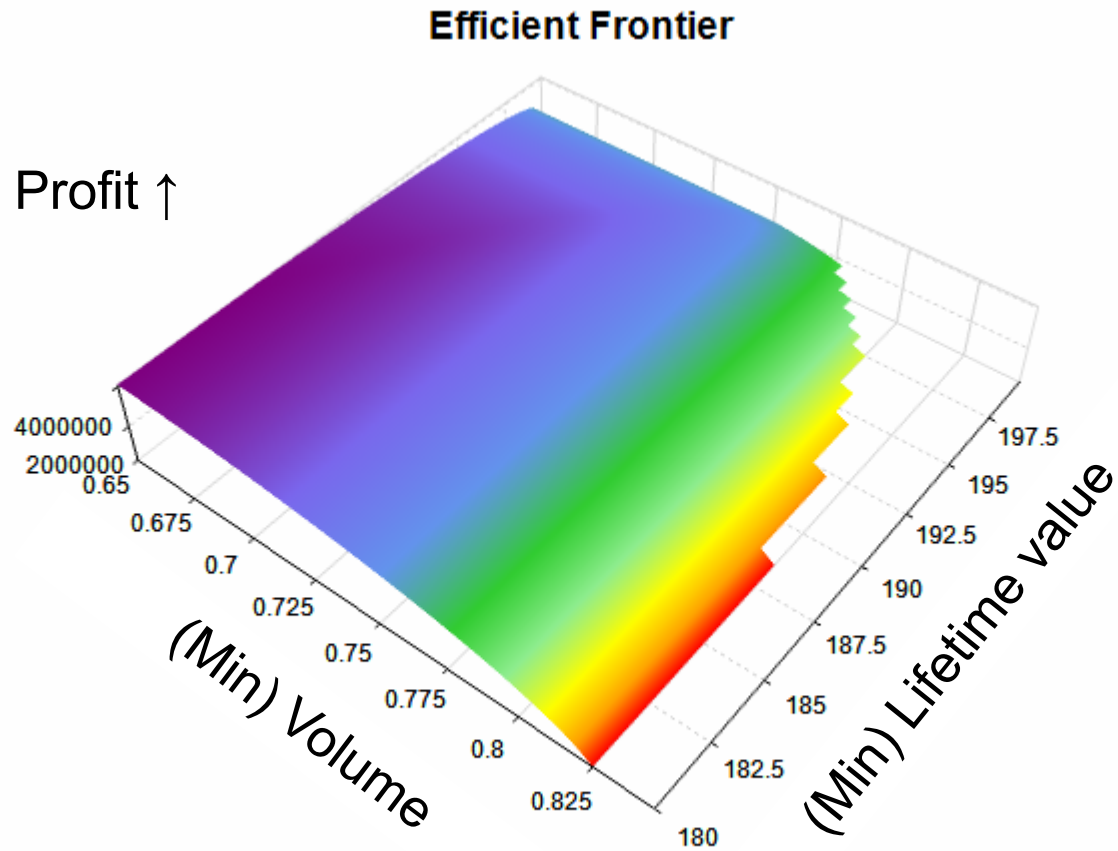


Five year efficient frontier

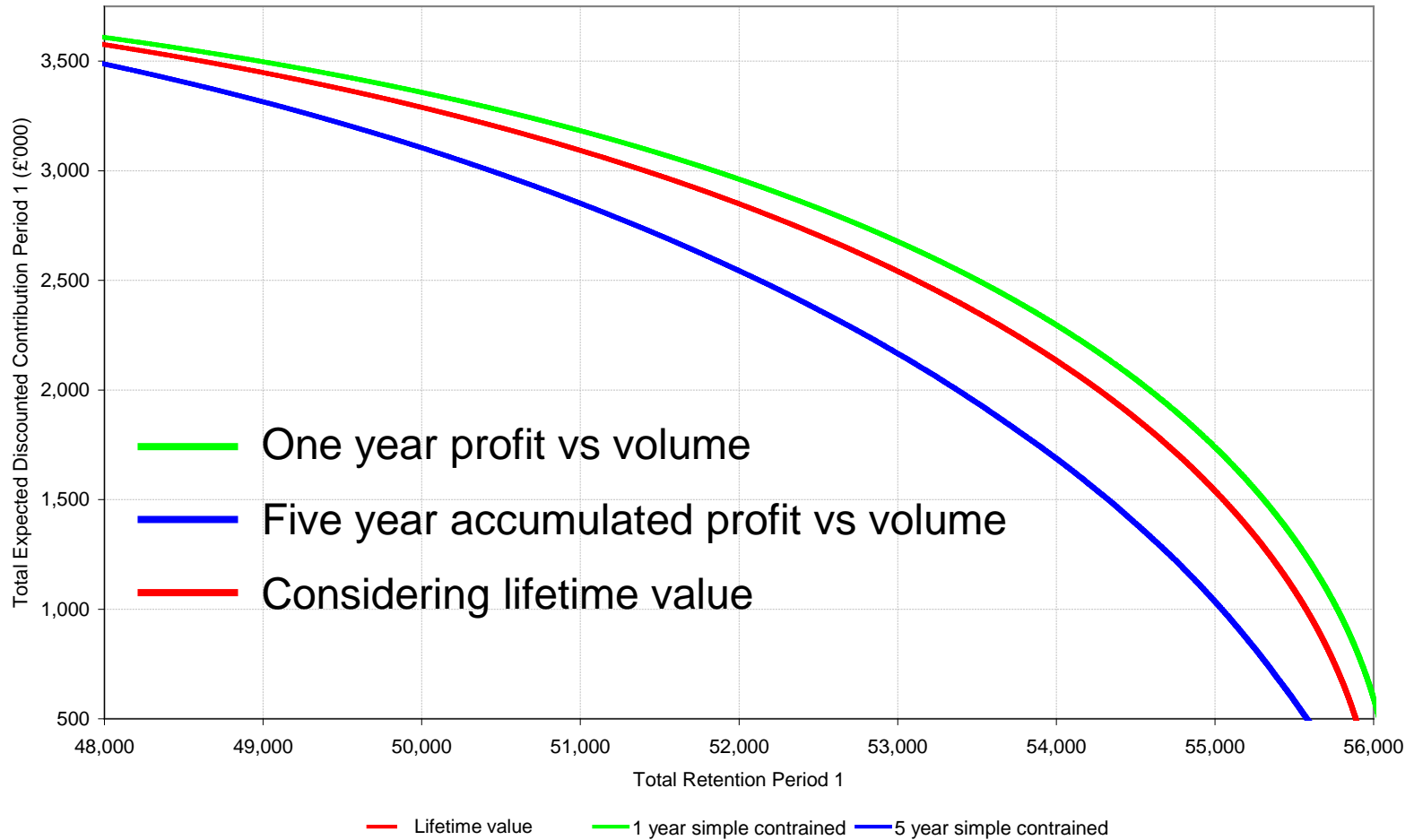




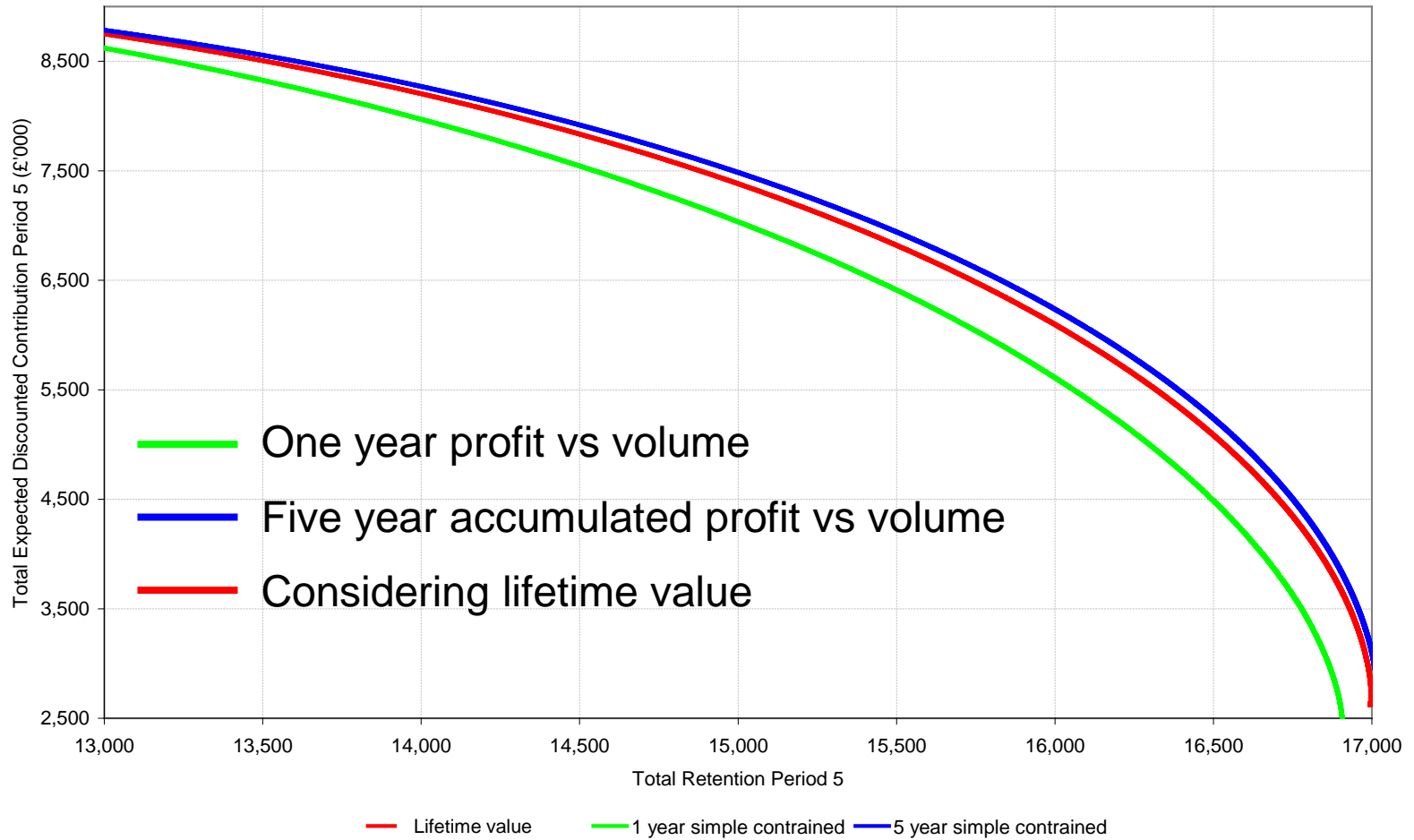
Multidimensional optimization



One year efficient frontier

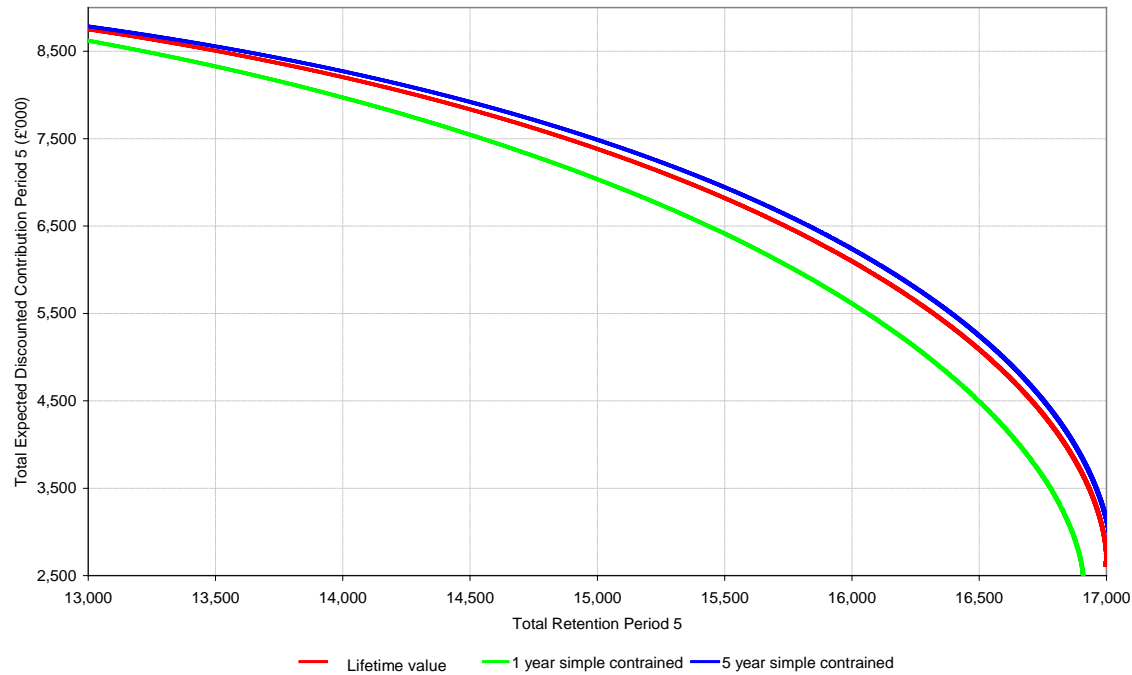
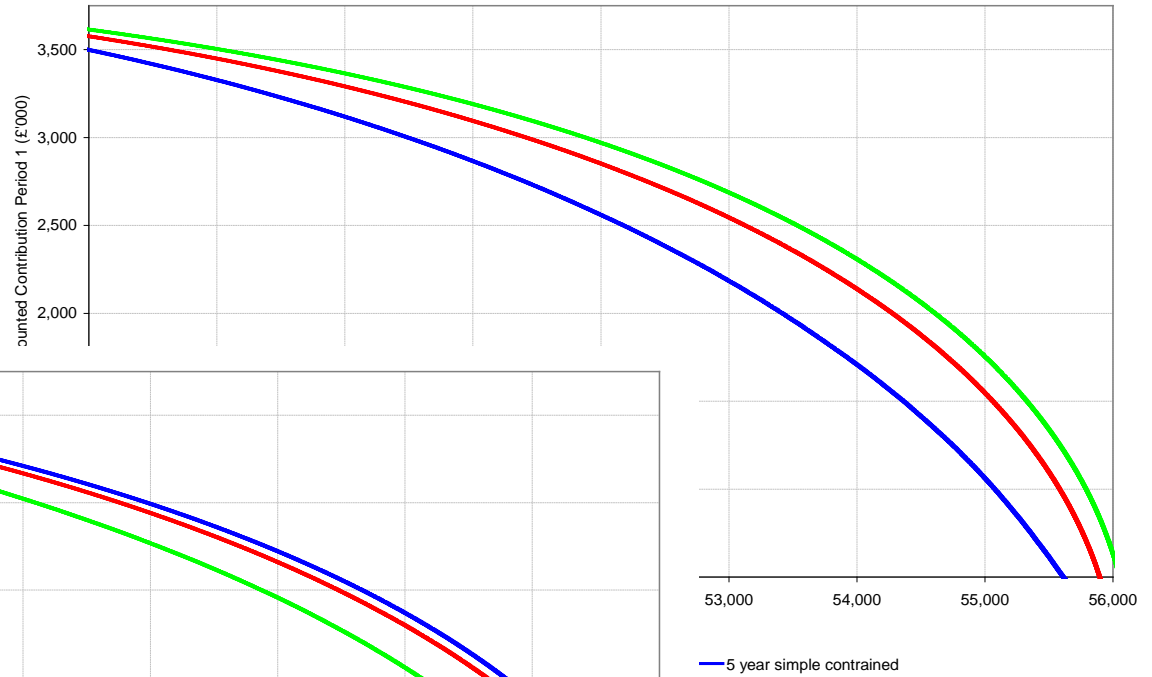


Five year efficient frontier



Almost the best of both worlds

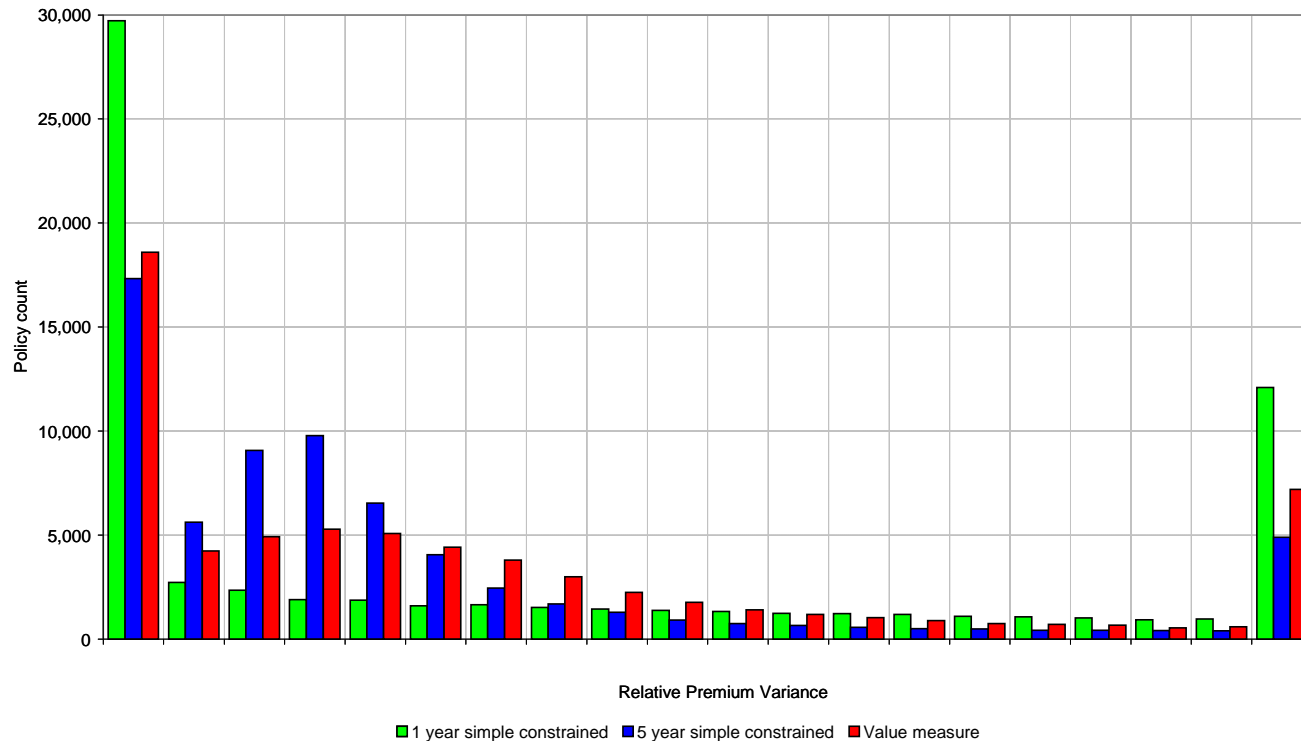
- 1-year profit vs. volume
- 5 year accumulated profit vs. volume
- Considering lifetime value



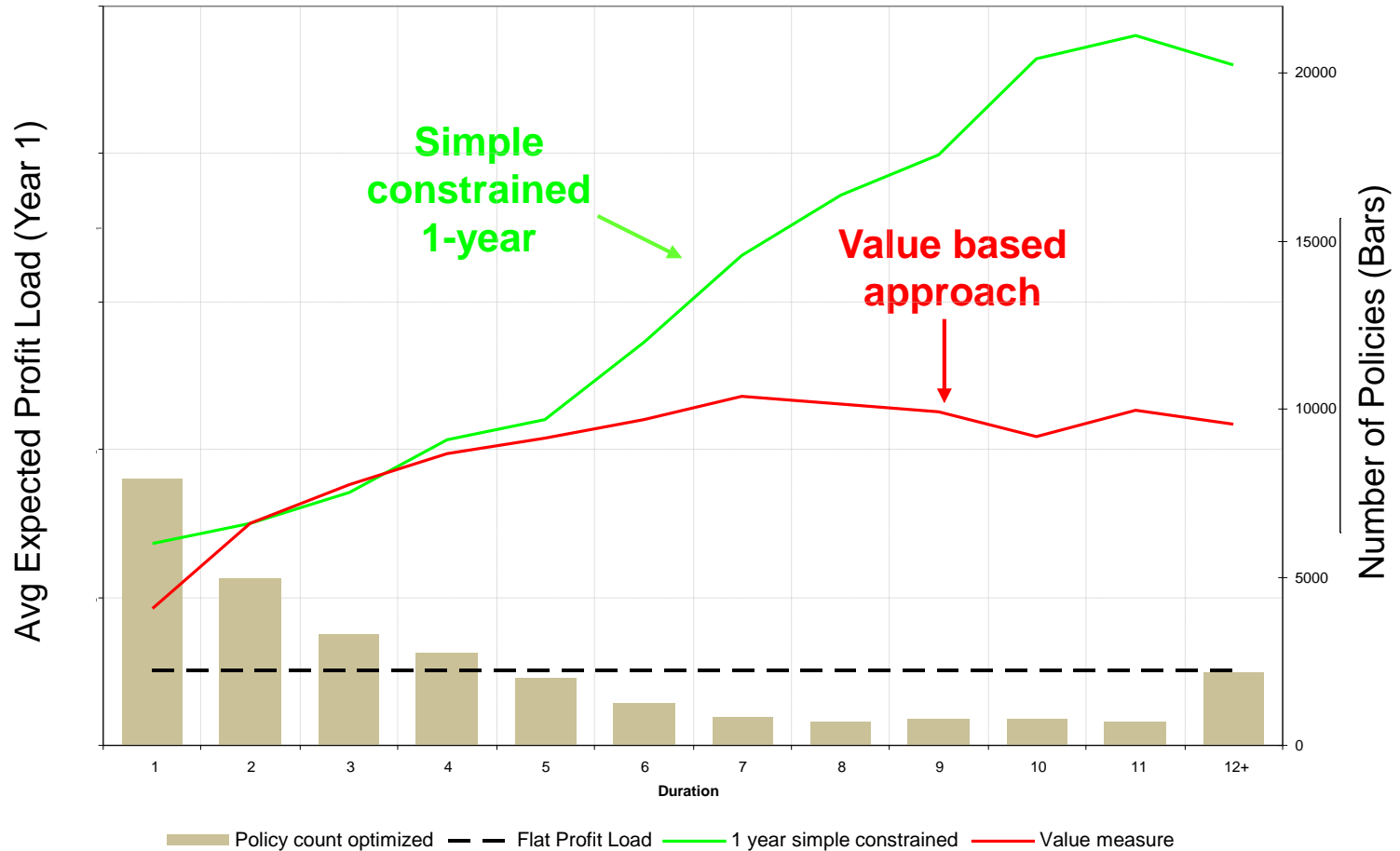


Value based approach - premium variances

- Value based approach avoids concentration of profit loads at extreme values which...
 - Extracts large profits from a small customer group
 - Maximizes degree of price differentiation
 - Relies on predictive accuracy of models at their extremes



Value based approach - premium variances by tenure





Price optimization – Inputs

- In summary the key inputs for price optimization are:
 - Data
 - Risk models
 - Behavioural and other models
 - Assumptions, Constraints and Objectives
 - Scenario testing environment



Price optimization – Predictive models

- Examples of different predictive models used in optimization projects across EMEA:
 - Conversion
 - Retention
 - Mid-term cancelation
 - Mid-term adjustment
 - Propensity to purchase additional covers, e.g. breakdown
 - Propensity to pay by instalments
 - Cross sell
 - Agent / Broker discretionary discounting

- What factors can be used in these models?

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Four options for price optimization

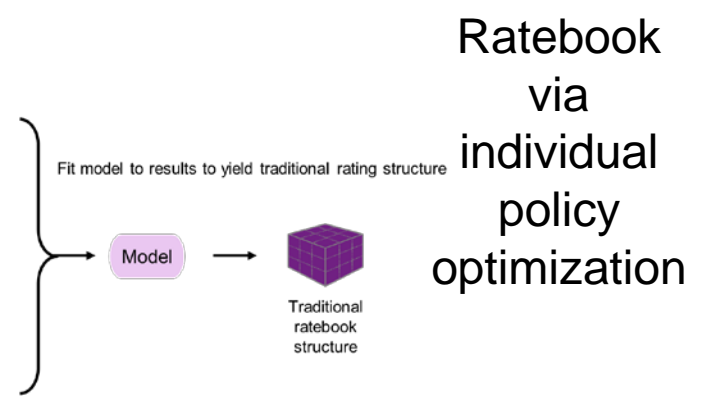
Individual policy optimization

Individual optimized prices

Policy no.	Premium
PEL009759458	327
UQJ408808153	555
KZM946999642	261
DDU700866747	349
VLQ391058119	334
YUW718736198	331
GEQ270961530	279
CSR303293030	188
XTB008693907	175
TJJ330632016	319
MFD704472553	349
ZV955030095	277
ZJY528736252	372
VRF026490810	647
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IVN82320056	641

Individual optimized prices

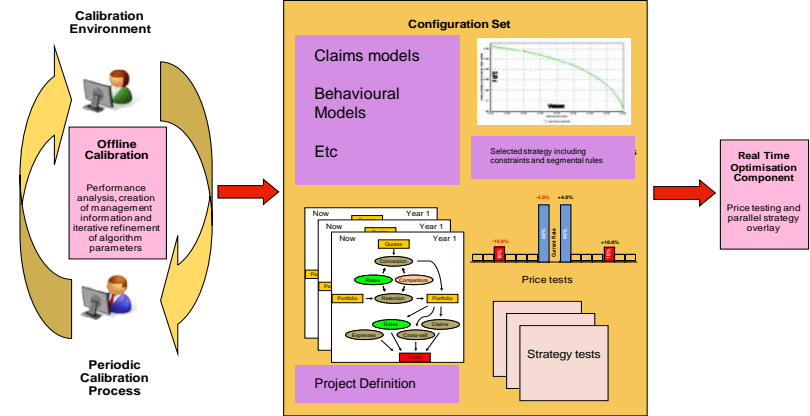
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VRF026490810	647
BNZ97260627	555
SXT608697514	203
JAE716278042	163
XU5991829954	633
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Base \$445

Age	Vehicle	Area	Etc.	Etc.
16	1.89	1 0.56	1 0.46	...
17	1.78	2 0.68	2 0.58	...
18	1.65	3 0.82	3 0.72	...
19	1.54	4 0.91	4 0.81	...
20	1.43	5 0.98	5 0.90	...
21	1.30	6 1.00	6 0.95	...
22	1.28	7 1.11	7 1.01	...
23	1.16	8 1.16	8 1.11	...
24	1.10	9 1.19	9 1.18	...
25	1.05	10 1.25	10 1.21	...
26	1.04	11 1.34	11 1.33	...
27	1.03	12 1.43	12 1.49	...

Ratebook optimization



Point of sale optimization

1 - Individual policy optimization



Individual optimized prices

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PEL009759458	327
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BIN297260627	555
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2 - Individual policy optimization re-expressed in ratebook form

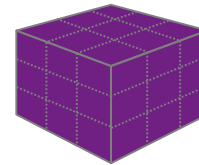


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Fit model to results to yield traditional rating structure

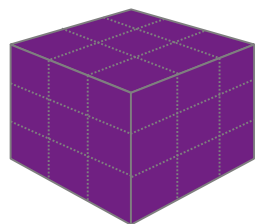
Model



Traditional ratebook structure



3 - Direct ratebook optimization



Traditional ratebook structure

Base \$445

Age	
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17	1.78
18	1.65
19	1.54
20	1.43
21	1.30
22	1.28
23	1.16
24	1.10
25	1.05
26	1.04
27	1.03
...	...

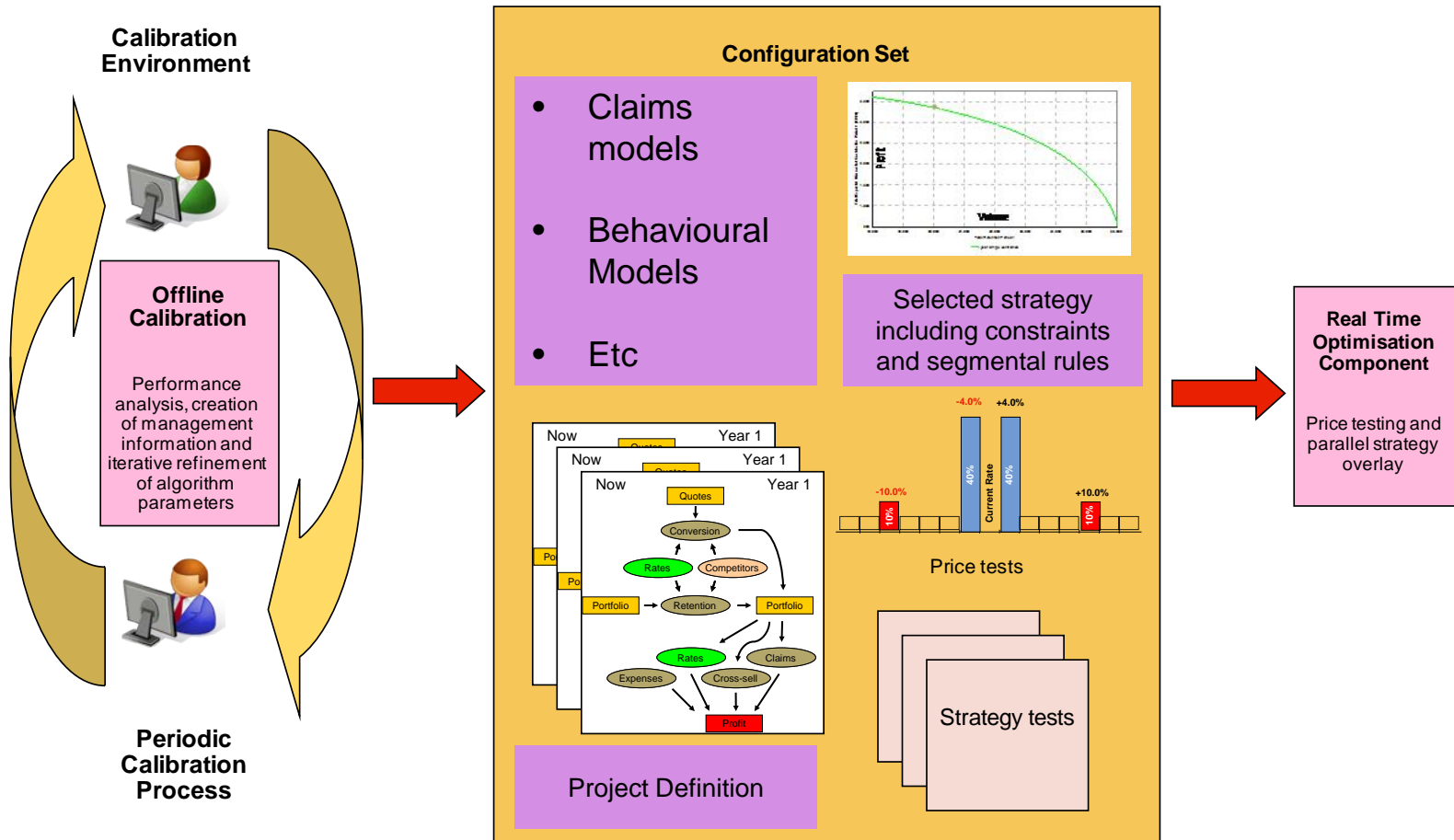
Vehicle	
1	0.56
2	0.68
3	0.82
4	0.91
5	0.98
6	1.00
7	1.11
8	1.16
9	1.19
10	1.25
11	1.34
12	1.43
...	...

Area	
1	0.46
2	0.58
3	0.72
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...	...

Etc.	
...	...

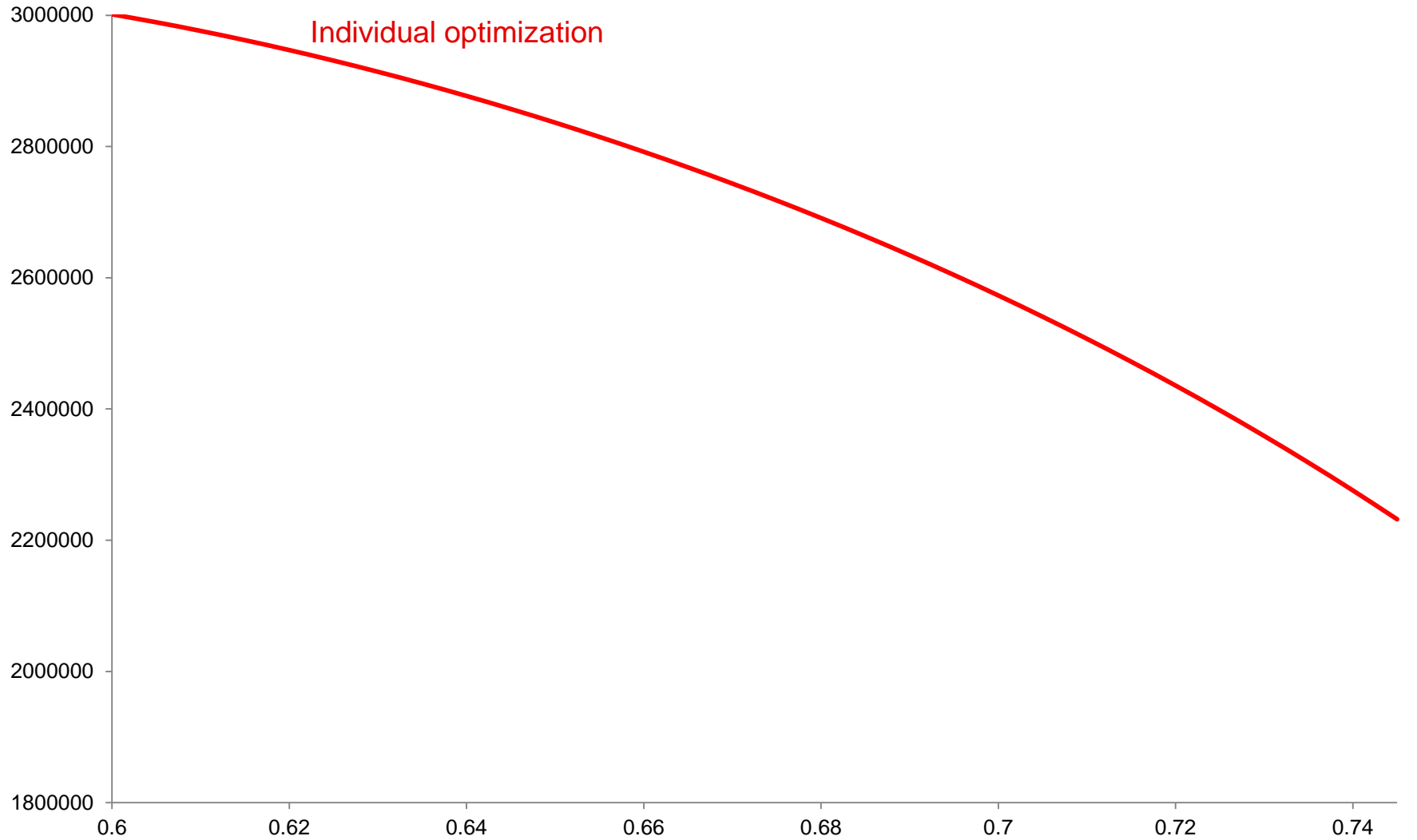
Etc.	
...	...

4 - Real Time Optimization



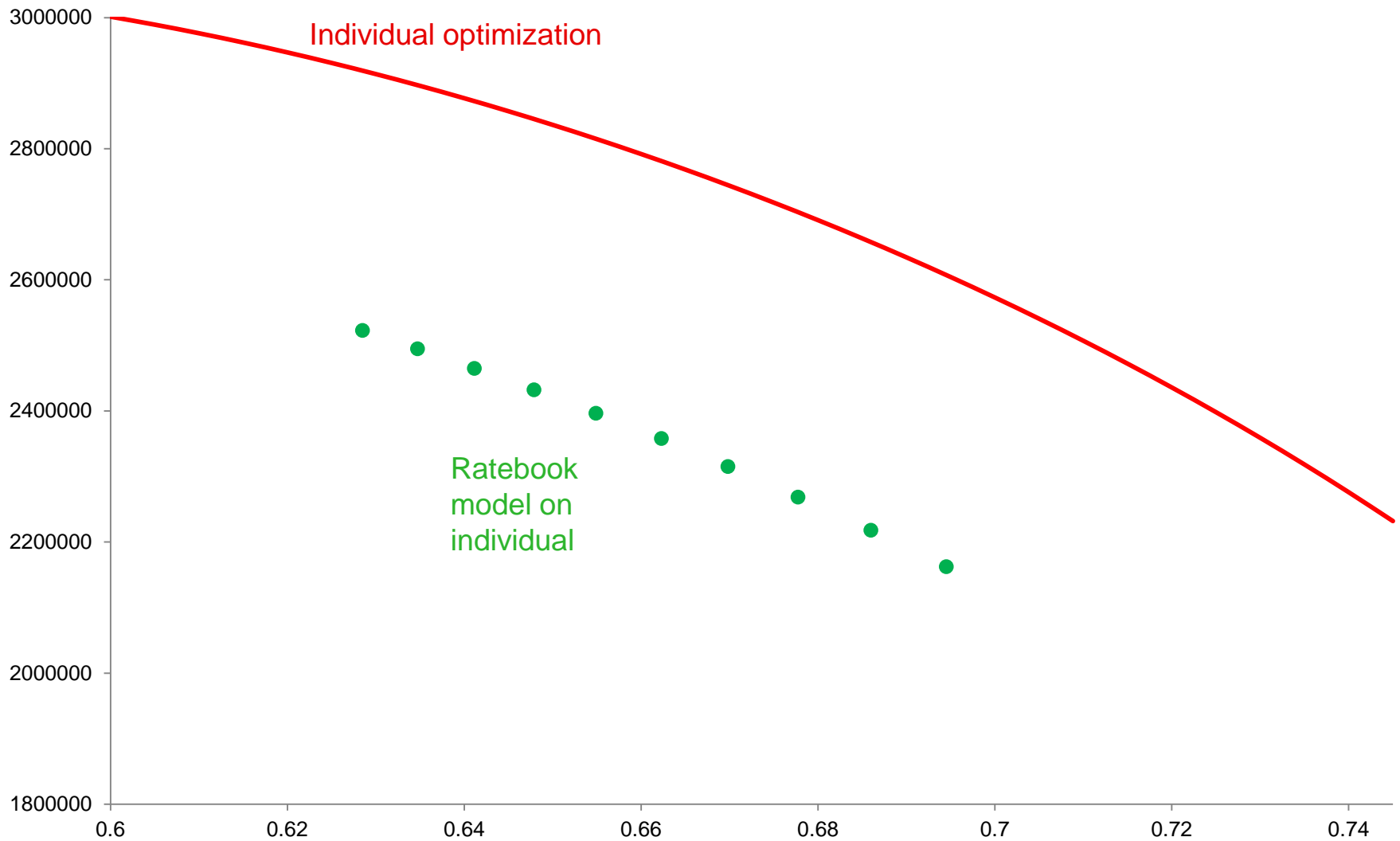


Price optimization



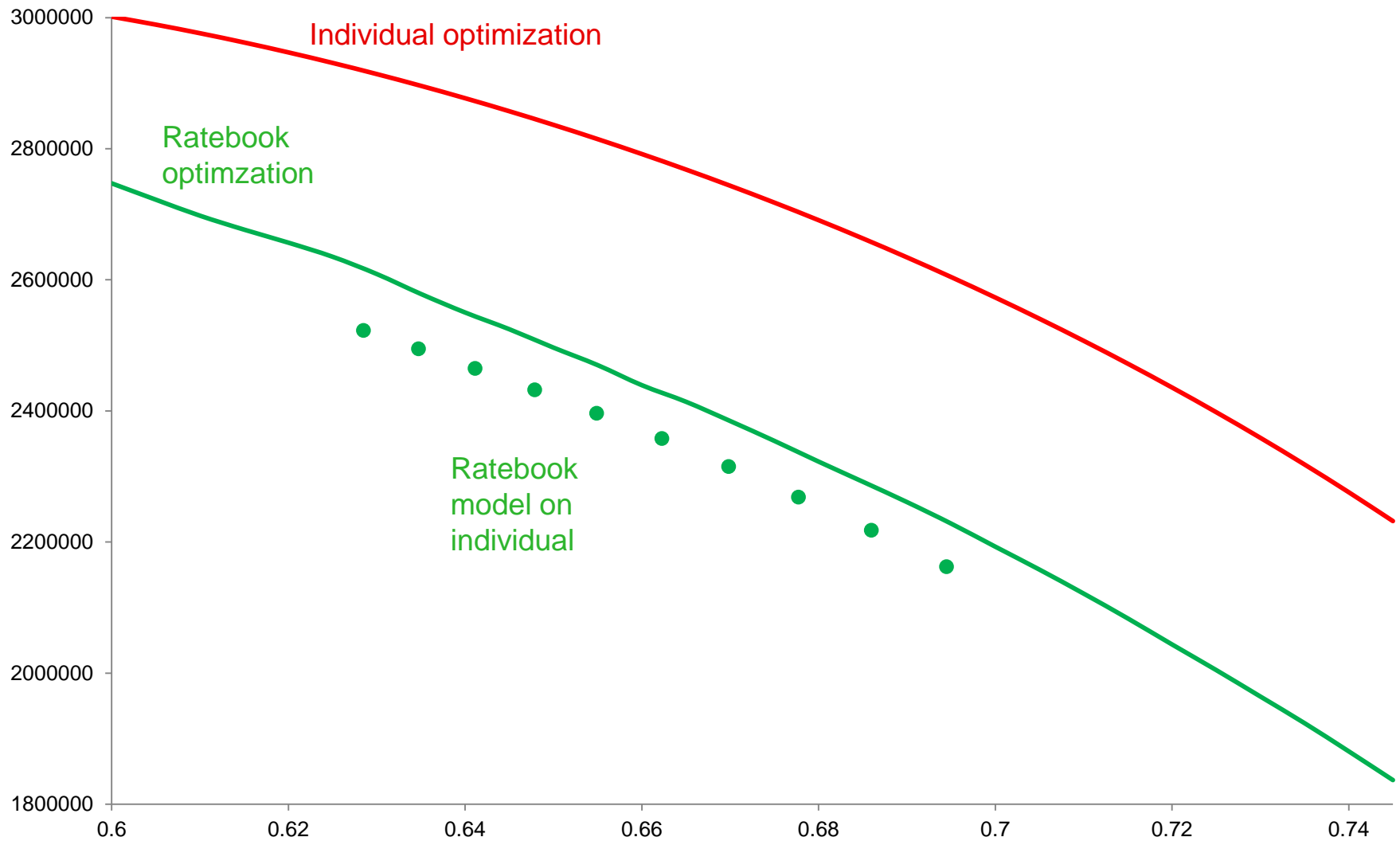


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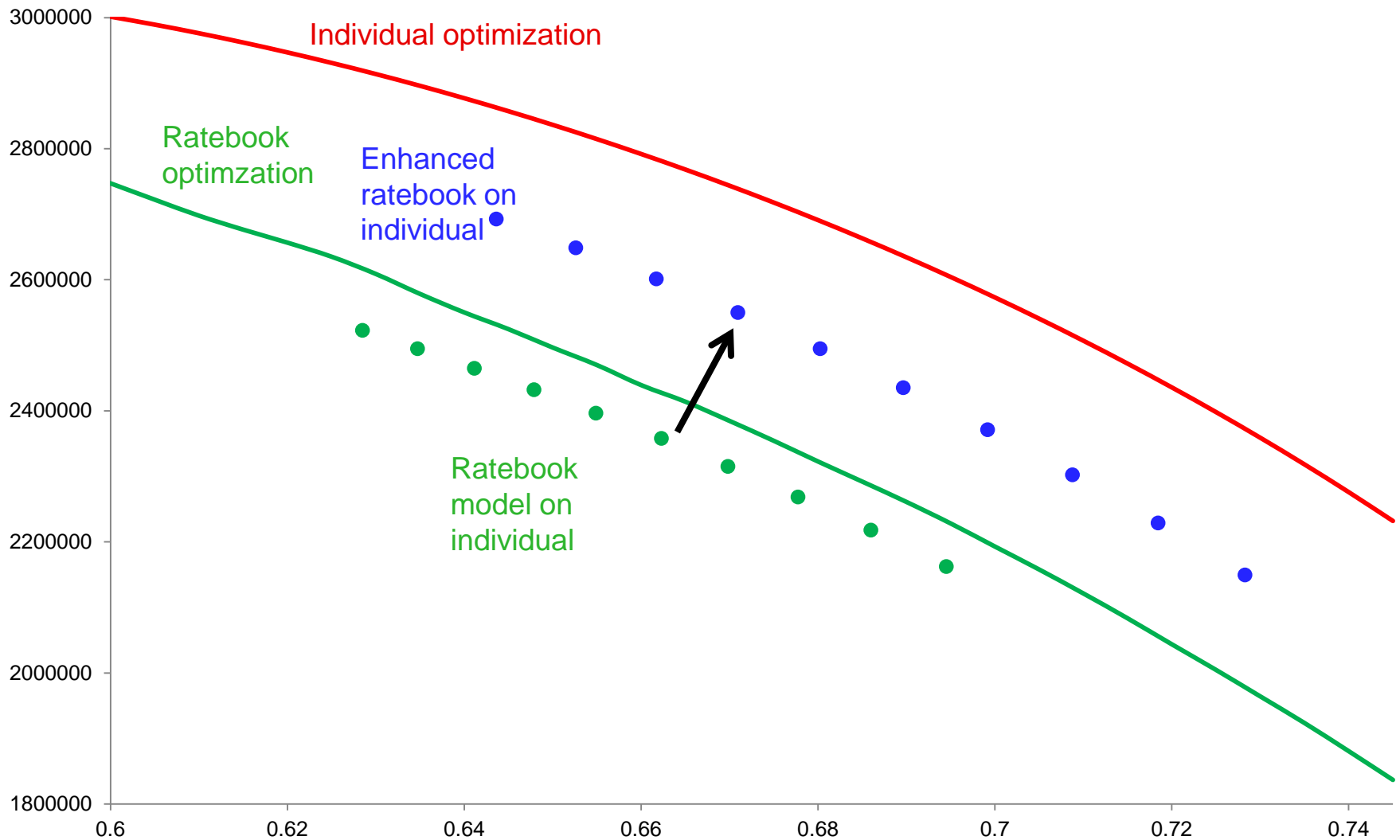


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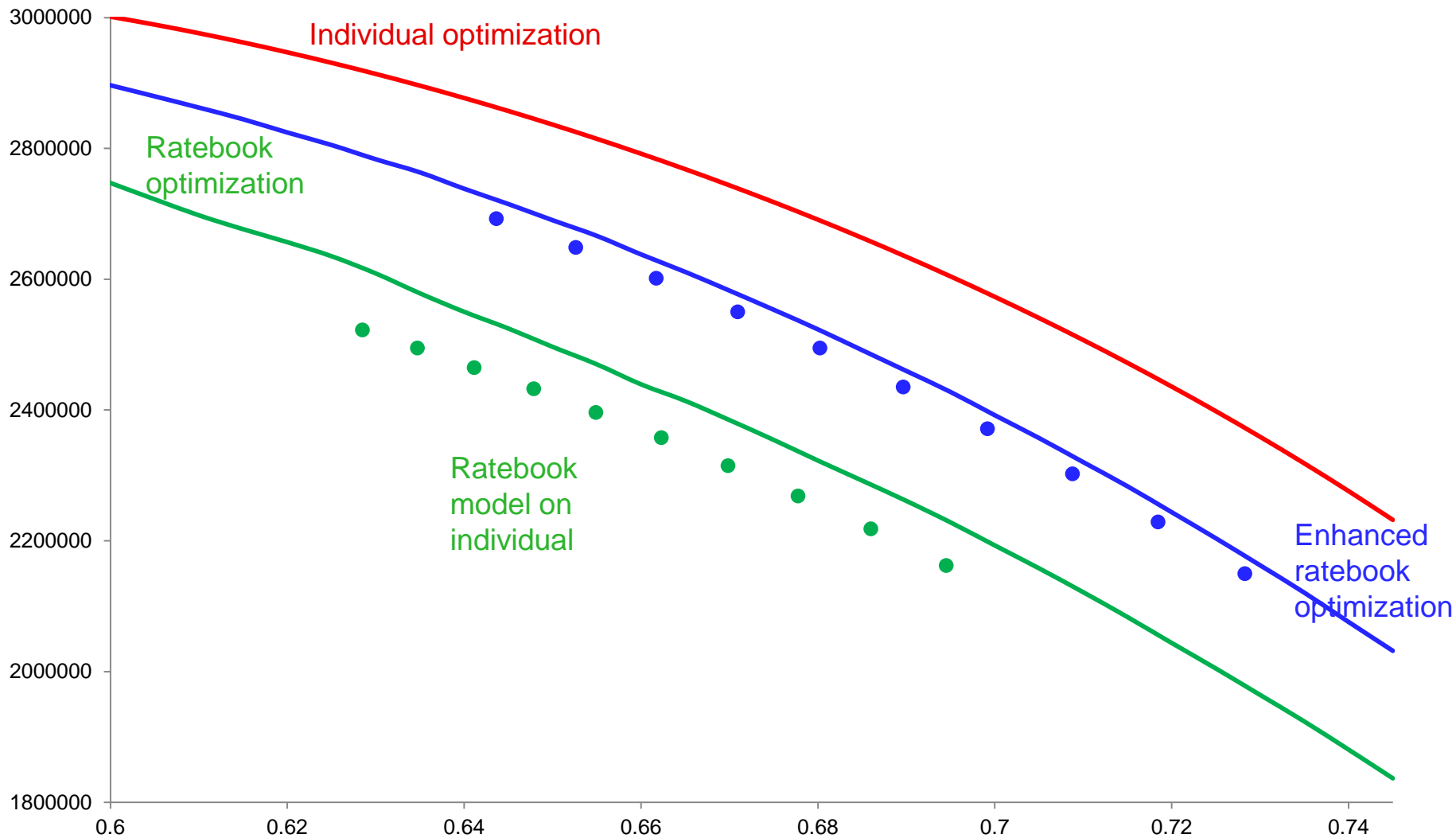


Price optimization





Price optimization



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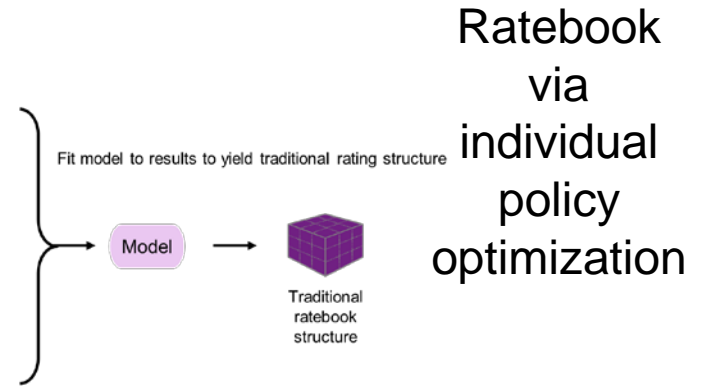
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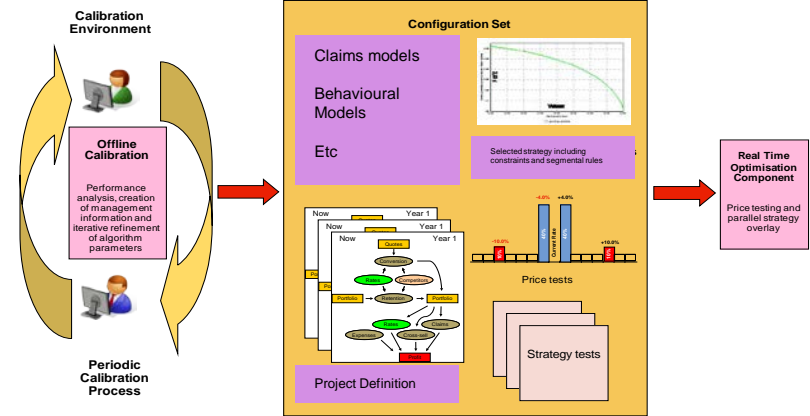
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Ratebook optimization



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Price optimization – wider implications

Optimization

Pricing decision support to help optimize pricing strategies and improve profitability

Benefits

Sophisticated, demand-based pricing

Combines real world constraints with mathematical optimization

Aligns marketing and pricing functions

Reduces risk of anti-selection

What's involved

- Uses predictive models to predict costs and customer behaviors
- Determines potential future outcomes

- Defines premium change and absolute premium limits to reflect real world requirements
- Optimization will give best outcome using these limits

- Efficient frontier allows clear understanding of volume and profit trade-off
- Understand impact of constraints

- Compares proposed rates with market rates to ensure prices are never too far below market view

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Questions

Discussion led by Francesco Daboni