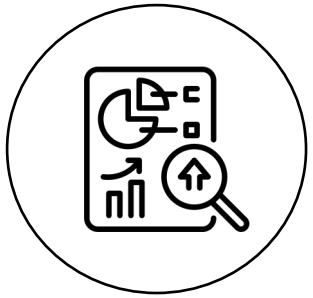
nomis

Intelligent Pricing for Better Banks

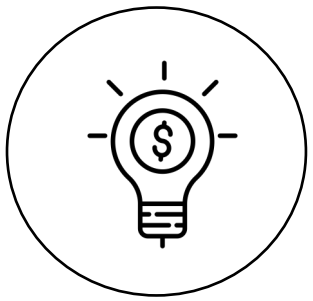
outline

who we are
company profile

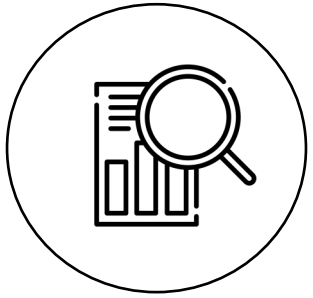
what we can do for you
problem statement



where you are now
current situation



our approach
methodology



our model
results

where you can be
simulation

what you can do
recommendation

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who we are

at Nomis, we are a team of banking, software, and data science geeks based in Silicon Valley with more than 25 years of experience in **price optimization analytics**. We believe that we can create a more resilient, fair, and profitable banking strategy for you

what we can do for you

risk-based pricing creates less profit, we can maximize your profit by optimizing your interest rates

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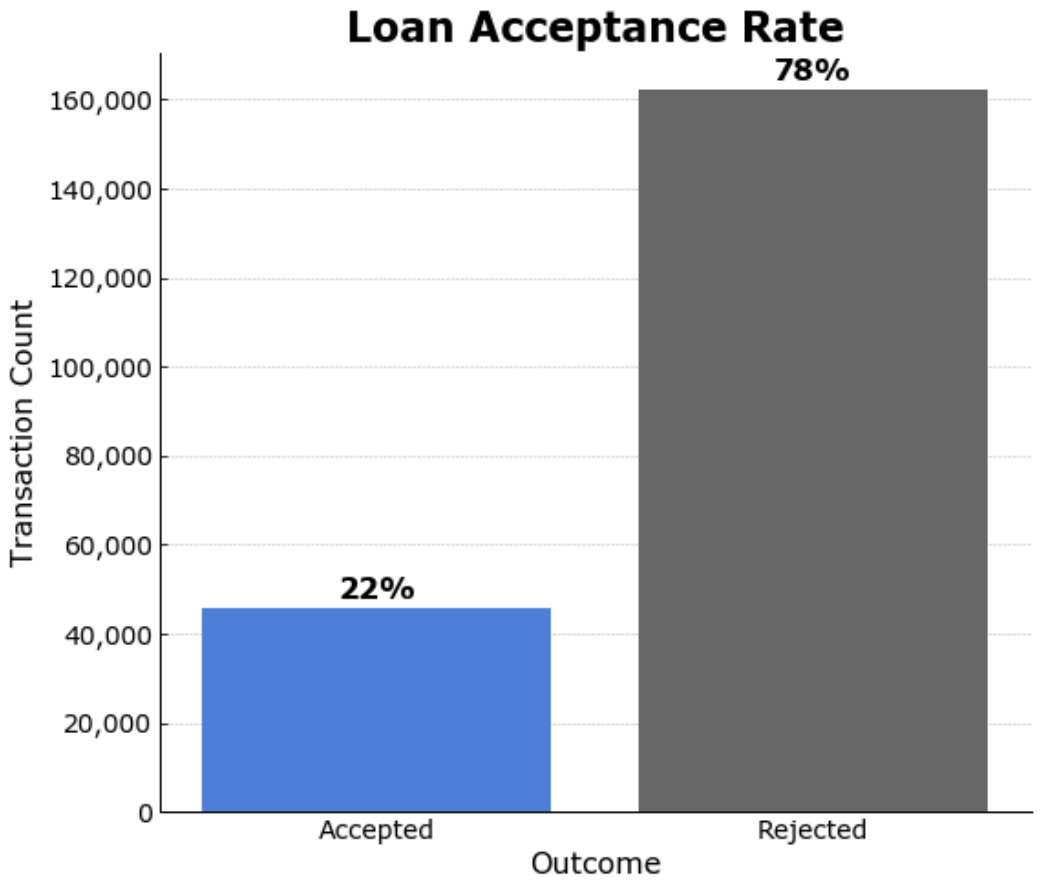
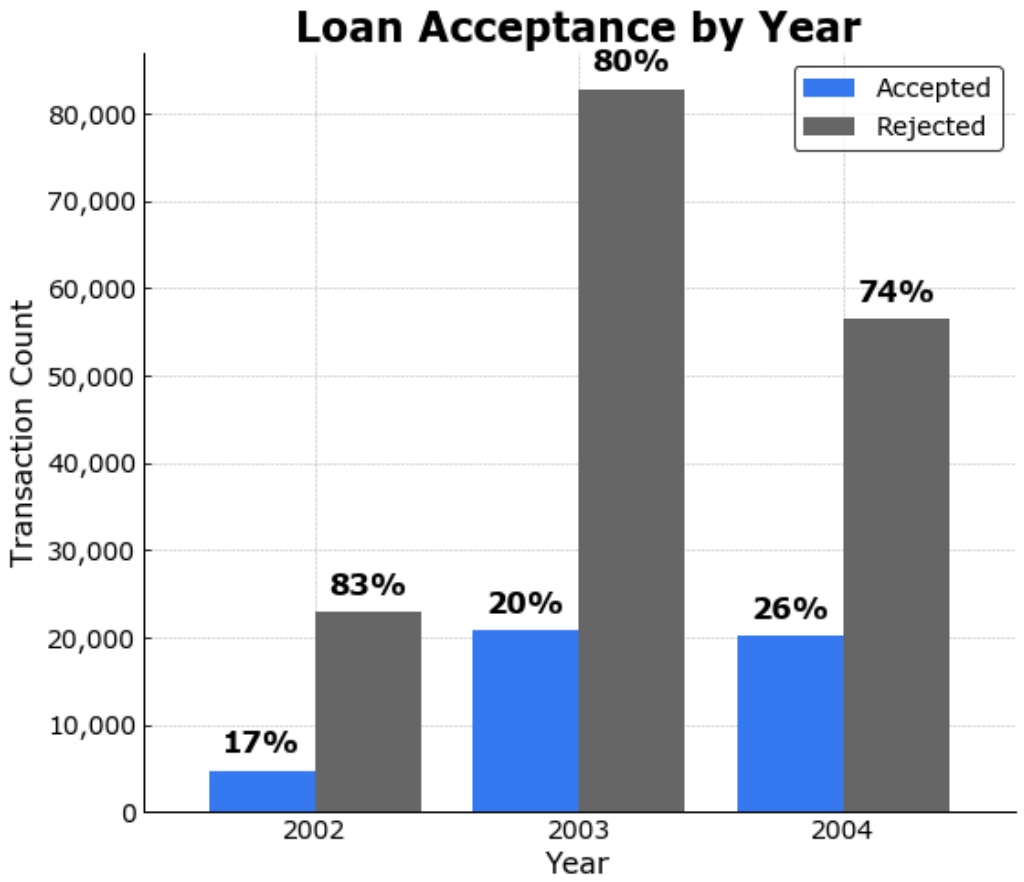
where you are now

number of loan offers further increased despite the consistent low acceptance rates





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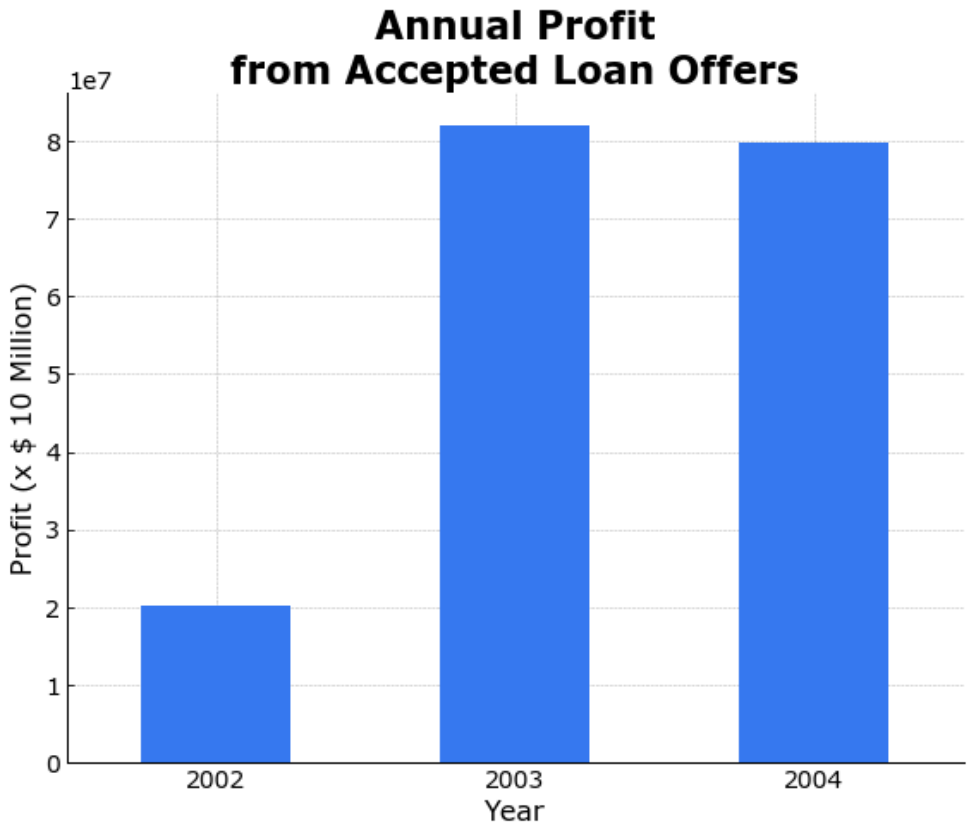
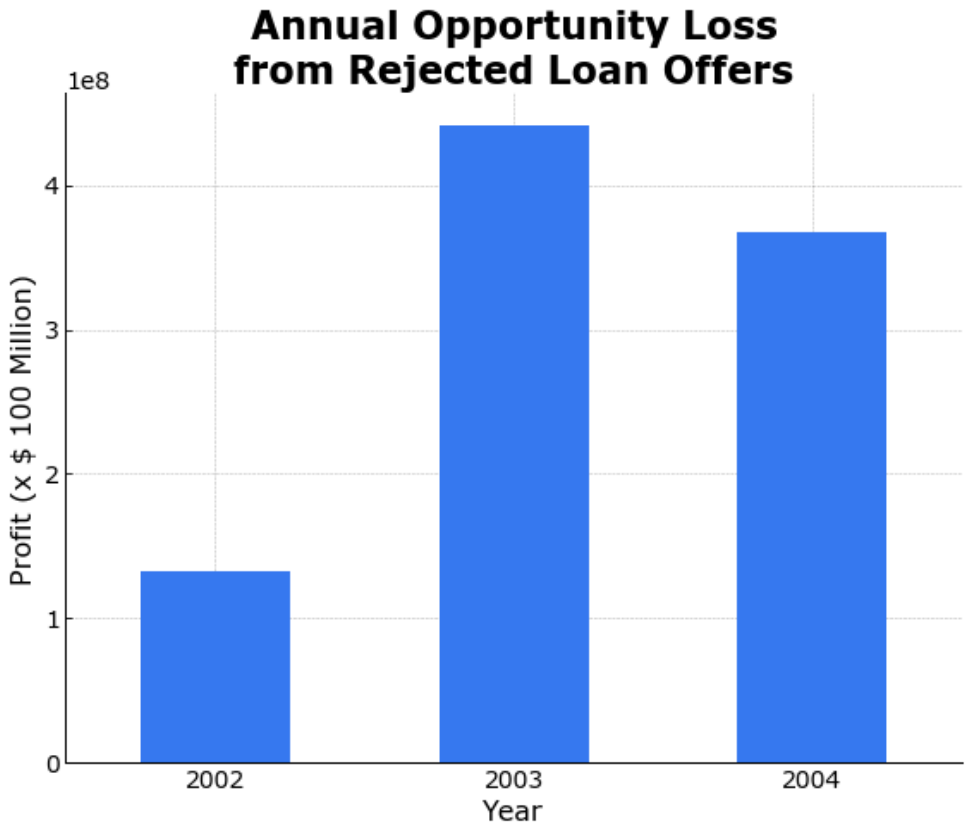
where you are now

$182 million
total profit



$941 million
total opportunity loss



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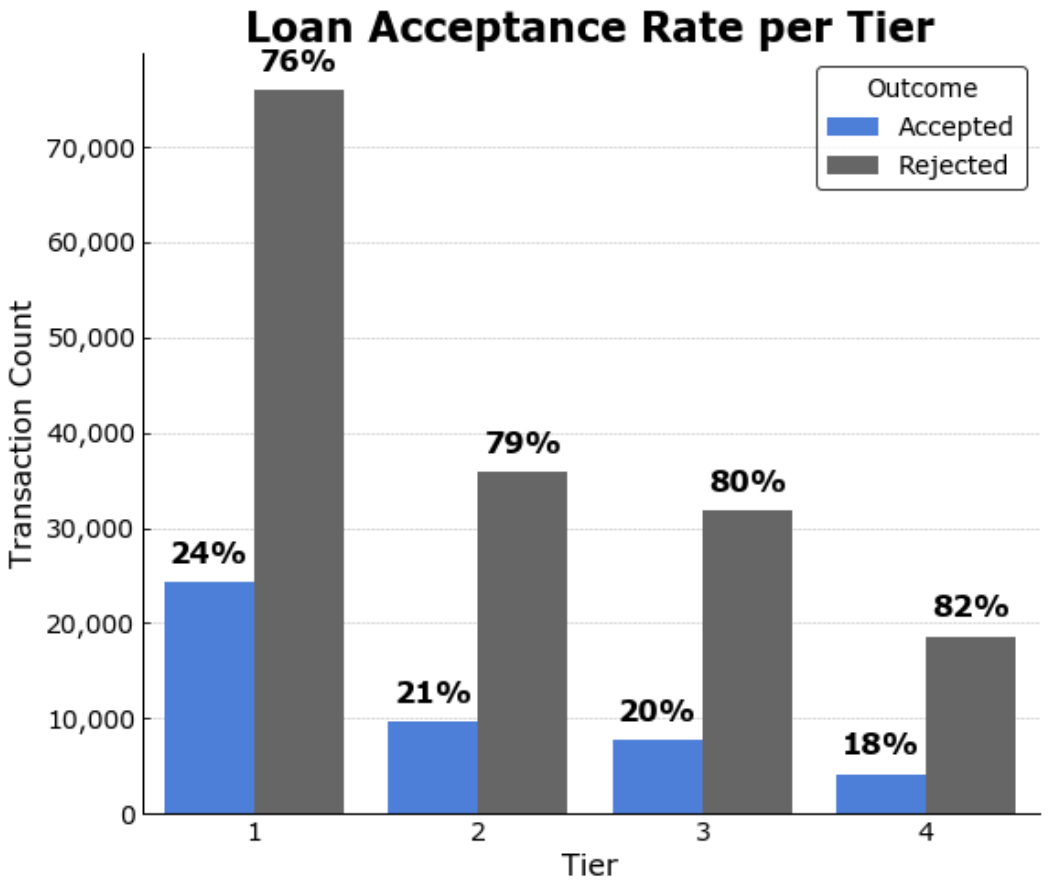
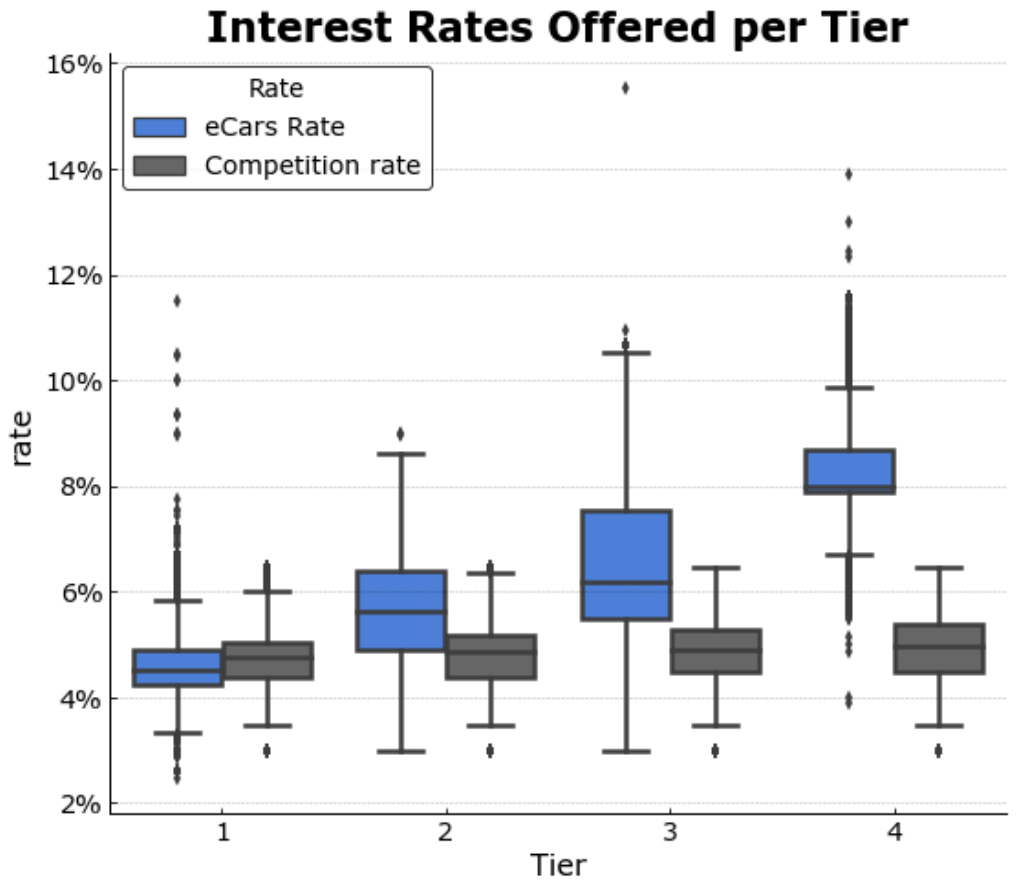
where you are now

higher (more risky) tiers are offered higher rates, however, the competition rate is relatively consistent across all tiers making them more attractive to borrowers





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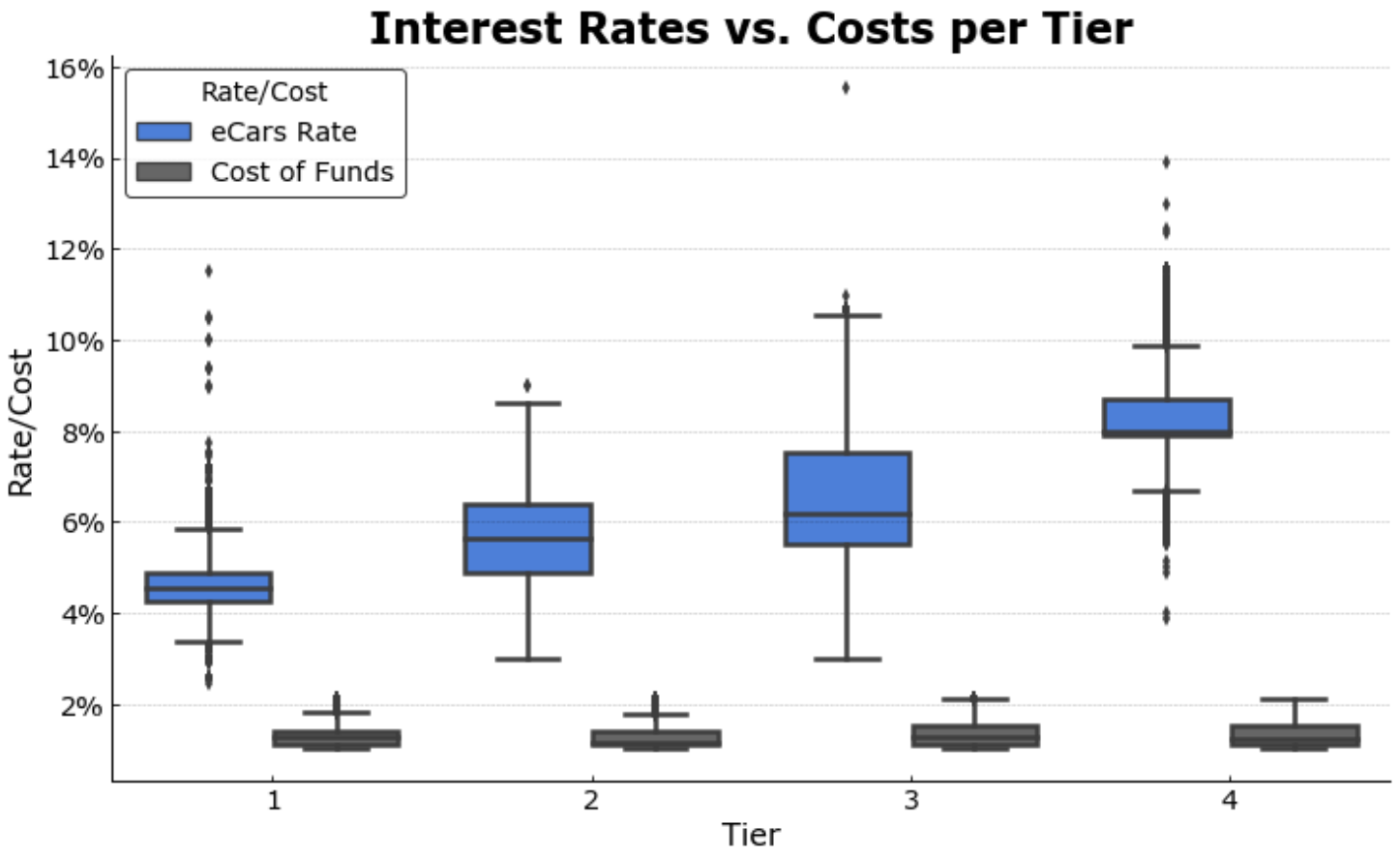
where you are now

the cost of funds is relatively uniform across all tiers despite the increasing interest rates. This implies that there is room for lowering of rates in higher tiers while still creating profit



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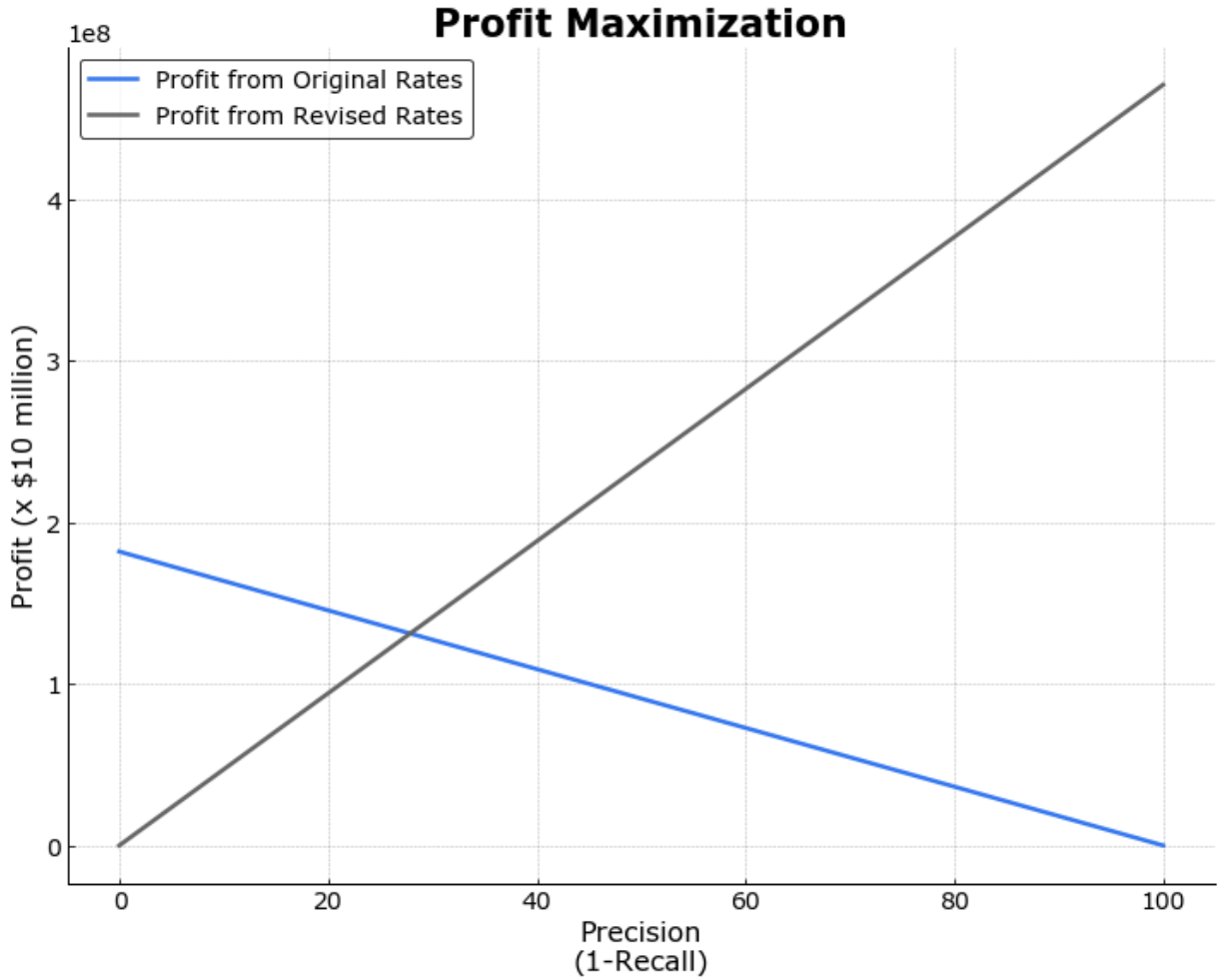
what could happen?

ideal projection: assuming all offers are accepted, we get maximum profit if we give revised rates to all clients

actual case: offering lower rates to convert some clients wouldn't be economical



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our approach

algorithm to optimize your interest rates

inputs	rate estimation
amount & term	Risk-Based Rate Estimation
• Loan Car Type • FICO • Competitors' Rate	**R**ate **A**cceptance **P**rediction **S**upervised **A**lgorithm

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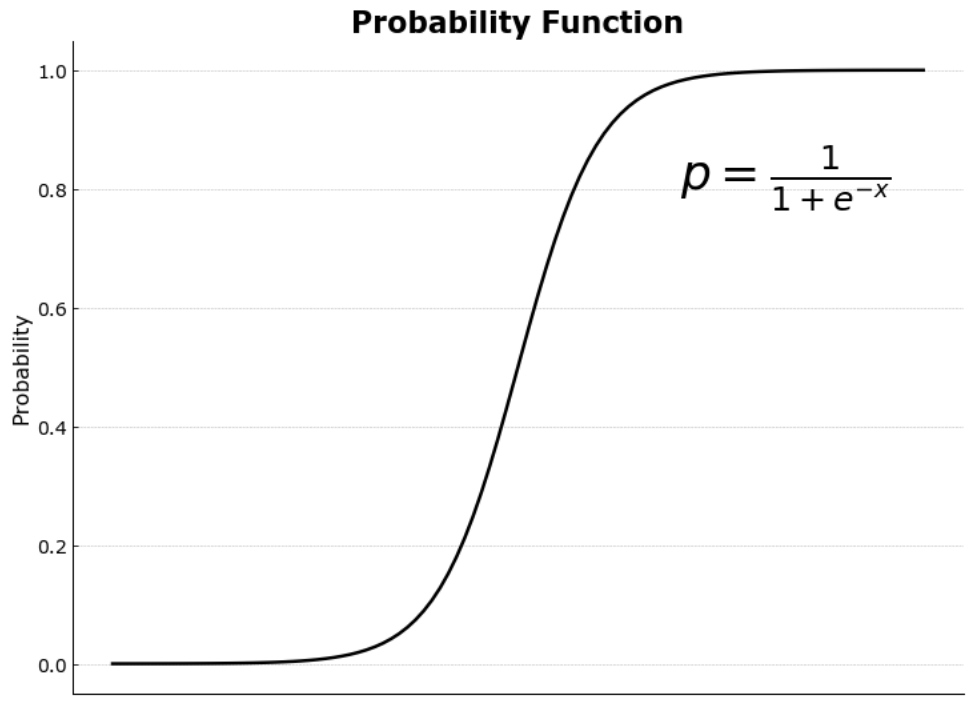
our approach

RAPSA prediction

ACTUAL	client **rejects** original rate	client **accepts** original rate
	offer **revised** rates	offer **original** rates
client **rejects** offer	• some clients will be converted by offering revised rate	• opportunity loss • cannot convert client
client **accepts** offer	• opportunity loss • client could've accepted original rate	• ideal case

$$Logit(p) = \omega_1 \times CarType_U + \omega_2 \times MonthlyFee + \omega_3 \times CompRateRatio + \omega_4 \times CarType_R + \omega_5 \times FICO + \omega_6 \times Amount + b$$



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$$
\begin{aligned}
Logit(0.71) = \quad & 1.89 \times CarType_U \\
& -11.79 \times MonthlyFee \\
& - \ 5.74 \times CompRateRatio \\
& + \ 1.37 \times CarType_R \\
& - \ 1.14 \times FICO \\
& - \ 0.66 \times Amount \\
& + \ 2.26
\end{aligned}
$$

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$$CompRateRatio = \frac{eCarsRate}{CompetitionRate}$$

$$\boxed{eCarsRate = \frac{CompetitionRate}{CompRateRatio}}$$

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simulation

RAPSA predicts...

	client **rejects** original rate	client **accepts** original rate
	offer **revised** rates	offer **original** rates
client **rejects** offer	88,823	73,475
client **accepts** offer	4,307	41,480

ACTUAL

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simulation

RAPSA
successfully
predicted

91%

of the clients
who actually
accepted

out of all
clients who
were predicted
to accept,

36%

actually
accepted

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40%

projected increase
in profits from
$182 million to
$255 million

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