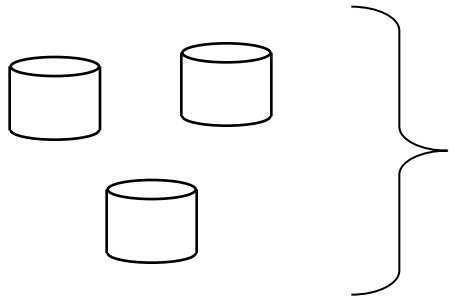


Prediction Model: change of firm of accountants

'Traces' of activities

A company is its sequence of decissions and actions

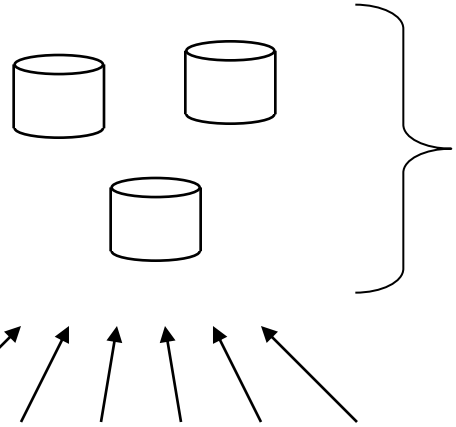
Strategy

Environment

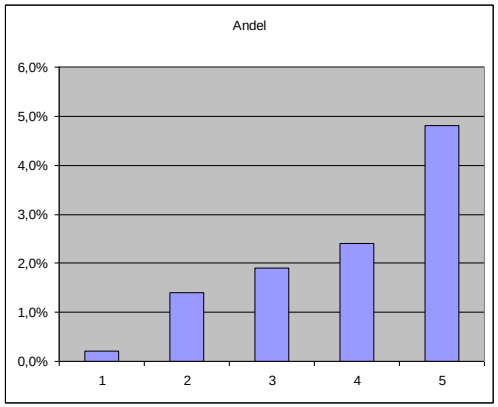
Resources

Competence

PARs
company database



Prediction Model:
change of firm of accountants



- Market structure
- Constant changes

Exampel.

Balance sheet data and key ratios: level, change and trend.
(ex. investments, profit, financial structure, etc.)

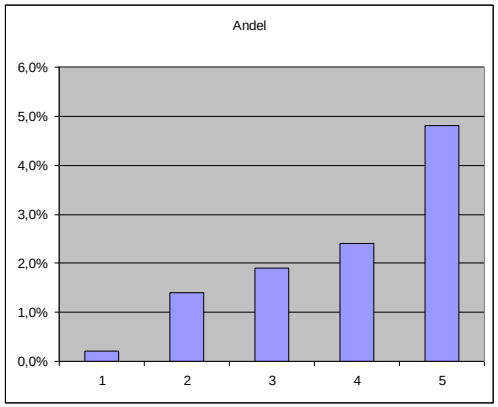
Situation and changes:
parent company, subsidiaries, bransches,
foreign ownership, etc.

Special events:
merger, changed business, new parent company, etc.

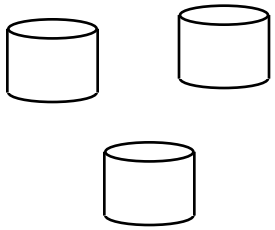
Company cars: fleet size, change, new cars

Board: changed members, mean age, accountants, …

Prediction Model:
change of firm of accountants

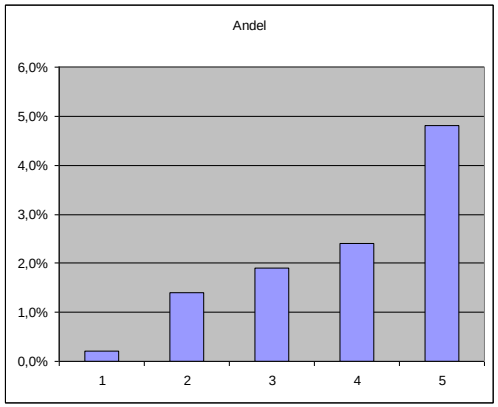


PARs
company database



In total 43 potentail key ratios, trends, measures of change, events, etc.

Prediction Model:
change of firm of accountants



Example
Using key ratios in the prediction model

PARs prediction models

Up to 6 years of 'historic' data/events are analyzed….

Client customer data

PARs company database

SCB PRV TS RSV

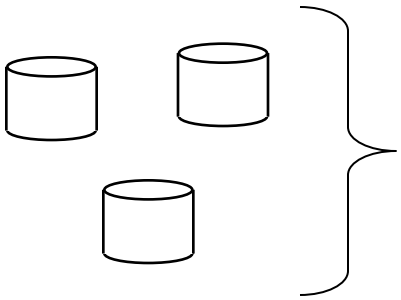
… to identify a model concerning customer behaviour during the coming 12 months.

PARs prediction models

To evaluate the model
we classify all companies,
customers and non-customers …

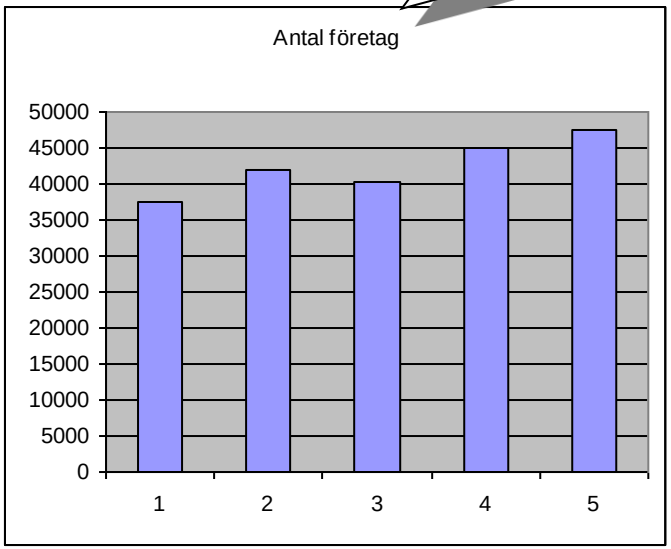
t_0

All companies allocated in five classes containing about 20% each.



PARs
company database

Prediction model:
Increasing
Customer
Revenue



Low prognosis

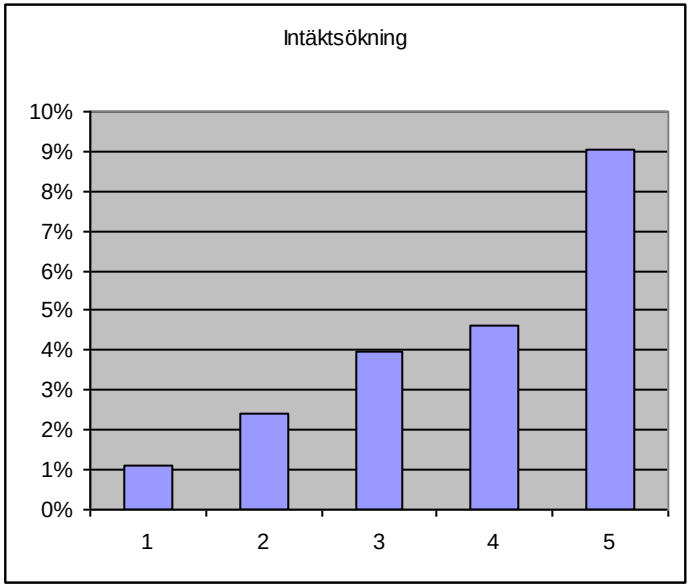
High prognosis

PARs prediction models

… and 12 months later we measure the actual outcome in terms of increased revenue, proportion of new customers, etc.

Increased revenue in each class one year after classification.

Clients customer data



Evaluation: Prediction model concerning customers changing to a full service firm of accountants

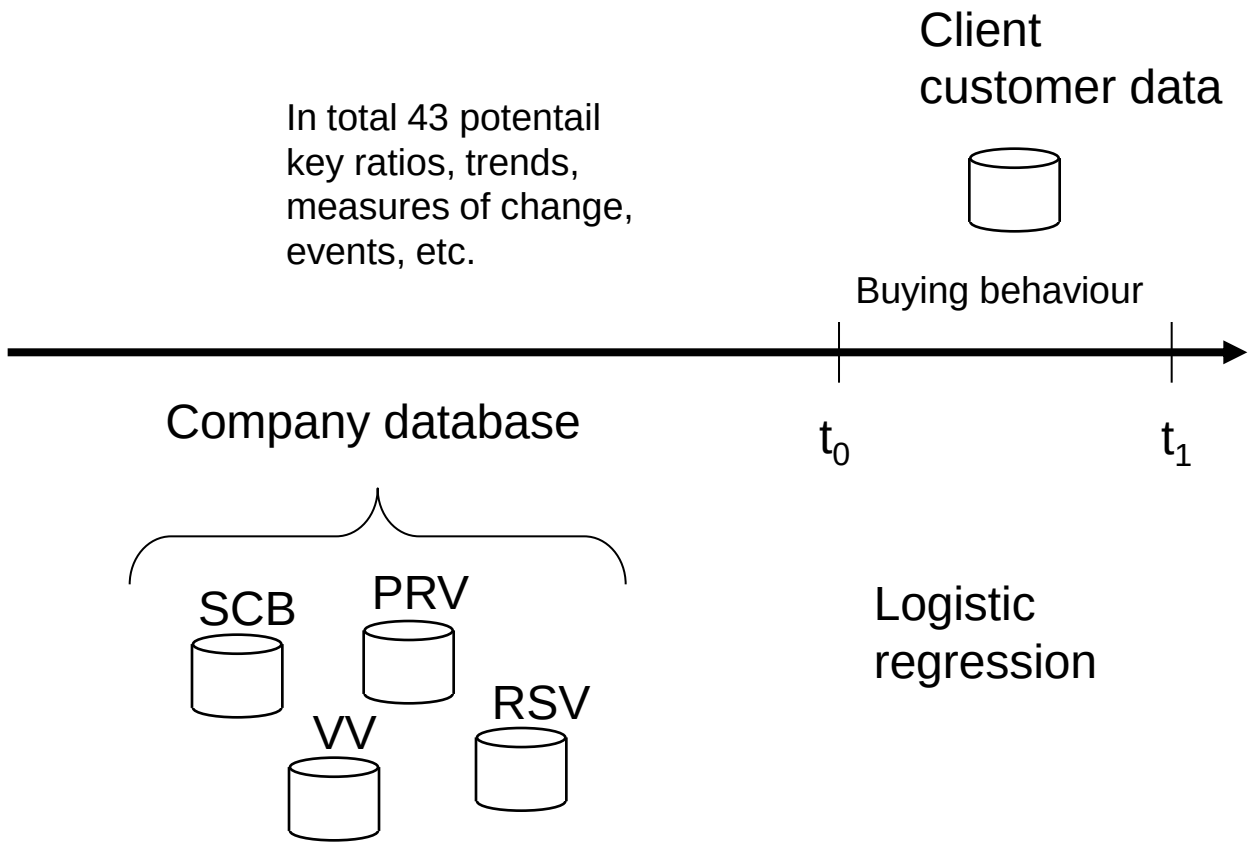
FÖRDELNING AV ANTAL FÖRETAG SOM BYTER TILL STÖRRE BYRÅ UNDER KOMMANDE ÅR
EXKLUSIVE DE FALL DÄR DEN MINDRE BYRÅN UPPHÖR/KÖPS UPP

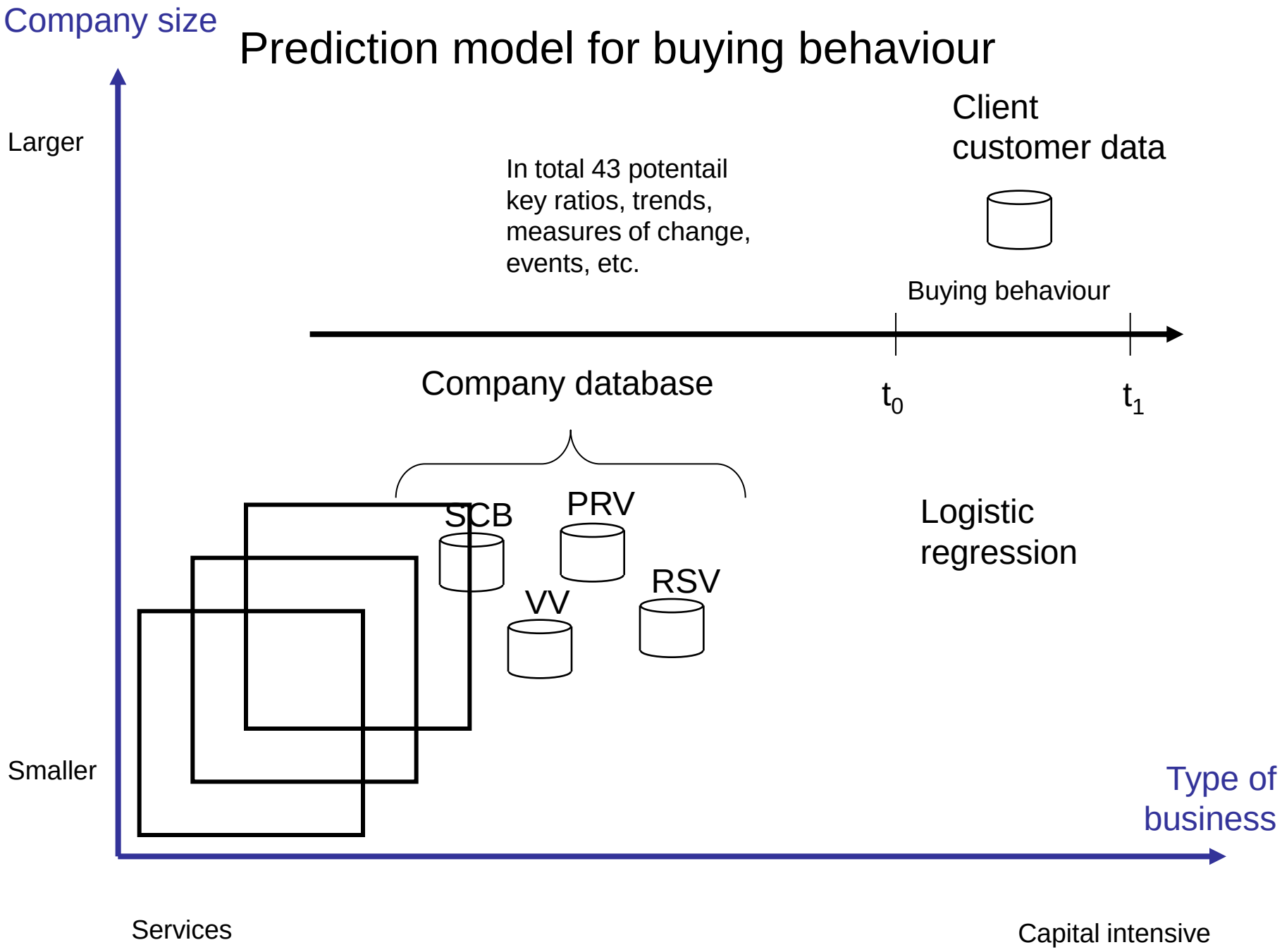
	FÖRETAG 2003	BYTE TILL STÖRRE BYRÅ
	Antal	Andel
PROGNOSKLASS BYRÅBYTE		
SB1	10725	0.2%
SB2	31161	1.4%
SB3	31458	1.9%
SB4	30732	2.4%
SB5	21109	4.8%
Totalt	125192	2.3%

Model classification

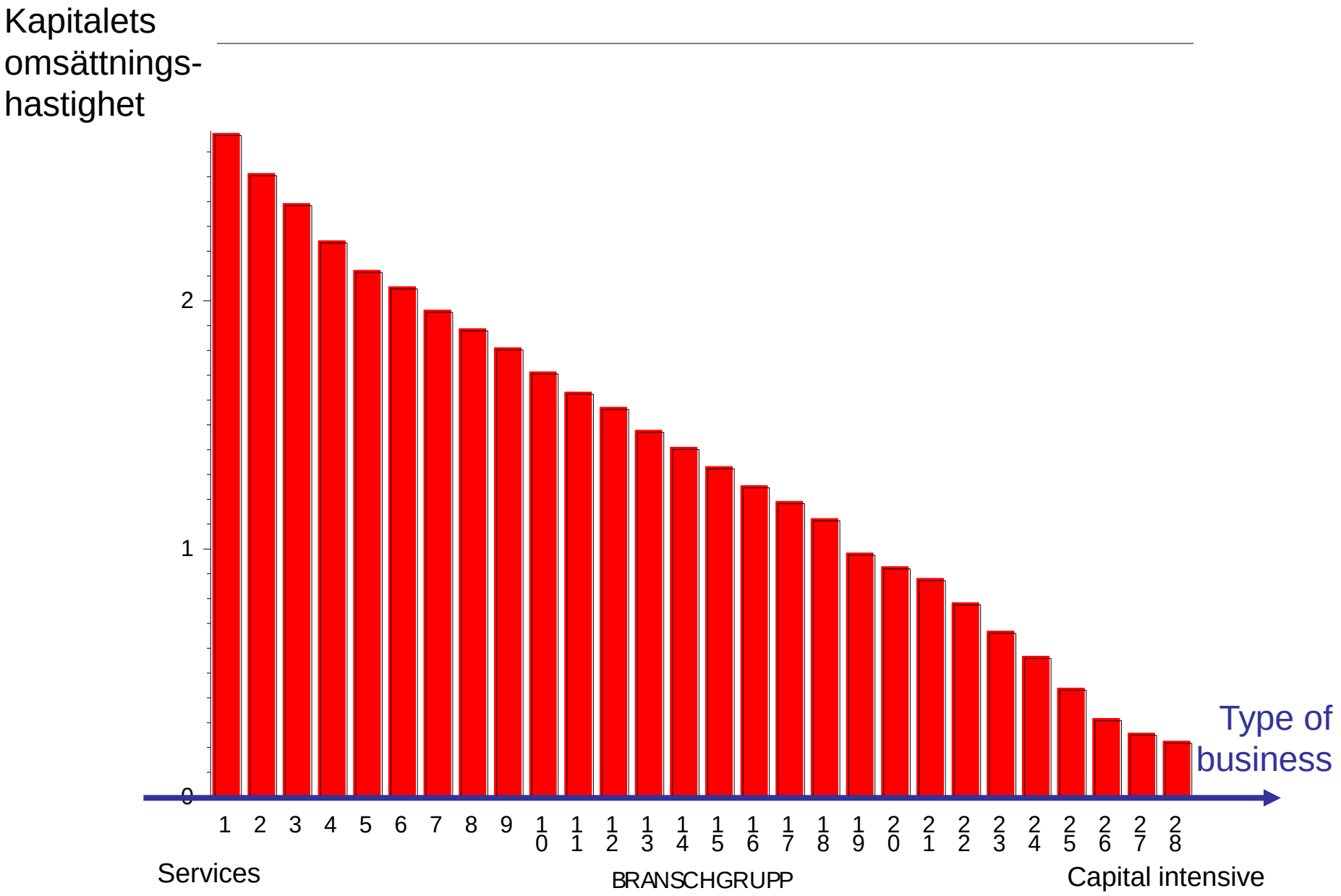
Actual change one year after classification

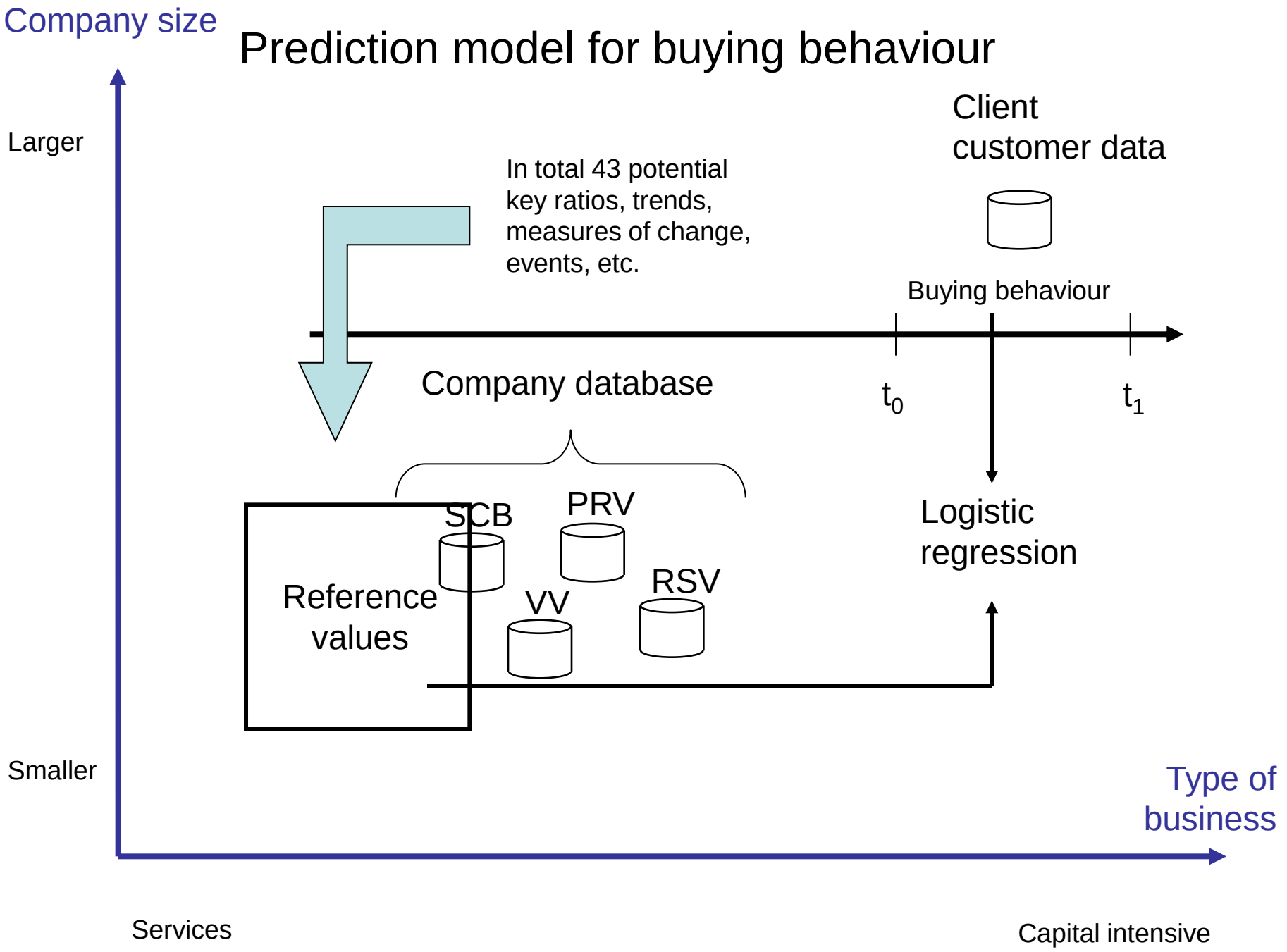
Prediction model for buying behaviour




Company size
Prediction model for buying behaviour
Larger
Client
customer data
In total 43 potentail
key ratios, trends,
measures of change,
events, etc.
Buying behaviour
Company database
t_0
t_1
SCB
PRV
RSV
VV
Logistic
regression
Smaller
Type of
business
Services
Capital intensive

Prediction model for buying behaviour

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PRV
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Reference
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Logistic
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Smaller
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Services
Capital intensive

PAR / Bisnode database

Tables

Basic company data
One record per company.
Contains name, address, startdate, enddate, line of business, etc.

FTG

Historic company data
Many records per company.
Contains the accumulated historic records from table FTG

FTG_H

Balance sheet data
One record per annual report (thus many records per company).
Turnover, profit, key ratios, etc.

BOKSLUT

Board member data
Many records per company and person.

FUNKTION_PERIOD

And many more tables!

How?

Serrano
Historic names etc.
Board data

Sampling for times series statistics

Statistical analysis

Logistic prediction model

The purpose is to predict expected customer behaviour by a model using external company data (trends, key ratios, …)

$$\text{Hitrate} = p(\text{customer}) = \frac{e^z}{1+e^z}$$

where:

$$z = \beta_0+\beta_1 x_1+ \beta_2 x_2+ \beta_3 x_3+\ldots+ \beta_k x_k$$

$x_1, \ldots x_k$	company variables (trends, key ratios, …) we would like to use to explain expected customer behaviour
$\beta_1, \ldots \beta_k$	Model parameters to be estimated by analysing customer data + external company data

Logistic prediction model

$x_1, \ldots x_k$ company variables (trends, key ratios, …) we would like to use to explain expected customer behaviour

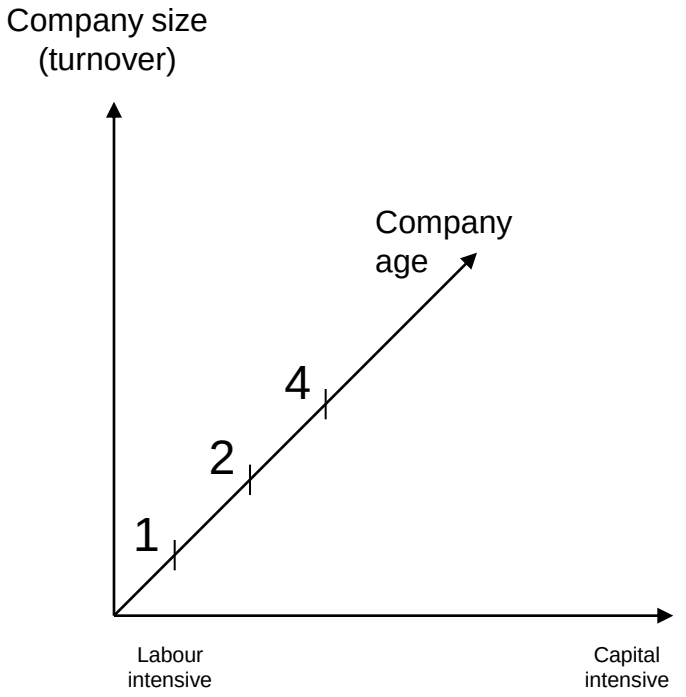
How could we use key ratios measuring:
- Growt
- Profit

When we know that they are related to company size, line of business, etc.?

We have to relate the individual companies key ratios to ”mean values” in groups representing varoius types of companies.

Logistic prediction model

There is not one single model ($z = \beta_0+\beta_1x_1+ \beta_2x_2+ \beta_3x_3+\ldots+ \beta_kx_k$) working for all companies



We estimate several model for combinations of:

- Company size
- Line of business
- Company age

Logistic prediction model

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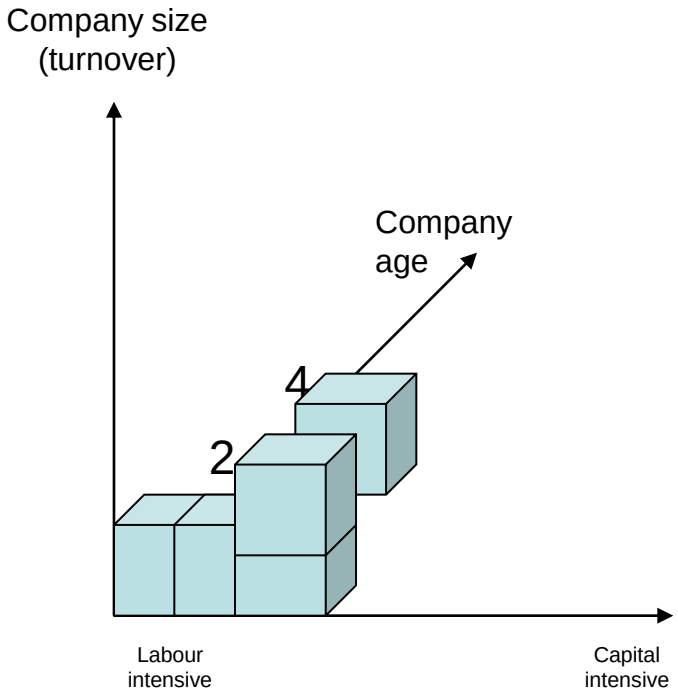

We estimate several model for combinations of:

- Company size
- Line of business
- Company age

In total 192 models describing various types of companies

Logistic prediction model

Exampel: midsize companies in a line of business representing ”medium capital intensity” and having 4 years or more of activity