Introducing a BBS Tax in Germany

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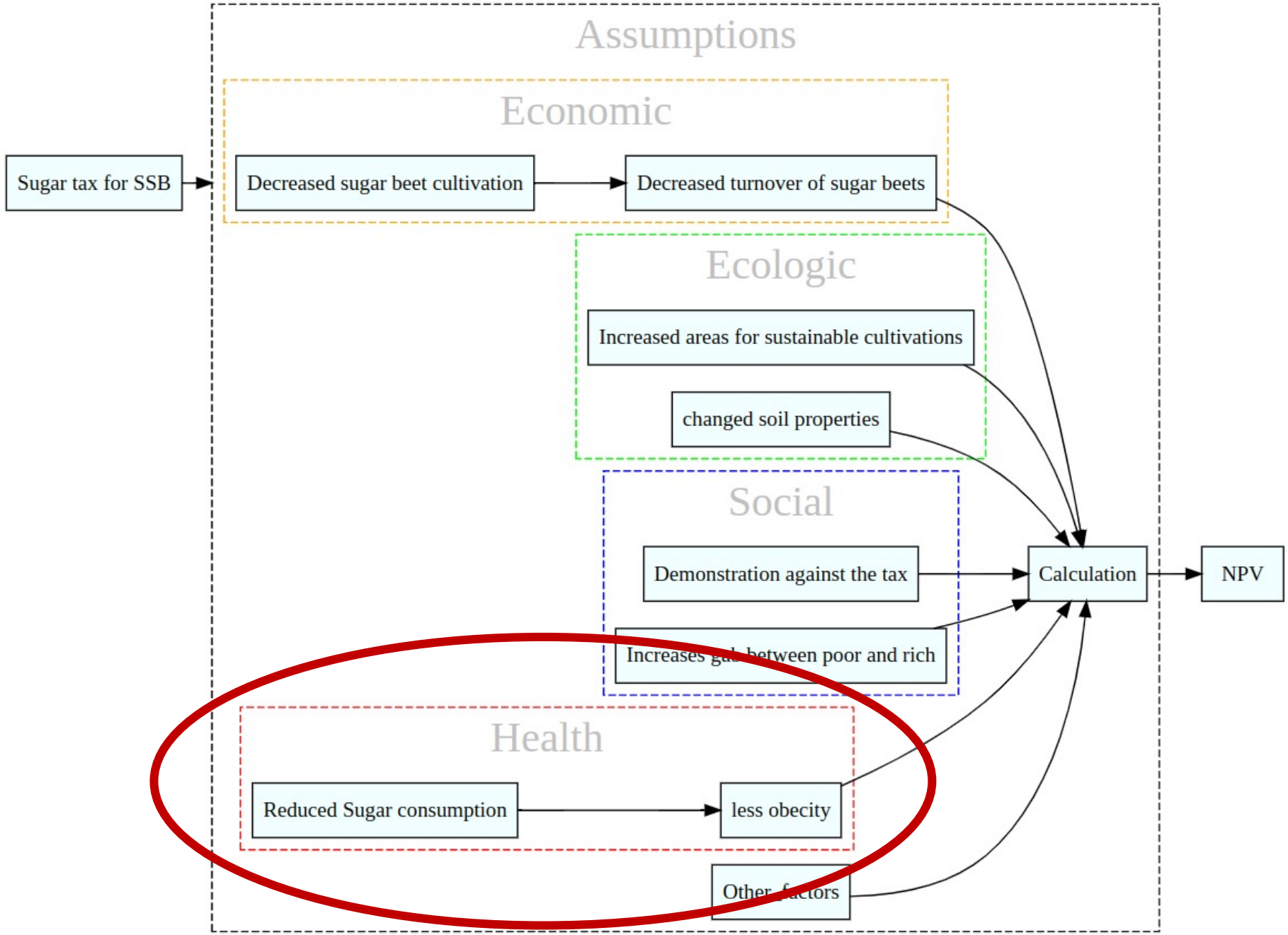
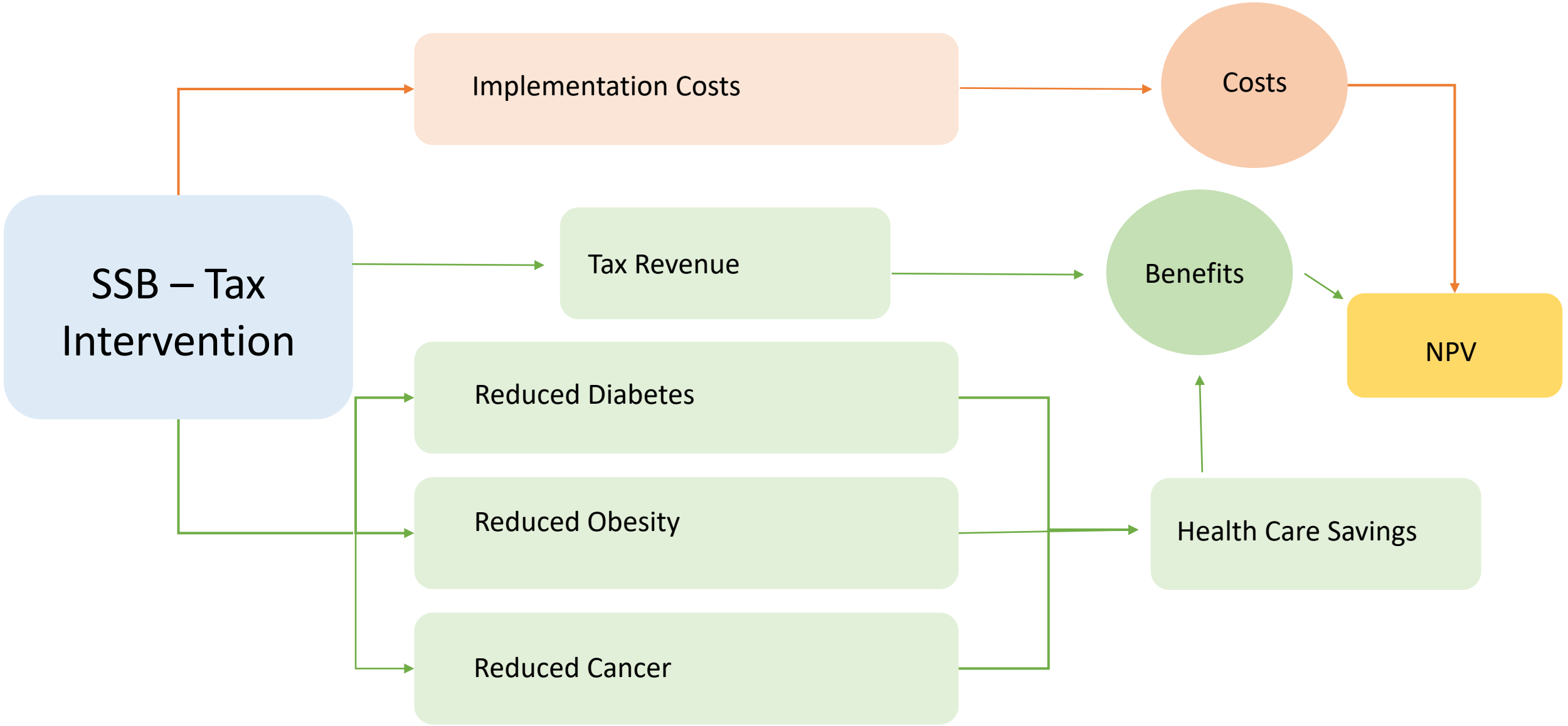
General Modell



For the decision analysis, we are focusing on health care costs

Decision Modell



Estimate value

- Saved Health care cost
  - saved health care cost for diabetes = reduced incidences of diabetes * saved health care cost for diabetes per case
  - saved health care cost for obesities = reduced incidences of obesity * saved health care cost for obesity per case saved health care cost for cancer = reduced incidences of cancer * saved health care cost for cancer per case

- Cost for implementation
  - Government implementation
  - Costs for accompanying campaigns/public information
  - Industry compliance

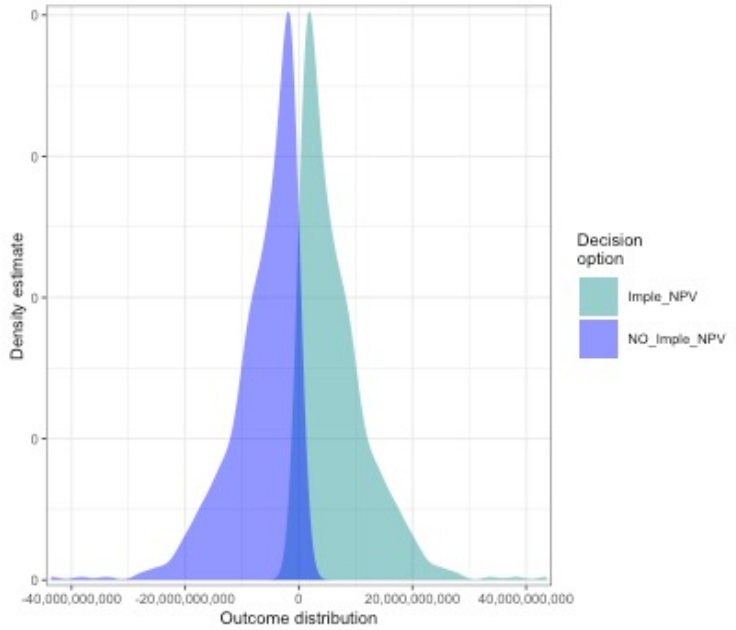
R code for estimation

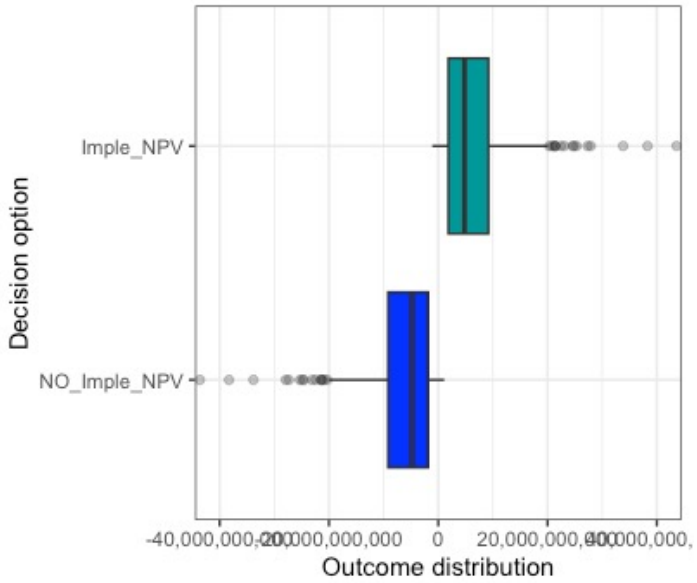
```r
library(decisionSupport)


decision_SSB_Tax <- function(x, varnames){
  #Estimate Saved cost of Diabetes care
  saved_diabetes <- red_diabetes * saved_diabetes
  #Estimate Saved cost of Obesities care
  saved_obesities <- red_obesity * saved_obesity
  #Estimate Saved cost of Cancers care
  saved_cancer <- red_cancer * saved_cancer
  #calculation saved Health care
  saved_health_care <- sum(saved_diabetes + saved_obesities +
                             saved_cancer)
  #sum of saved and revenue
  saved_and_revenue <- saved_health_care + revenue_tax
  #Estimate implement cost
  implementation_cost <- sum(intervention_costs_admin + intervention_costs_prod +
                               intervention_costs_info)
  #result of implementation
  result_imple <-  saved_and_revenue - implementation_cost
  result_n_imple <- implementation_cost -  saved_and_revenue
  #not clear with discount rate
  NPV_imple <-
    discount(result_imple, discount_rate, calculate_NPV = TRUE)
  NPV_n_imple <-
    discount(result_n_imple, discount_rate, calculate_NPV = TRUE)
  #Generate the list of outputs from the Monte Carlo simulation
  return(list(Imple_NPV = NPV_imple,
              NO_Imple_NPV = NPV_n_imple,
              NPV_decision_do = NPV_imple - NPV_n_imple,
              Cashflow_decision_do = NPV_imple - NPV_n_imple))
}
```

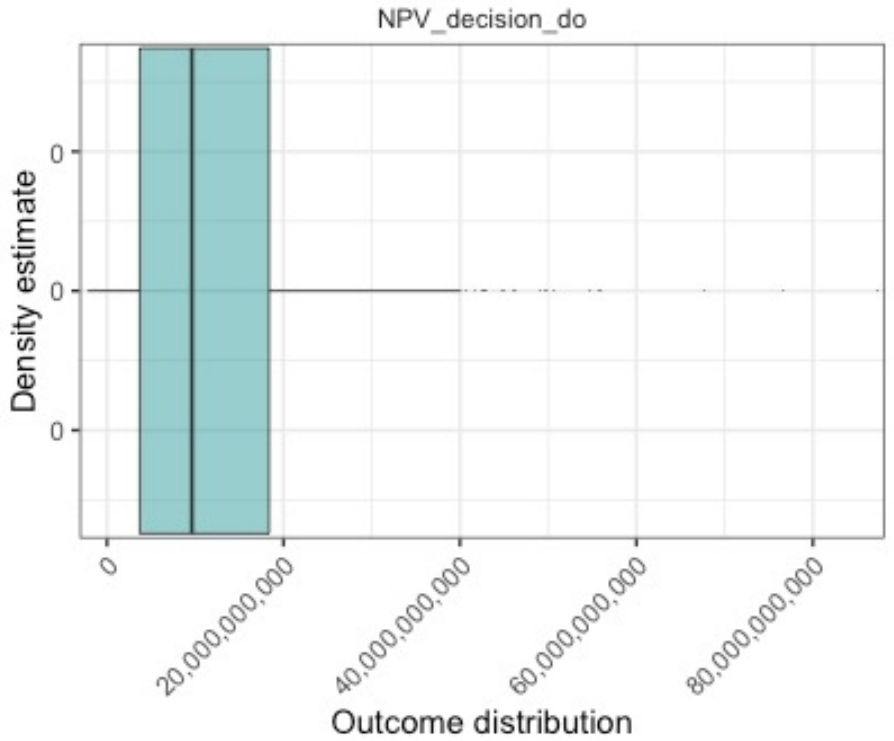
Input table

description	label	variable	distribution	lower	median	upper	unit
Establishment costs	Government implementation	intervention_costs_admin	posnorm	1371265500.00		1782645150.00	Euro
	Industry compliance	intervention_costs_prod	posnorm	1353124040.00		1791975080.00	Euro
	Costs for accompanying campaigns/public information	intervention_costs_info	posnorm	1000000.00		5000000.00	Euro
Reduced incidences of	Diabetes	red_diabetes	posnorm	155400.00		218100.00	Case
	Obesity	red_obesity	posnorm	1604000.00		2857700.00	Case
	Cancer	red_cancer	posnorm	16040.00		28577.00	Case
Saved health care costs per case	Diabetes	saved_diabetes	posnorm	4524.30		4917.20	Euro
	Obesity	saved_obesity	posnorm	95.19		95.34	Euro
	Cancer	saved_cancer	posnorm	95189.27		95340.08	Euro
Tax income for the government	Tax revenue	revenue_tax	posnorm	19200000.00		19200000000.00	Euro
Discount rate (%)	Discount rate (%)	discount_rate	posnorm	1.00		5.00	

plot with the estimate results







More problem

- If we run the code for cash flow we get the warning message:
  - Error: Time scale is not greater than or equal to '2'. Consider adding more time to the model.!!

Next step

- Figure out how we can solve the problem with cash flows
- More estimation?