Change in industrial inventories is a very important value that is surveyed in Israel CBS on a quarterly frequency.
This change in the inventories is used by the macroeconomic department in the CBS to calculate the GDP along with other data.
The problem with the Industrial Inventories Quarterly Survey is that there are many missing data in the reports due to two reasons:
1. Many firms do not calculate inventory value in the quarterly frequency but only on the annual basis.
2. The firms report too late to the survey.
The missing data is not missing at random but it is missing primarily from the small and medium firms.
In this research, at first I examined an imputation methodology on yearly data panel from the "Manufacturing, Mining and Quarrying Survey" and then on a quarterly panel from the “Industrial Inventories Quarterly Survey".
I examined the imputation with the regression imputation, nearest neighbor imputation, cold deck and the revenue inventories ratio.
The results were tested with MAPE(mean absolute percentage error) and with the standard deviation of the total value of imputation. They show that cold deck and the revenue inventories ratio outperform the other imputation methodology.
The optimal imputation methodology which minimize the error term is an integration of those two methods.
According to the research results, I designed a management system that implements the imputation methodology and maximizes the useful data by reception of administrative data together with the survey reports.
The accuracy of the imputation methodology(that was tested a year after the implementation) enables the Israel CBS to calculate the change in inventories not only for the industrial sector but also on each branch level.
The data about the change in inventories could be used in future researches to forecast business cycles .