The objective of this thesis is to study the method of securitie selection and fund allocation in an optimal portfolio. The method and criteri are constructed from a quantitive method applied to investment theory.   Th criteria used in ranking securities consist of turnover liquidity, ris premium to risk ratio and diversification of securities.   A nonlinear program ming model is used for the allocation of funds.

The return of a porfolio of which the funds are allocated by nonlinear programming method is compared with the one which the funds ar allocated by a uniform random method, on the assumption that the nonlinea programming method derives a better return than the uniform random method The study also compares the return of a portfolio as follows :

1) A uniform random method is applied for both securities selectio and funds allocation.

2) A uniform random method is applied for securities selection whe funds are allocated in equal proportions.

3) The method of weighing of turnover liquidity is used for securiti selection and funds allocation.

From the statistical analysis and experimentation, we found that

1) The securities selection by using turnover liquidity, risk premiu to risk ratio, and diversification of securities including the nonlinea programming method in the funds allocation results a significant highe return than the other method.

2) We can not absolutely conclude that which type of holding peric of investment yields better return.

3) From the sample of random proportions, which was 100 times sample, we found that the funds allocated by a nonlinear programming methc provides a better return than by the random method.

The result of the study supports the hypothesis and conforms wit both quantitative analysis theory and investment theory.