Risks and return are two vital components of any financial investment. The ultimate goal of investing is minimizing risk while maximizing the return of the investment. A diversified portfolio is one such method to achieve this state. However, an investor with a diversified portfolio is susceptible to risk related to the overall market, known as systematic risk. Hence, in risk evaluation, an investor is more concerned with a systematic risk, or a risk that cannot be eliminated by diversification. In this research, our focus will be on the study of a portfolio consisting of various stocks and securities. In particular, we will look at a market portfolio that is assumed to be optimal under the capital asset pricing model (CAPM). We will be able to measure the systematic risk of a security by calculating the sensitivity of the security’s return against the return of the market portfolio, known as the beta of the security. Thus, using the CAPM, the beta will determine the risk premium an investor needs to consider when making crucial financial decisions. (Received September 12, 2019)