

Financial modelling

[Finance](#), [Investment](#)



Portfolio theory examines the relationship that exists between risk and return when investing in equities. Based upon the pioneering work of Markowitz, it is explained how a rational investor in an efficient capital market, requiring an optimal portfolio of investments, can maximize utility, having regard to the relationship between returns and risk associated with their covariability of returns, within portfolio (Hill, 1998).

This assignment is designed to test some of the theoretical concepts of portfolio theory and to examine how investment decisions in practice, could be influenced and improved by application of the theory. Therefore, we will look at the effects of risk reduction, firstly by modeling equities from 3 specific sectors within UK and then by introducing 8 international equities to the portfolios. The risk/return relationship will be further examined by the application of the Capital Market Line. Low risk sector There are two specific reasons why this report has chosen to employ bank sector as a source of low risk sector.

First of all, the UK banking sector is dominated by large banks, especially the big five, which are HSBC Bank UK, Royal Bank of Scotland, Barclays, Halifax Bank of Scotland and Lloyds TSB, hence making strong concentration and indicating lack of competition in UK banking sector (Cruickshank Report, 2000). Secondly, after the hard time in the early 1990s, UK banks continued to perform well at their profitability. In 2004, the big UK banks delivered a return on equity to shareholders of 16 per cent, substantially above the average return of FTSE listed companies ([http://www. neweconomics. org](http://www.neweconomics.org)).

Such high market concentration and stable return performance can evident that the UK bank sector is a low risk sector. Looking at Figure 1, line AB is the efficient frontier, the portfolio area laying on which represent the greatest possible expected return for a given level of risk (Lumby and Jones, 2000). Therefore, a high risk-averse investor would not be interesting in portfolio Z because portfolio D would give the investor the maximize return(ERP= 7%) for the same risk (0. 153) as portfolio Z(ERP= 4%) , while the less cautious investor would prefer portfolio B than C hence point B provide highest return at such high risk.

If the portfolios are combined with the risk-free assets, it is visible from Figure 1 that except portfolios on line rf F, which called capital market line (CML), no other portfolio of risky assets when combined with the risk-free assets allows the investor to achieve higher returns for a given risk(Pike and Neale, 2006). Furthermore, the CML highlight that portfolio F (SDP= 2. 3%, ERP= 13%) is the most desirable portfolio for risk-averting investors, which 0. 4 of the funds invested in Barclay and 0. 6 in HBOS.

As a result, the investor who wishes to maximize returns for a given risk or minimize risk for a given return would only interesting in the portfolios located on the CML. Investors who wished to locate on the CML somewhere between rf(0, 0. 05) and F (0. 023, 0. 13) would invest a proportion of their funds at F while placing the rest of their funds on risk-free assets. If investor who wants to have higher return, they can place all their funds onto portfolio F and borrow additional funds which are invested in F as well. In addition,

according to Pike and Neale(2006), the lower the correlation, the greater the portfolio effect achievable.

Table 1 show that correlation between Barclay and HBOS is high comparing with the correlations. However, due to Barclay and HBOS's risk and return outperform than other 4 banks, the high correlation would not affect the portfolio F to be the best portfolio in the bank sector. High risk sector Competitive pressures have a significant effect on the financial condition of companies in the UK computer sector. More than 30, 000 software companies, including international players such as Microsoft and Oracle and many small innovative companies, are established in UK software ; computer service sector ([http://www.](http://www.investoverseas.org)

[investoverseas.org](http://www.investoverseas.org)). Furthermore, the competition and clients choose on the basis of skills cause strongly spending growth on improvement of technology, which gives high financial budget and high financial risk to companies in the software and computer service sector. In my opinion, the software ; computer service sector is a high risk sector. The six companies within the sector are: ICM Computer Group plc, Touchstone Group PLC, Gladstone PLC, Innovation Group plc, Alphameric plc and Xansa PLC.