CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

5.1) Summary

The changes in volatility of the Malaysia bond and stock market over the period of 1994 to 2002 have been documented in this study. It is observed that PDS has the highest monthly return level (range –18 to 99.62%), followed by stocks (range –25% to 33%) and MGS (range –5 to 9%). PDS returns exceed the returns of stocks for the period of March to June 2000. MGS LT has a higher return fluctuation than the other MGS. An examination of bond and stock market volatility indicates that there are significant changes in stock and bond market volatility over time. The discrete and dynamic measures of F-tests show that MGS ST and PDS volatility changes tremendously over time compared to the other MGS and stocks. There are fewer significant changes in volatility over time for stocks compared to MGS and PDS, indicating that while the stock market is having a higher level of volatility (return fluctuation), its volatility is more stable than bond volatility. Major volatility (12MMA SD) peaks for MGS AS, MGS ST and MGS MT occurred on August 1998 and December 1999 respectively. The highest volatility peak for MGS LT and PDS occurred on June 2002 and June 2001 respectively. Overall, MGS AS, MGS ST, MGS MT and stocks have the same 12-month moving average standard deviation of returns historical profile. The volatility of PDS is increasing, it's the highest and moved in the opposite direction to the stocks and MGS bonds started from May 2000 to May 2002, before it was abolished on July 2002. The highest volatility period for the stock, MGS AS, MGS ST and MGS MT occurs in 1997 to 1999. Likewise, the highest volatility period for the MGS LT and PDS occurs in 2000 to 2002.

As expected, an analysis of the 12MMA SDR indicates that PDS has the highest SDR, followed by MGS LT and other MGS classes. The SDR analysis shows that the longer the maturity term, the higher is the bond volatility. This can be shown by the average SDR for the MGS AS (0.11), MGS ST (0.06), MGS MT (0.12) and MGS LT (0.16). The test on the SDR trend-lines shows that only the PDS and the MGS LT have the positive trend

over the time period under study while all the MGS bond categories have the negative trend. This implies that the volatility level for the PDS and MGS LT (MGS AS, MGS ST and MGS MT) increases faster (slower) than the stocks volatility. However, started from November 2000, the SDR for the MGS AS, and MGS MT moves in the positive trend, indicating an increase in volatility level for these government securities. The recent positive SDR trend for the MGS and PDS is in line with the results obtained by Reily et al. (2000), who find that the volatility of bonds is increasing faster than the stock volatility in the US over time.

The systematic risk measure (beta) of bonds versus stocks is not stable over time and varies widely for MGS and PDS. The beta range is recorded as – 0.6392 to 1.7016 for PDS, -0.3410 to 0.1107 for MGS LT, -0.1106 to 0.0967 for MGS MT, -0.0278 to 0.0440 for MGS ST and –0.1379 to 0.0929 for MGS AS. An analysis of the beta slope indicates that only PDS has the positive trend while other MGS classes have the negative trend. In other words, there has been an overall increase / decrease in the risk of PDS / MGS relative to the risk for stocks. The plot of the beta and SDR graphs for the MGS and PDS show that the historical beta profiles are both differs from or similar to the historical SDR profiles. These graphs show that for the recent period of September 2001 to October 2002, the MGS is relatively volatile as measured by the high SDR, but in addition that the returns of MGS are moving counter to stocks. The time periods with negative beta and high SDR might be an observation supporting the notion of "flight-to-quality" and "decoupling" effect discussed by Stivers et al. (2002) and Harper (2003). On the other hand, for the period of June 2001 to June 2002, PDS is extremely volatile and it moves in the same direction as the stocks. These trends send a beneficial signal to the bond analysts and the portfolio managers that MGS is a suitable risk hedging capital market instrument compared to the PDS. The analysis of the correlation of bond market returns relative to the stock market returns confirms the characters and behavior of the historical beta records for the bond market. Similar to the beta profile, the correlation varies widely as follows: -0.7513 to 0.7199 for MGS all series, -0.6319 to 0.6990 for MGS

short-term bonds, -0.6461 to 0.7652 for MGS medium-term bonds, -0.7386 to 0.6694 for MGS Long-term bonds and –0.4224 to 0.5618 for PDS. The 12MMA beta and correlation analysis indicates that the relationship between bond market and stock market is very unstable. The systematic risk of the PDS (MGS) is increasing (decreasing) relative to the risk of the stocks over time. During the time period under study, the volatility for MGS AS, MGS ST and MGS MT increasing slower than the stock volatility while it turns up to be the other way for MGS LT and PDS.

5.2) Discussion Of Results

Most of the literature discussed in chapter 2 shows that asset allocation strategy is an important factor affecting the performance of an investment portfolio. Proper asset allocation strategy ensures good return to the investors while limiting the risk facing the investors. Asset allocation fulfills the risk-return tradeoff theory. Besides, studies also show the existence of decoupling effect, to which the bond market is moving counter the stock market during volatile periods. Decoupling effect shows that bonds are good hedge for stocks in the US {Harper (2003), Stivers and Sun (2002)}. On the other hand, Patel et al. (1998) found that the volatility of the bond market and stock market between the developed countries and emerging markets is more correlated during the periods of high volatility. Kortian et al. (1996) found that the volatility for bonds and stocks in Australia is higher during bear market and the volatility is found to be more correlated both across countries and markets during period of high volatility. In addition, Reily et al. (2000) found that the historical beta for the bond market is increasing overtime; meaning bonds are becoming more risky relative to stocks. In short, Reily et al. found that bonds and stocks are becoming more correlated. Results from Patel et al., Kortian et al. and Reily et al. shows that bonds might not suitable to be used to hedge the risk for stock portfolio.

Results of the study show that the performance of MGS and PDS in Malaysia is in line with the risk-return tradeoff theory. Theoretically, equity has a higher volatility compared to the bond due to higher return. The higher level of return

and standard deviation of return for PDS compared to stocks and MGS in this study supports the above theory. Theory also suggests that the volatility of bonds is proportional to its maturity term. Results show that MGS LT has the highest volatility and return, followed by MGS MT, MGS AS and MGS ST, which is in line with theory. Besides, bonds should be less or negatively correlated to stocks as it is normally used to hedge against market risk. Results of the study show that MGS has the negative beta trend-line over time, meaning that MGS serves as a good hedge for stocks portfolio during volatile period. However, the beta trend-line is positive for PDS, showing that it's more correlated to stocks. The reason of strong correlation between the stocks and PDS might be due to the fact that most of the PDS are convertibles or loan stocks, which tends to track the mother share. Thus, concerns that plague stocks often have a similar effect on the value of corporate debt. As such, it might not be wise to invest in PDS if it increases the overall risk of the portfolio.

Reily et al. (2000) finds that the volatility of the government bond market in US is increasing faster than the stock volatility and there has been an increase in the systematic risk for the government bond relative to stock. The increasing volatility of government bond in the US might be due to active trading of the US government bond around the clock (24 hours) through several Financial Exchange centers in US, Japan, London etc. This creates high demand and an efficient market for the US government bond. Besides, the remarkable technology advances in the computer and communication industry ensure investors to react quickly to information. The high demand on bonds and the Information Technology advances provide liquidity to the US government bond worldwide and cause the price to change quickly. Quick price change turns into high price or return volatility of the financial asset. The less-efficient MGS market in Malaysia might be due to lower transaction activity caused by the portfolio management strategy and the absence of an efficient Financial Exchange center.

Most of the local bonds investors are managing their portfolio passively. They use the buy-and-hold strategy for asset and liability matching purposes. Investors tend to hold the bonds until the maturity date, rather than trading the bonds in the secondary market. In addition, bond market in Malaysia is still at its "young" stage. The shortfall in the financial exchange center causes high transaction costs for the investors. This limits the number of investors to institutional investors, unit trust funds or insurance companies, who has the ability to transact in big volume. Passive portfolio management and Limited market player groups reduce bonds transaction and consequently, the possibility of huge price changes (volatility) in the bond market. However, in the long run, the government's move to improve the efficiency of the financial center for bond market in Malaysia and the change of passive portfolio management to the active portfolio management strategy might cause a strong correlation between the stock and the bond market in future, which is in line with the bond-stock correlation trend in US (Reily et al., 2000). In other words, the bond market and stock market in Malaysia might become more correlated if the barriers stated above can be eliminated.

5.3)   Implications

The documentation of changes in bond return volatility is essential for the bond analysts and portfolio managers who need to estimate future bond market volatility. The volatility indicates the market risks facing the portfolio managers who make the asset allocation decisions. The results indicate that the average monthly volatility for stock and bond markets is as follows: KLSE (8.71%), MGS all series (0.96%), MGS short-term bonds (0.55%), MGS medium-term bonds (1.09%), MGS long-term bonds (1.28%) and PDS (10.3%). The average standard deviation for MGS is 0.972%, which is about the same to the average monthly volatility for the MGS all series bonds, indicating that the MGS all series bond index is representative for the overall MGS bond market in Malaysia. The average volatility for MGS bond market is about 11% (0.972 / 8.71) of the stock volatility. MGS and PDS fulfill the risk-return tradeoff criteria. PDS has the highest return and volatility while MGS short-term bonds have the lowest returns and volatility. The recent (started

end of 2001) positive trend of the SDR for MGS and PDS indicates that the bonds volatility level is increasing faster than the stock volatility.

A major implication for the portfolio managers is the relationship between bond market and stock market volatility because this relationship has a critical effect on asset allocation decisions. The results of the study show that there are large changes in the volatility of the bonds and stocks. The low beta and correlation for bonds relative to the returns of stocks show that the volatility changes for the two asset classes are not highly correlated. The low beta and correlation encourage diversification between the MGS and the stocks. A plot of moving beta between the stocks and bonds indicates an upward (downward) trend for the PDS (MGS) bonds. The moving correlation, which shows a same cyclical upward or downward trend as the historical beta profile confirms this beta relationship. The negative (positive) trend of beta for the MGS (PDS) bond markets with the recent (started end of 2001) positive trend of the SDR for the MGS and PDS bonds indicates that MGS bond is more suitable for risk hedging compared to the PDS bonds. The significant changes in volatility of bond and stock market over time implies that portfolio rebalance as per suggested by Loo (2001) is essential for managing the risk of the portfolio in today's volatile market.

The results obtained from this study is not in line with the increasing correlation between bonds and stocks obtained by Reily et al. (2000), which implied that the stocks are more interest rate sensitive and bonds are not as good for diversification purposes with stock portfolio. This study found that the correlation between the bonds and stocks markets in Malaysia is negative and is suitable for diversification purposes with stock market. The decreasing correlation implies a bigger allocation to bonds in a portfolio asset allocation decision.

5.4)   Limitation Of Study

This study is exploratory in nature. It attempts only to detect the existence of significant changes in stock market and bond market returns; and to examine whether the relative volatility of bonds compared to stocks is increasing overtime. It does not provide an in-depth study on the possible causes that affect the volatility of the Malaysia bond market or the impact of the monetary policy, fiscal policy or other international financial crisis on the local bond market. Either, it does not provide a regression model or a mathematical equation that links the returns of stock and bond market, which is a valuable tool for the investors to estimate the returns of bond market base on the stock market returns.

The data available for the bond returns from the RAM-Quantshop indices is rather short and "young". RAM-Quantshop MGS indices and RAM-Listed Bond index is the only available public data that can be used in this study. RAM-Quantshop MGS indices cover the period of January 1994 till to date for MGS, while the RAM-Listed bond index is only available for the period of December 1995 to June 2002. Besides, the method used to calculate the MGS and PDS indices is different. Apart from that, the method used for calculating the RAM-Listed bond index is the same as the KLSE index, which is based on the fluctuation in market price of these financial assets. On the other hand, the RAM-Quantshop MGS indices measure the changing value of MGS outstanding in the market, taking into account the capital appreciation, accrued interest and reinvestment of coupon payment. Accrued interest contributes positive impact to the MGS indices. Another limitation on the bond indices is that RAM-Listed bond index might not be representative for measuring the corporate bond market, as most of the PDS are OTC traded.

5.5)   Suggestions For Further Studies

It would be of interest to researchers to extend the volatility analysis to other bond classes such as Khazanah and Cagamas bonds. Besides, an index that measures the performance of the OTC traded PDS should be established for an indicative analysis on the volatility of the PDS market.

There are many other topics related to stock market anomalies that can be studied on Malaysia bond market, for example, January effect, firm size effect etc. Besides, a study on the factors or government policies that cause volatility in bond market enables investors to adjust their asset allocation policy suitable to different market conditions, in other words to beat the market.