CHAPTER V

DISCUSSION

Chapter V is the discussion about the result obtain in chapter IV.

According to chapter I, the main issue is about Hidden Markov in time series forecasting model. The principle of HMM is that the current price influenced by n-1 prices. Gold price is a stochastic process and its causative factor formed a markov chain. New academic year and crude oil selected to be causative factors in this case. In the new academic year in June-July, the data suggest that gold price were inceasing in June 2009 and June 2010 but decreasing in July or one month thereafter. This condition is due to the community needs for school purposes. The effect of crude oil at the gold price occured in September 2008, October 2008, December 2008, March 2009, April 2009, July 2009, December 2009, February 2010, June 2010, and October 2010 where the decreasing in crude oil contributed to the gold prices in that month or a month thereafter.

π is the initial probability. Define π for state $1 = 0.573$ and π for state $2 = 0.427$. C and σ is the expectation and variance of data. To facilitate the search for the parameter, created a program functional programming-based computing using Matlab®. The estimators obtained were used to calculate the expected value of gold price.

With the average percentage error of 2.25% for $A - C1 - \sigma1$, 2.22% for $A - C1 - \sigma2$, 2.96% for $A - C2 - \sigma1$, and 2.8% for $A - C2 - \sigma2$ which is less than 10%, then Hidden Markov Model is sufficient to be implement on gold price by means of two causative factors. With the same value of c and enlarged σ, the error can be narrowed. Reciprocally

by the same values of σ and c that are enlarged, the error can also be narrowed. It proves that simulation sequence is closed to the actual one.