CHAPTER FIVE

RESULTS OF ANALYSIS

5.1 SECTION I: RELATIONSHIP ANALYSIS

5.1.1 Econometric Model (Without Dummy)

It is based on the log linear model developed by including the explanatory / independent variables of stock index futures' volume, market capitalization, M1 and saving deposits represented by the following equation:

$$\mathbf{lnFUTS\ t = f\ (\ lnVOL_t\ ,\ lnMARCAP_t,\ lnM1_t,\ lnSAVDEP_t\ )}$$

for original model monthly data where FUTS t is the price of the stock index futures at time t, VOL is the end month stock index futures volume, MARCAP is the KLSE market capitalization and SAVDEP is the interest; saving deposits in percent per annum for Commercial Banks over the period from January 1996- December 2000. The econometric model for estimated equation for original model of the price of stock index futures is as follows:

$$\mathbf{lnFUTS = 4.110 - 0.0333\ lnVOL + 0.937\ lnMARCAP - 0.263\ lnM1}$$

$$\textit{(5.129)} \qquad \textit{(-4.138)} \qquad \textit{(39.836)} \qquad \textit{(-3.391)}$$

$$\mathbf{- 0.0584\ lnSAVDEP}$$

$$\textit{(-1.471)}$$

R-squared = 0.988 **D.W. = 0.594** **F = 1102.811**

The estimated equation seems to fit the data well as evident by the R-squared, which is 0.988. The model postulates that stock index futures are significantly related to the three variables considered, i.e..., futures volume, market capitalization and monetary aggregates M1. Since the econometric model are met to accept the validation of coefficients, we can conclude that the coefficients give the impression that the stock index futures' volume has the negative relationship with the stock index futures price. As 1% increase in the futures' volume, the stock index futures price is expected to decrease 0.03% where it is significant. The intersect beta coefficient indicated no economic interpretation. The same observation on the interest on saving deposits, which indicated 1% increase in interest saving deposits, the futures price may decrease 0.058%, which is insignificant. The KLSE market capitalization and monetary aggregates M1 results turned to be exciting. 1% increase in KLSE market capital, futures may increase approximately 0.93%. The result is more than expected, as the KLSE composite index is the underlying asset for stock index futures. The money aggregates thus showed the negative relationship as 1% increase in M1, may decrease the futures price approximately 0.26%. However, all the coefficients showed an inelastic manner related to the stock index futures.

Table 5.1

Regression Result

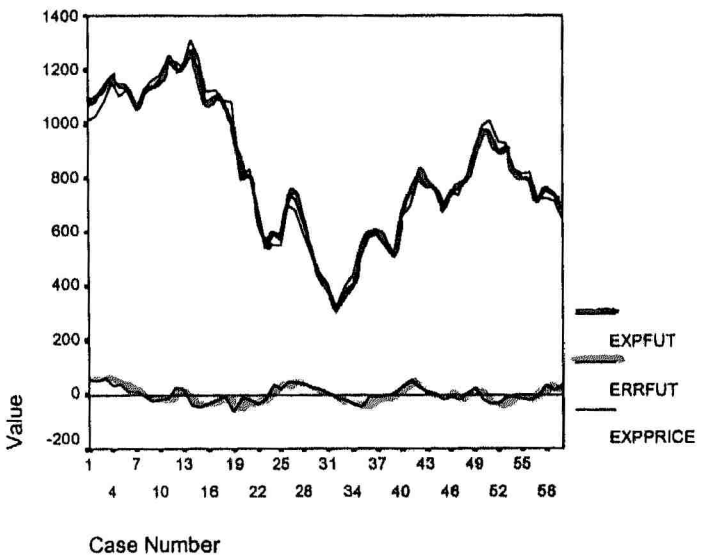
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.110	.801		5.129	.000
	LNVOL	-3.33E-02	.008	-.089	-4.138	.000
	LNMARCAP	.937	.024	.960	39.836	.000
	LNM1	-.263	.078	-.086	-3.391	.001
	LNSAVDEP	-5.84E-02	.040	-.032	-1.471	.147

a. Dependent Variable: LNFUT

Figure 5.1

Futures vs. Econometric Model without Dummy



- EXPFUT= Actual Futures Prices (data starts from 1064.8)
- ERRFUT = Error (below tick)
- EXPPRICE = Expected Futures Price

5.1.2 Econometric Dummy Model

It is also based on the log linear model developed by including the explanatory / independent variables of stock index futures' volume, market capitalization, M1 and saving deposits with including the dummy variable which take the 19th observation (July 1997 onwards as post crisis) of price fluctuation represented by the following equation:

$$\mathbf{lnFUTS_t = f(lnVOL_t, lnMARCAP_t, ln\ M1_t, lnSAVDEP_t, lnDUM_t)}$$

for dummy model monthly data where FUTS t is the price of the stock index futures at time t, VOL is the end month stock index futures volume, MARCAP is the KLSE market capitalization, SAVDEP is the interest rates; saving deposits in percent per annum for Commercial Banks and DUM is a dummy variable of price fluctuation over period from January 1996- December 2000. The econometric model for estimated equation for original model of the price of stock index futures is as follows:

$$\mathbf{lnFUTS_t = 4.083 - 0.0318\ lnVOL + 0.932\ lnMARCAP - 0.258\ lnM1}$$

$$\textit{(4.961)} \qquad \textit{(-2.763)} \qquad \textit{(26.584)} \qquad \textit{(-3.123)}$$

$$\mathbf{- 0.0637\ lnSAVDEP - 0.00626\ lnDUM97}$$

$$\textit{(-1.269)} \qquad \textit{(-0.176)}$$

Dummy July 1997

0 if before July 1997

1 if after July 1997

R-squared = 0.988 **D.W. = 0.592** **F = 866.712**

The regression result suggests that each one percent increase in the stock index futures volume contributed to a 0.0318% decrease in stock index futures. While each one per cent increase in market capitalization contributed to a 0.932% increase in stock index futures. The intersection of 4.083 brings no economic interpretation. The findings also indicate that each one percent increase in monetary aggregates M1 contributed to a 0.258% decrease in stock index futures whereas the last indicators which is interest rates in term of saving deposits showed as each one percent increase in interest rates contributed to a 0.0637% decrease in stock index futures. As for dummy variables in the model, the finding suggested that after the crisis; the stock index futures has experienced small decrease of 0.00626%, which is insignificant.

Table 5.2

Regression Result

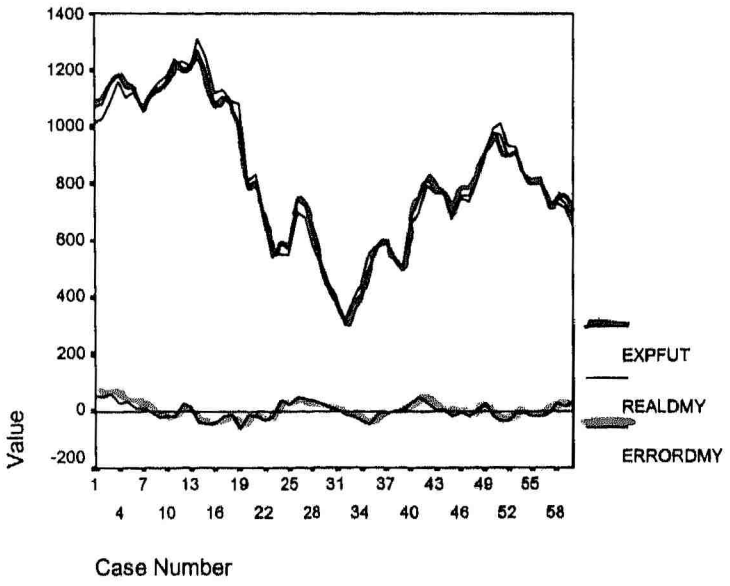
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.083	.823		4.961	.000
	LNVOL	-3.18E-02	.012	-.085	-2.763	.008
	LNMARCAP	.932	.035	.956	26.584	.000
	LNM1	-.258	.083	-.085	-3.123	.003
	LNSAVDEP	-6.37E-02	.050	-.035	-1.269	.210
	dummy var	-6.26E-03	.036	-.009	-.176	.861

a. Dependent Variable: LNFUT

Figure 5.2

Futures vs. Econometric Dummy Model



- EXPFUT= Actual Futures Prices (data starts from 1064.8)
- ERRORDMY = Error (below tick)
- REALDMY = Expected Futures Price

5.2 The Analysis of the Sign of the Independent Variables With Both Models

5.2.1 Futures Volume (Monthly)

The futures volume showed negative relationship as we expected players or speculators might sell futures prices especially in the bear market. The short selling activities, which permitted in futures market facilitated players to sell futures at the higher price. From the period July 1997 to early 1998, players seemed to reduce the risk in the cash market by selling futures, thus volume turned out to be enormous.

Futures volume shows the negative relationship in the bear market. Investors are expected to exploit derivatives futures as futures are the only instruments that allow to sell first at the higher price and buy back later at the lower prices[1]. Futures volume are expected to improve as the futures prices decline in the bear market. The downward movement is expected to be speedier compared when the market controlled dominantly by the bulls. This futures volume is an important indicator when we test for the dummy later in this chapter.

[1] In Malaysia, the short selling activities in cash market are considered as illegal.

5.2.2 Market Capitalization

The positive coefficient for market capitalization suggests that market capitalization is likely the most important variable in determining futures trend. The change in the market value of the index components (KLSE CI) widely effects the change in stock index futures. It is obviously as we can see as the outstanding shares or price change in the top counters in KLSE CI such as TELEKOM, TENAGA or Maybank may effect the futures price. Investors may tend to maintain its futures price over cash as they expected that when cash market tend to be bearish, they may sell futures but holding their shares in the cash markets. Investors then may buy back futures at the lower price and thus making money in futures market. So when the market trend turns bullish back, they may accumulate or add up their shares in cash and at the same time buy futures. That's why we might see futures closely track the market capitalization as players play the same ball game as previously.

5.2.3 Monetary Aggregates (M1)

The statistical analysis has found that M1 has had significant negative influences on futures market. The negative coefficient in M1 suggests two things: 1) that investors tend to invest in futures when money circulation decrease in the market as they expect economy may tend to turn up in the future as government's contractionary monetary policy to control money circulation and 2) investors put their money to trade futures in bearish market to take the opportunity of short selling in the futures market as investors must have enough margin to finance their trade in futures.

The first scenario indicates that as money circulation decrease in the market, futures market may tend to increase. It may be possible as investors expect the government to continue reducing money in the market in future, thus they invest their money in cash market (holding some stocks in their portfolio) and at the same time trading futures.

The second scenario then indicates that as money circulation increase in the market, investors tend to push down futures; meaning they sell off their shares in futures market in the bear market.

5.2.4 Interest Rate

The saving deposits interest rates also displayed negative relationship as it shows the opportunity cost of holding money in banks or trading futures. *Ceterisparibus,* investors tend to put their money in banks, which offers higher rates in the market whereas as interest rates in the market lower, investors tend to invest their money in trading futures.

5.3 ANALYSIS OF CHANGE BEFORE AND AFTER JULY 1997 ECONOMIC CRISIS

(BEFORE JULY 1997 CRISIS)
ln FUTS t = 4.110 – 0.0333 lnVOL t + 0.937 lnMARCAP – 0.263 lnM1 – 0.0587 lnSAVDEP

(AFTER JULY 19997 CRISIS)
ln FUTS t = 4.083 – 0.0318 lnVOL t + 0.932 lnMARCAP – 0.258 lnM1 – 0.0637nSAVDEP – 0.00626 DUM97

Δ (- 0.00626%)

It is so obvious from the regression result above, there is insignificant change before and after July 1997. It was found that the percentage change was down by 0.00626%, which is only diminutive change. The explanations behind are that our stock index futures market not that matured and witnessed not many transactions traded every month. It was expected that investors were still trading using emotions and psychological factors than fundamental and technical factors. It was obviously witnessed after Malaysia's government took stringent policy such as capital control in 1998, which saw a big swing and tremendous fluctuations in the market. As the indicators used are more fundamentally, the change in each indicators, which demonstrate small change, suggested that fundamental factors had small influence in our stock index futures market.

Volume traded in our market is obviously lesser than regional market such as Singapore, Korea and Hong Kong. This explained that as the volume-traded small, the structural change may not have a big effect on our market. Even though the sign of the coefficients may display the same before and after crisis but stock index futures market in Malaysia has only little percentage change before and after the Asian currencies crisis when we regress using dummy.

5.4 SECTION I: TEST FOR EFFICIENCY USING MOVING AVERAGES AND SINGLE EXPONENTIAL SMOOTHING.

The results of the moving averages and exponential smoothing suggest that both time series forecasting method could not outperform the market using the same trading rules and assumptions. An investigation into the returns from trading to be significantly negative. The results show that using moving averages of MA (2), MA (3), MA (4), MA (5) and MA (6) produce negative results or losses. For exponential smoothing forecasting technique, the negative results or losses are also produced using $\alpha = 0.1, 0.2, 0.5, 0.8$ and 0.9 respectively and for the extreme cases which selected value of $\alpha = 0.01, 0.001, 0.0001, 0.99, 0.999$ and 0.9999 shows the same negative returns for overall 58 observations. For Table 5.3a, all the transactions are taking commissions into account and for Table 5.3b all transactions are not taking commissions into considerations. However unluckily, both transactions with or without commissions saw overall trading produced losses and negative returns in both moving averages and single exponential smoothing. Below are the losses occurred when we test using MA and Exponential Smoothing.

Table 5.3a

Results on Moving Averages and Single Exponential Smoothing (With Commissions)

Moving Average					
	MA (2)	**MA (3)**	**MA (4)**	**MA (5)**	**MA (6)**
Profit/Loss (RM)	(79,310.00)	(118,040.00)	(113,400.00)	(75,780.00)	(24,550.00)
Monthly Profit/Loss (RM)	(1,367.41)	(2,070.88)	(2,025.00)	(1,377.82)	(454.63)
n =	58	57	56	55	54
Single Exponential Smoothing					
n=58		$\alpha = 0.1$	$\alpha = 0.2$	$\alpha = 0.5$	$\alpha = 0.8$	$\alpha = 0.9$
Profit/Loss (RM)		(43,470.00)	(50,510.00)	(109,030.00)	(74,410.00)	(93,990.00)
Monthly Profit/Loss (RM)		(749.48)	(870.86)	(1,879.83)	(1,282.93)	(1,620.52)

Table 5.3b

Results on Moving Averages and Single Exponential Smoothing (Without Commissions)

Moving Average					
	MA (2)	**MA (3)**	**MA (4)**	**MA (5)**	**MA (6)**
Profit/Loss (RM)	(72,350.00)	(111,200.00)	(106,680.00)	(69,180.00)	(18,070.00)
Monthly Profit/Loss (RM)	(1,247.41)	(1,950.88)	(1,905.00)	(1,257.82)	(334.63)
n =	58	57	56	55	54
Single Exponential Smoothing					
n=58	$\alpha = 0.1$	$\alpha = 0.2$	$\alpha = 0.5$	$\alpha = 0.8$	$\alpha = 0.9$
Profit/Loss (RM)	(36,510.00)	(43,550.00)	(102,070.00)	(67,450.00)	(87,030.00)
Monthly Profit/Loss (RM)	(629.48)	(750.86)	(1,759.83)	(1,162.93)	(1,500.52)

For MA (2) using 58 observations; MA (3) using 57 observations; MA (4) using 56 observations, MA (5) using 55 observations and MA (6) using 54 observations, the results suggested that we couldn't reap above normal profits when we use the moving averages forecasting technique with the Malaysian Stock Index Futures. The forecasting technique and trading rules produced overall losses like RM 79,310.00 or 1,367.41 per observation, RM 118, 040.00 or RM 2,070.88 per observation, RM 113,400.00 or RM2, 025.00 per observation, RM 75,780.00 or 1,377.82 per observation and RM 24,550.00 or RM 454.63 per observation for MA (2), MA (3), MA (4), MA (5) and MA (6) respectively when we take into account the commissions of RM120 per trade. Even though the losses seemed to reduce when we use higher *k*, but when the writer tests the MA (7) for 53 trades done, it showed even higher overall losses of RM 67,000.00 or RM 1,253.70 per observation (include commissions) or RM 61,340.00 for overall losses or RM 1,135.93 (not include commissions), which denied the belief which say using higher *k*, will result lower losses. For further details on trading simulation on moving averages and exponential smoothing, refer Appendix 5 (Table 5.12 -Table 5.28)

Single Exponential Smoothing also saw the same negative results and losses produced in overall 58 observations using the same trading rules and assumptions throughout the period 1996-2000. With various α has been used, the results for all selected α values found negative returns and losses for overall trades with or without commissions. However if we look at the trend of the results for single exponential smoothing, we could safely conclude that as α values approaching 0, then we'll see the reduction of overall losses in trades. This belief could be proved by taking extreme α values near 0 and 1 then compared the results. From the findings below for extreme cases, it may be safe to say that as α values approaching 0, and then the losses could be reduced. The lowest losses is when we use $\alpha = 0.001$ as the overall losses recorded RM 10,930.00 compared to huge losses recorded by α, which value near to 1.

Table 5.3c

Results on Single Exponential Smoothing- Extreme Cases (With Commissions)

	$\alpha = 0.01$	$\alpha = 0.001$	$\alpha = 0.0001$	$\alpha = 0.99$	$\alpha = 0.999$	$\alpha = 0.9999$
Profit/Loss	(19,990.00)	(10,930.00)	(22,550.00)	(46,810.00)	(97,670.00)	(97,670.00)
Monthly Profit/Loss	(344.66)	(188.48)	(388.79)	(807.069	(1,683.97)	(1,683.97)

Table 5.3d

Results on Single Exponential Smoothing- Extreme Cases (Without Commissions)

	$\alpha = 0.01$	$\alpha = 0.001$	$\alpha = 0.0001$	$\alpha = 0.99$	$\alpha = 0.999$	$\alpha = 0.9999$
Profit/Loss	(13,030.00)	(3,970.00)	(15,590.00)	(39,850.00)	(90,710.00)	(90,710.00)
Monthly Profit/Loss	(224.66))	(68.45)	(268.79)	(687.07	(1,563.97)	(1,563.97)

5.5 SECTION II: TEST FOR MARKET EFFICIENCY USING LOG LINEAR DISTRIBUTIVE LAG MODEL AND LOG LINEAR DISTRIBUTIVE LAG DUMMY MODEL IN SAMPLE FORECAST.

The most important dimension of work in this paper is to test the market efficiency in the Malaysian Stock Index Futures market. For that purpose, the research forecasted has been conducted from observation 1-60 using the log linear distributive lag model and log linear distributive lag dummy model. Let us start with the log linear distributive lag model. The function that applied for this model in this analysis is as follows:

$$\mathbf{lnFUTS = f (lnVol_{t-1}, lnMarCap_{t-1}, lnM1_{t-1}, lnSavDep_{t-1})}$$

When we regress using the log linear distributive lag model, we have found that regression equation is as below:

$$\mathbf{lnFUTS = 3.962 - 0.113\ lnVol_{t-1} + 0.699\ lnMarCap_{t-1} - 0.034\ lnM1_{t-1}}$$

$$\mathbf{(1.710) \quad (-4.966) \quad (10.223) \quad (-1.48)}$$

$$\mathbf{- 0.122\ lnSavDep_{t-1}}$$

$$\mathbf{(-1.126)}$$

$$\mathbf{R\text{-}squared = 0.910}$$

Table 5.4

Regression Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.962	2.317		1.710	.093
	LAGLNVOL	-.113	.023	-.305	-4.966	.000
	LAGLNMAR	.699	.068	.720	10.223	.000
	LAGLNM1	-3.40E-02	.230	-.011	-.148	.883
	LAGLNSVD	-.122	.109	-.067	-1.126	.265

a. Dependent Variable: LNFUT

After having the equation, we take the lag data (t-1), which is the last month data and plugged into the equation to get the Stock Index Futures forecasting data for the current month. Then using the trading rules and assumptions in Chapter Four (refer section 4.6.3), the test for weak form efficiency is tested. For the sample forecasting test, the findings were so interesting as we can see that using the log linear distributive lag model with trading rules could produce above normal profits of RM 154,500.00 for 59 trades or RM 2,618.64 per month before taking into account RM12O commissions per trade. Obviously, when we added up the commissions into the trades, even though the returns is smaller but could also produce above average returns of RM 147,420.00 for 59 trades or RM 2,498.00 per month. The details of the mechanics of trading is shown in Table 5.5 below:

Table 5.5

Econometric Model Forecast Data and Trading Simulation

Assumptions:

1) Stock index futures will be bought and sold at the closing price .

2) The calculation of profit is = (sell price- buy price) * 100 (multiplier)

3) Only traded 1 lot per transaction. Cost per round turn is RM120 or

4) Ignore the slippage

		Forecast Data	Market			Without Commission	With Commissic
Period	Actual Data	For Next Observation	Expectation Up/Down	Buy	Sell	Profit/Loss	Profit/Loss
1	1064.8	1142.72	Up	1064.8	1079.9	1510	1390
2	1079.9	1177.86	Up	1079.9	1145.4	6550	6430
3	1145.4	1111.68	Down	1182.8	1145.4	-3740	-3860
4	1182.8	1150.86	Down	1136.6	1182.8	4620	4500
5	1136.6	1107.81	Down	1129.7	1136.6	690	570
6	1129.7	1136.13	Up	1129.7	1058.6	-7110	-7230
7	1058.6	1065.07	Up	1058.6	1113	5440	5320
8	1113	1106.27	Down	1130.5	1113	-1750	-1870
9	1130.5	1162.87	Up	1130.5	1162.2	3170	3050
10	1162.2	1136.29	Down	1220.3	1162.2	-5810	-5930
11	1220.3	1209.63	Down	1229.2	1220.3	-890	-1010
12	1229.2	1148.08	Down	1213.9	1229.2	1530	1410
13	1213.9	1159.24	Down	1268.3	1213.9	-5440	-5560
14	1268.3	1253.79	Down	1200.7	1268.3	6760	6640
15	1200.7	1175.69	Down	1079	1200.7	12170	12050
16	1079	1030.4	Down	1107.5	1079	-2850	-2970
17	1107.5	1009.81	Down	1075.6	1107.5	3190	3070
18	1075.6	1008.3	Down	1013	1075.6	6260	6140
19	1013	976.77	Down	794.3	1013	21870	21750
20	794.3	750.48	Down	811.2	794.3	-1690	-1810
21	811.2	749.54	Down	666.2	811.2	14500	14380
22	666.2	668.32	Up	666.2	537.5	-12870	-12990
23	537.5	558.09	Up	537.5	587	4950	4830
24	587	558.79	Down	566.6	587	2040	1920
25	566.6	562.47	Down	743.6	566.6	-17700	-17820
26	743.6	640.05	Down	720.2	743.6	2340	2220
27	720.2	630.91	Down	622.3	720.2	9790	9670
28	622.3	543.17	Down	539.5	622.3	8280	8160

29	539.5	491.54	Down	455.9	539.5	8360	8240
30	455.9	431.45	Down	401.9	455.9	5400	5280
31	401.9	400.73	Down	303.5	401.9	9840	9720
32	303.5	337.42	Up	303.5	374	7050	6930
33	374	408.26	Up	374	406.2	3220	3100
34	406.2	507.24	Up	406.2	505	9880	9760
35	505	584.94	Up	505	579.8	7480	7360
36	579.8	609.64	Up	579.8	591.1	1130	1010
37	591.1	633.35	Up	542	591.1	4910	4790
38	542	565.48	Up	542	503.4	-3860	-3980
39	503.4	532.6	Up	503.4	675.3	17190	17070
40	675.3	627.34	Down	741.8	675.3	-6650	-6770
41	741.8	669.32	Down	819	741.8	-7720	-7840
42	819	756.45	Down	770.7	819	4830	4710
43	770.7	751.79	Down	769	770.7	170	50
44	769	744.18	Down	673.9	769	9510	9390
45	673.9	718.7	Up	673.9	746.7	7280	7160
46	746.7	763.32	Up	746.7	734.4	-1230	-1350
47	734.4	812.24	Up	734.4	810.9	7650	7530
48	810.9	872.52	Up	810.9	917.4	10650	10530
49	917.4	872.39	Down	975.7	917.4	-5830	-5950
50	975.7	969.88	Down	971.9	975.7	380	260
51	971.9	947.94	Down	900.3	971.9	7160	7040
52	900.3	919.45	Up	900.3	915.3	1500	1380
53	915.3	900.9	Down	823.5	915.3	9180	9060
54	823.5	825.73	Up	823.5	796.5	-2700	-2820
55	796.5	818.91	Up	796.5	795.1	-140	-260
56	795.1	855.44	Up	795.1	713.9	-8120	-8240
57	713.9	752.51	Up	713.9	754.6	4070	3950
58	754.6	751.01	Down	727.5	754.6	2710	2590
59	727.5	754.59	Up	727.5	681.4	-4610	-4730
60	681.4					0	0
	Profit					**154,500.00**	**147,420.00**

Average per observation	**2,618.64**
Average after comm.	**2,498.64**

From the table 5.5 above, it has found that for the direction of expectation up and down, the up expectation recorded 25 observations whereas the down expectation recorded 34 observations. For the winning trades and losses trades, the winning trades and losses trades are 40 times and 19 trades respectively.

Now for the log linear distributive lag dummy model, the function that applied for this model in this analysis is as follows:

$$\mathbf{lnFUTS = f (lnVol_{t-1}, lnMarCap_{t-1}, lnM1_{t-1}, lnSavDep_{t-1}, lnDUM_{t-1})}$$

When we regress using the log linear distributive lag dummy model, we have found that regression equation is as below:

$$\mathbf{lnFUTS = 3.491 - 0.0953\ lnVol_{t-1} + 0.636\ lnMarCap_{t-1} + 0.04115\ LnM1_{t-1}}$$

$$\mathbf{(1.461) \quad (-3.060) \quad (6.269) \quad (0.167)}$$

$$\mathbf{-0.190\ LnSavDep_{t-1} - 0.0818\ LnDUM_{t-1}}$$

$$\mathbf{(-1.405) \quad (-0.844)}$$

$$\mathbf{R\text{-}squared = 0.911}$$

Table 5.6

Regression Result

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.491	2.390		1.461	.150
	LAGLNVOL	-9.53E-02	.031	-.257	-3.060	.003
	LAGLNMAR	.636	.101	.655	6.269	.000
	LAGLNM1	4.115E-02	.247	.013	.167	.868
	LAGLNSVD	-.190	.135	-.104	-1.405	.166
	LNLGDY1	-8.18E-02	.097	-.113	-.844	.402

a. Dependent Variable: LNFUT

After having the equation, we take the lag data (t-1), which is the last month data and plugged into the equation to get the Stock Index Futures forecasting data for the current month. Then using the trading rules and assumptions in Chapter Four, the results seemed to suggest that using the log linear distributive lag dummy model could outperform the Malaysian Stock Index Futures market. For the sample test, the findings were much more interesting as we can see that using the log linear distributive lag dummy model with trading rules could produce higher above normal profits of RM 174,820.00 for 59 trades or RM 2,963.05 per month before taking into account RM12O commissions per trade. It renders that the log linear distributive lag dummy model is better compared to the previous model. Obviously, when we added up the commissions the mechanism, even though the returns is smaller but could also produce above average returns of RM 167,740.00 for 59 trades or RM 2,843.05 per month. The details of the mechanics of trading is shown in Table 5.7 below:

Table 5.7

Econometric Dummy Model Forecast Data and Trading Simulation

Period	Actual	Forecast Data For Next Observation	Market Expectation Up/Down	Buy	Sell	Without Commissions Profit/Loss	With Commission Profit/Loss
1	1064.8	1135.89	Up	1064.8	1079.9	1510	1390
2	1079.9	1169.53	Up	1079.9	1145.4	6550	6430
3	1145.4	1111.09	Down	1182.8	1145.4	-3740	-3860
4	1182.8	1149.29	Down	1136.6	1182.8	4620	4500
5	1136.6	1108.32	Down	1129.7	1136.6	690	570
6	1129.7	1132.51	Up	1129.7	1058.6	-7110	-7230
7	1058.6	1071.29	Up	1058.6	1113	5440	5320
8	1113	1107.86	Down	1130.5	1113	-1750	-1870
9	1130.5	1160.53	Up	1130.5	1162.2	3170	3050
10	1162.2	1138.71	Down	1220.3	1162.2	-5810	-5930
11	1220.3	1202.82	Down	1229.2	1220.3	-890	-1010
12	1229.2	1151.64	Down	1213.9	1229.2	1530	1410
13	1213.9	1170.63	Down	1268.3	1213.9	-5440	-5560
14	1268.3	1249.88	Down	1200.7	1268.3	6760	6640
15	1200.7	1178.08	Down	1079	1200.7	12170	12050
16	1079	1045.67	Down	1107.5	1079	-2850	-2970
17	1107.5	1028.35	Down	1075.6	1107.5	3190	3070
18	1075.6	1028.91	Down	1013	1075.6	6260	6140
19	1013	998.98	Down	794.3	1013	21870	21750
20	794.3	726.71	Down	811.2	794.3	-1690	-1810
21	811.2	729.76	Down	666.2	811.2	14500	14380
22	666.2	655.44	Down	537.5	666.2	12870	12750
23	537.5	555.51	Up	537.5	587	4950	4830
24	587	558.22	Down	566.6	587	2040	1920
25	566.6	561.96	Down	743.6	566.6	-17700	-17820
26	743.6	628.05	Down	720.2	743.6	2340	2220
27	720.2	616.36	Down	622.3	720.2	9790	9670
28	622.3	537.24	Down	539.5	622.3	8280	8160
29	539.5	488.81	Down	455.9	539.5	8360	8240
30	455.9	434.77	Down	401.9	455.9	5400	5280
31	401.9	405.35	Down	303.5	401.9	9840	9720
32	303.5	346.67	Up	303.5	374	7050	6930
33	374	416.42	Up	374	406.2	3220	3100

34	406.2	501.25	Up	406.2	505	9880	9760
35	505	574.6	Up	505	579.8	7480	7360
36	579.8	598.72	Up	579.8	591.1	1130	1010
37	591.1	621.76	Up	542	591.1	4910	4790
38	542	562.62	Up	542	503.4	-3860	-3980
39	503.4	532.01	Up	503.4	675.3	17190	17070
40	675.3	627.6	Down	741.8	675.3	-6650	-6770
41	741.8	673.86	Down	819	741.8	-7720	-7840
42	819	754.19	Down	770.7	819	4830	4710
43	770.7	752.51	Down	769	770.7	170	50
44	769	744.47	Down	673.9	769	9510	9390
45	673.9	720.97	Up	673.9	746.7	7280	7160
46	746.7	762.37	Up	746.7	734.4	-1230	-1350
47	734.4	807.77	Up	734.4	810.9	7650	7530
48	810.9	867.84	Up	810.9	917.4	10650	10530
49	917.4	875.41	Down	975.7	917.4	-5830	-5950
50	975.7	960.84	Down	971.9	975.7	380	260
51	971.9	939.13	Down	900.3	971.9	7160	7040
52	900.3	910.78	Up	900.3	915.3	1500	1380
53	915.3	895.24	Down	823.5	915.3	9180	9060
54	823.5	828.57	Up	823.5	796.5	-2700	-2820
55	796.5	821.28	Up	796.5	795.1	-140	-260
56	795.1	849.1	Up	795.1	713.9	-8120	-8240
57	713.9	756.9	Up	713.9	754.6	4070	3950
58	754.6	758.11	Up	754.6	727.5	-2710	-2830
59	727.5	760.87	Up	727.5	681.4	-4610	-4730
60	681.4					0	0
	Profit/Loss					**174,820.00**	**167,740.00**

Average per observation = **2,963.05**

Average after commissions **2,843.05**

From the table 5.7 above, it has found that for the direction of expectation up and down, the up expectation recorded 25 observations whereas the down expectation recorded 34 observations. For the winning trades and losses trades, the winning trades and losses trades are 40 times and 19 trades respectively.

However, for the ex-ante forecast, the method used above is statistically bias and tends to exaggerate the accuracy of the model. Forecast errors tend to be reduced as the values of the dependent variables are already used in the regression estimates. Ex-post forecast or out-of-sample forecast is done next to further examine the strength of the model.

5.6 SECTION III: TEST FOR MARKET EFFICIENCY USING LOG LINEAR DISTRIBUTIVE LAG MODEL AND LOG LINEAR DISTRIBUTIVE LAG DUMMY MODEL IN EX-POST FORECAST.

In ex-post forecast, the values of the dependent variables to be forecasted is outside the sample data used in regressing the model. For instance, regress using the lag econometric regression for 1-30 observations, it has found that the equation is as below:

Example: Regression 1-30

$$\mathbf{lnFUTS = 0.882 - 0.138\ lnVol_{29} + 0.593\ lnMarCap_{29} + 0.32\ lnM1_{29} - 0.0325\ lnSavDep_{29}}$$

Then, forecast data no 31:

Forecast data number 31

$$\mathbf{lnFUTS_{31} = 0.882 - 0.138(11.46) + 0.593(5.66) + 0.32(10.86) - 0.033(1.51)}$$

Thus, the forecasted stock index futures data for observation data no 31 is 438.35. For the rest of the data, the same procedure is repeated to forecast next observation SIF data. This method is also employed to the log linear distributive lag dummy model for forecasting. The details of each regression equations and trading simulation with log linear distributive lag model and log liner distributive lag dummy model are shown in Table 5.9, Table 5.10, Table 5.11 and 5.12.

Table 5.8

Regression Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.882	3.205		.275	.785
	LAGLNVOL	-.138	.055	-.478	-2.516	.019
	LAGLNMAR	.593	.105	.546	5.624	.000
	LAGLNM1	.320	.328	.068	.976	.339
	LAGLNSVD	-3.25E-02	.992	-.005	-.033	.974

a. Dependent Variable: LNFUT

For an ex-post forecasting period, our study shows remarkable results in order to test market efficiency by using above average returns as a mark. The results show that with applying the same trading rules and assumptions, the system could produce above normal profit of RM 7,170.00 and RM 10,770.00 with and without commissions respectively. If we put it by monthly observation, using the system we may make extra money of RM 359 without taking considerations of the commissions paid to the broker house or RM 239.00 after taking commissions into account.

Notes on abbreviations:
Reg = Regression from observation no 1-n
Obs = Current Observation
Cooff = Intersect Coefficient
Vol = Futures' Volume Coefficient
Mar = Market Capitalization Coefficient
M1 = Monetary Aggregates (M1) Coefficient
SavDep= Interest Rates in term of Saving Deposits Coefficient
bVol = Volume data in terms of ln
bMar = Market Capitalization data in terms of ln
bM1 = M1 data in terms of ln
bSavDep = Saving Deposits data in terms of ln
LgForcast = Forecast in term of log
Futures antilog = Stock Index Futures Forecast Data

Table 5.9

Log Linear Distributive Lag Model Forecast Data (Ex-Post Forecast)

Reg 1 to n	Obs	Cooff	Vol	Mar	M1	SavDep	bVol	bMar	bM1	bSavDep	LgForcast	Futures antilog
30	31	0.882	-0.138	0.593	0.32	-0.033	11.46	5.66	10.86	1.51	6.083	438.35
31	32	0.331	-0.127	0.614	0.378	-0.268	11.44	5.55	10.83	1.51	5.975	393.42
32	33	-1.098	-0.0946	0.67	0.529	0.911	11.44	5.3	10.83	1.51	8.475	4795.61
33	34	-0.561	-0.117	0.61	0.496	0.611	11.23	5.52	10.85	1.39	7.723	2260.14
34	35	-0.66	-0.121	0.613	0.495	-0.521	9.73	5.58	10.83	1.38	6.225	505.26
35	36	0.682	-0.12	0.616	0.494	-0.516	10.15	5.85	10.86	1.36	7.731	2277.15
36	37	-0.721	-0.12	0.616	0.495	-0.491	10.23	5.93	10.9	1.35	6.437	624.49
37	38	-0.78	-0.125	0.617	0.491	-0.393	10.08	5.96	10.94	1.34	6.482	653.43
38	39	-0.468	-0.14	0.629	0.419	-0.009	10.48	5.86	10.93	1.32	6.319	555.11
39	40	-0.422	-0.151	0.63	0.396	0.212	10.46	5.76	10.89	1.31	6.218	501.45
40	41	-0.121	-0.125	0.63	0.416	-0.335	10.94	6.05	10.92	1.18	6.470	645.75
41	42	0.122	-0.106	0.652	0.401	-0.626	10.96	6.14	10.98	1.08	6.690	804.66
42	43	0.106	-0.104	0.653	0.404	-0.65	10.76	6.28	11.01	1.07	6.840	934.81
43	44	0.433	-0.114	0.645	0.365	-0.482	10.63	6.25	11.04	1.06	6.771	872.28
44	45	1.012	-0.116	0.651	0.3	-0.39	10.7	6.24	11.04	1.06	6.732	838.52
45	46	1.412	-0.121	0.651	0.253	-0.279	10.29	6.13	11.06	1.05	6.663	782.72
46	47	1.63	-0.12	0.656	0.227	-0.26	10.34	6.22	11.04	1.02	6.710	820.90
47	48	1.796	-0.12	0.66	0.205	-0.218	9.77	6.21	11.1	1.01	6.778	877.89
48	49	2.223	-0.117	0.671	0.154	-0.2	9.73	6.31	11.2	1.02	6.839	933.93
49	50	2.418	-0.117	0.675	0.133	-0.197	10.59	6.45	11.21	0.99	6.829	923.91
50	51	2.154	-0.116	0.675	0.158	-0.205	10.29	6.55	11.2	0.99	6.948	1041.34
51	52	2.381	-0.117	0.673	0.137	-0.194	10.57	6.56	11.14	0.99	6.893	985.66
52	53	2.385	-0.12	0.664	0.143	-0.172	10.24	6.46	11.13	0.99	6.867	960.02
53	54	2.416	-0.121	0.663	0.14	-0.164	10.38	6.46	11.13	0.98	6.840	934.94
54	55	2.435	-0.123	0.658	0.14	-0.14	10.49	6.35	11.14	0.99	6.744	848.98
55	56	2.527	-0.123	0.659	0.13	-0.132	10.4	6.32	11.14	0.99	6.730	837.31
56	57	2.618	-0.123	0.661	0.12	-0.125	9.91	6.32	11.15	1.03	6.786	885.22
57	58	3.302	-0.117	0.681	0.0394	-0.118	10.28	6.19	11.14	1.03	6.632	759.17
58	59	3.316	-0.117	0.681	0.0238	-0.118	10.44	6.22	11.18	1.04	6.473	647.71
59	60	3.496	-0.116	0.685	0.0185	0.119	10.22	6.19	11.18	1.03	6.880	972.87
60												

Table 5.10

Trading Simulation for Log Linear Distributive Lag Model (Ex-Post)

Obs	Actual	Forecast for Next Observation	Market Expectation up/down	Buy	Sell	Profit/Loss With Commissions	Profit/Loss Without Commissions
30	455.9	438.35	down	401.9	455.9	5,280.00	5,400.00
31	401.9	393.42	down	303.5	401.9	9,720.00	9,840.00
32	303.5	4795.61	up	303.5	374	6,930.00	7,050.00
33	374	2260.14	up	374	406.2	3,100.00	3,220.00
34	406.2	505.26	up	406.2	505	9,760.00	9,880.00
35	505	2277.15	up	505	579.8	7,360.00	7,480.00
36	579.8	624.49	up	579.8	591.1	1,010.00	1,130.00
37	591.1	653.43	up	591.1	542	(5,030.00)	(4,910.00)
38	542	555.11	up	542	503.4	(3,980.00)	(3,860.00)
39	503.4	501.45	down	675.3	503.4	(17,310.00)	(17,190.00)
40	675.3	645.75	down	741.8	675.3	(6,770.00)	(6,650.00)
41	741.8	804.66	up	741.8	819	7,600.00	7,720.00
42	819	934.81	up	819	770.7	(4,950.00)	(4,830.00)
43	770.7	872.28	up	770.7	769	(290.00)	(170.00)
44	769	838.52	up	769	673.9	(9,630.00)	(9,510.00)
45	673.9	782.72	up	673.9	746.7	7,160.00	7,280.00
46	746.7	820.90	up	746.7	734.4	(1,350.00)	(1,230.00)
47	734.4	877.89	up	734.4	810.9	7,530.00	7,650.00
48	810.9	933.93	up	810.9	917.4	10,530.00	10,650.00
49	917.4	923.91	up	917.4	975.7	5,710.00	5,830.00
50	975.7	1041.34	up	975.7	971.9	(500.00)	(380.00)
51	971.9	985.66	up	971.9	900.3	(7,280.00)	(7,160.00)
52	900.3	960.02	up	900.3	915.3	1,380.00	1,500.00
53	915.3	934.94	up	915.3	823.5	(9,300.00)	(9,180.00)
54	823.5	848.98	up	823.5	796.5	(2,820.00)	(2,700.00)
55	796.5	837.31	up	796.5	795.1	(260.00)	(140.00)
56	795.1	885.22	up	795.1	713.9	(8,240.00)	(8,120.00)
57	713.9	759.17	up	713.9	754.6	3,950.00	4,070.00
58	754.6	647.71	down	727.5	754.6	2,590.00	2,710.00
59	727.5	972.87	up	727.5	681.4	(4,730.00)	(4,610.00)
						-	-
					Profit	**7,170.00**	**10,770.00**
					Profit per Observation	**239.00**	**359.00**

From the table 5.10 above, it has been found that for the direction of expectation up and down, the up expectation recorded 25 observations whereas the down expectation recorded only 5 observations. For the winning trades and losses trades, the winning trades and losses trades are equal that is 15 times for both winning trades and losses.

As we saw previously where using the log linear distributive lag model could produce above average profits to investors, the ex-post forecasting period using the log linear distributive lag dummy model displayed more interesting findings. Much more gains and profits could be reap using such model with same trading rules and assumptions. RM 39,730.00 are the total profits produced without taking commissions into account, which saw profits of RM 1,324.33 per month whereas if we take the commissions into account, the amount of profits recorded are RM 36,130.00 or RM 1,204.33 totally and monthly respectively. The details of each regression equations and trading simulation for log linear distributive lag dummy model are shown in Table 5.11 and Table 5.12

Notes on abbreviations:
Reg = Regression from observation no 1-n
Obs = Current Observation
Cooff = Intersect Coefficient
Vol = Futures' Volume Coefficient
Mar = Market Capitalization Coefficient
M1 = Monetary Aggregates (M1) Coefficient
SavDep= Interest Rates in term of Saving Deposits Coefficient
Dum = Dummy variable Coefficient
bVol = Volume data in terms of ln
bMar = Market Capitalization data in terms of ln
bM1 = M1 data in terms of ln
bSavDep = Saving Deposits data in terms of ln
bDum = dummy data in terms of ln
LgForcast = Forecast in term of log
Futures antilog = Stock Index Futures Forecast Data

Table 5.11

Log Linear Distributive Lag Dummy Model Forecast Data (Ex-Post Forecast)

Reg 1-n	Obs	Cooff	Vol	Mar	M1	SavDep	dum	Bvol	bmar	bm1	bsavdep	bDum	lgfor	Futures antilog
30	31	0.67	-0.112	0.503	0.395	-0.214	-0.093	11.46	5.66	10.86	1.51	1	6.108	449.22
31	32	0.08	-0.108	0.56	0.439	-0.434	-0.059	11.44	5.55	10.83	1.51	1	5.992	400.06
32	33	-1.075	-0.096	0.673	0.524	-0.897	0.0041	11.44	5.3	10.83	1.51	1	5.718	304.37
33	34	-1.002	-0.091	0.559	0.579	-0.876	-0.068	11.23	5.52	10.85	1.39	1	6.063	429.56
34	35	-1.07	-0.106	0.58	0.553	-0.62	-0.048	9.73	5.58	10.83	1.38	1	6.22	502.86
35	36	-1.072	-0.106	0.58	0.553	-0.62	-0.048	10.15	5.85	10.86	1.36	1	6.359	577.83
36	37	-1.09	-0.106	0.58	0.554	-0.613	-0.049	10.23	5.93	10.9	1.35	1	6.427	618.55
37	38	-1.17	-0.109	0.578	0.555	-0.536	-0.053	10.08	5.96	10.94	1.34	1	6.477	650.1
38	39	-0.942	-0.12	0.582	0.497	-0.189	-0.063	10.48	5.86	10.93	1.32	1	6.331	561.52
39	40	-0.781	-0.136	0.594	0.453	0.0928	-0.048	10.46	5.76	10.89	1.31	1	6.224	504.92
40	41	-0.804	-0.099	0.563	0.522	-0.525	-0.09	10.94	6.05	10.92	1.18	1	6.508	670.58
41	42	-0.745	-0.082	0.563	0.529	-0.763	-0.104	10.96	6.14	10.98	1.08	1	6.699	811.56
42	43	-0.719	-0.083	0.568	0.525	-0.743	-0.103	10.76	6.28	11.01	1.07	1	6.837	931.88
43	44	-0.374	-0.093	0.561	0.484	-0.572	-0.101	10.63	6.25	11.04	1.06	1	6.783	882.61
44	45	0.291	-0.097	0.573	0.407	-0.468	-0.094	10.7	6.24	11.04	1.06	1	6.734	840.81
45	46	0.746	-0.103	0.578	0.352	-0.351	-0.087	10.29	6.13	11.06	1.05	1	6.666	785.59
46	47	1.02	-0.102	0.587	0.318	-0.327	-0.084	10.34	6.22	11.04	1.02	1	6.709	820.11
47	48	1.186	-0.103	0.591	0.296	-0.284	-0.084	9.77	6.21	11.1	1.01	1	6.764	866.24
48	49	1.581	-0.1	0.6	0.25	-0.268	-0.086	9.73	6.31	11.2	1.02	1	6.838	932.2
49	50	1.766	-0.099	0.604	0.23	-0.266	-0.086	10.59	6.45	11.21	0.99	1	6.844	938.4
50	51	1.523	-0.098	0.601	0.254	-0.275	-0.089	10.29	6.55	11.2	0.99	1	6.938	1030.
51	52	1.69	-0.098	0.597	0.24	-0.269	-0.093	10.57	6.56	11.14	0.99	1	6.889	981.5
52	53	1.645	-0.099	0.582	0.253	-0.254	-0.099	10.24	6.46	11.13	0.99	1	6.852	945.6
53	54	1.653	-0.099	0.58	0.253	-0.249	-0.099	10.38	6.46	11.13	0.98	1	6.842	935.9
54	55	1.648	-0.101	0.573	0.256	-0.229	-0.105	10.49	6.35	11.14	0.99	1	6.747	851.6
55	56	1.795	-0.102	0.578	0.239	-0.214	-0.099	10.4	6.32	11.14	0.99	1	6.739	844.3
56	57	1.931	-0.01	0.584	0.222	-0.203	-0.095	9.91	6.32	11.15	1.03	1	7.691	2188
57	58	2.545	-0.096	0.597	0.152	-0.202	-0.103	10.28	6.19	11.14	1.03	1	6.64	765
58	59	2.607	-0.096	0.6	0.145	-0.2	-0.101	10.44	6.22	11.18	1.04	1	6.653	775.1
59	60	2.901	-0.096	0.612	0.111	-0.196	-0.094	10.22	6.19	11.18	1.03	1	6.652	774.5
60														

Table 5.12

Trading Simulation for Log Linear Distributive Lag Dummy Model (Ex-Post)

Obs	Actual	Forecast for Next Observation	Market Expectation Up/Down	Buy	Sell	Profit/Loss With Commissions	Profit/Loss Without Commissions
30	455.9	449.22	down	401.9	455.9	5,280.00	5,400.00
31	401.9	400.06	down	303.5	401.9	9,720.00	9,840.00
32	303.5	304.37	Up	303.5	374	6,930.00	7,050.00
33	374	429.56	Up	374	406.2	3,100.00	3,220.00
34	406.2	502.86	Up	406.2	505	9,760.00	9,880.00
35	505	577.83	Up	505	579.8	7,360.00	7,480.00
36	579.8	618.55	Up	579.8	591.1	1,010.00	1,130.00
37	591.1	650.1	Up	591.1	542	(5,030.00)	(4,910.00)
38	542	561.52	Up	542	503.4	(3,980.00)	(3,860.00)
39	503.4	504.92	Up	503.4	675.3	17,070.00	17,190.00
40	675.3	670.58	down	741.8	675.3	(6,770.00)	(6,650.00)
41	741.8	811.56	Up	741.8	819	7,600.00	7,720.00
42	819	931.88	Up	819	770.7	(4,950.00)	(4,830.00)
43	770.7	882.61	Up	770.7	769	(290.00)	(170.00)
44	769	840.81	Up	769	673.9	(9,630.00)	(9,510.00)
45	673.9	785.59	Up	673.9	746.7	7,160.00	7,280.00
46	746.7	820.11	Up	746.7	734.4	(1,350.00)	(1,230.00)
47	734.4	866.24	Up	734.4	810.9	7,530.00	7,650.00
48	810.9	932.21	Up	810.9	917.4	10,530.00	10,650.00
49	917.4	938.49	Up	917.4	975.7	5,710.00	5,830.00
50	975.7	1030.8	Up	975.7	971.9	(500.00)	(380.00)
51	971.9	981.5	Up	971.9	900.3	(7,280.00)	(7,160.00)
52	900.3	945.67	Up	900.3	915.3	1,380.00	1,500.00
53	915.3	935.93	Up	915.3	823.5	(9,300.00)	(9,180.00)
54	823.5	851.66	Up	823.5	796.5	(2,820.00)	(2,700.00)
55	796.5	844.34	Up	796.5	795.1	(260.00)	(140.00)
56	795.1	2188.4	Up	795.1	713.9	(8,240.00)	(8,120.00)
57	713.9	765	Up	713.9	754.6	3,950.00	4,070.00
58	754.6	775.13	Up	754.6	727.5	(2,830.00)	(2,710.00)
59	727.5	774.59	Up	727.5	681.4	(4,730.00)	(4,610.00)
60	681.4					-	-
					Profit	**36,130.00**	**39,730.00**
					Profit per Observation	**1,204.33**	**1,324.33**

From the table 5.12 above, it has been found that for the direction of expectation up and down, the up expectation recorded 27 observations whereas the down expectation recorded even lower compared to previous model that is 3 observations. For the winning trades and losses trades, the winning trades and losses trades are 15 times each.

However, we could also compare the log linear distributive lag model and the log linear distributive lag dummy model with the buy-and-hold policy and strategy (buy and hold policy is simply buying stocks or index at the beginning of the test period and holding it till the end of the test period) to ascertain the differences of profits between techniques.

Calculations for buy-and-hold strategy from observation 30-60 are as below:

Buy Index: 455.9
Sell Index: 681.4
Commissions 1 lot per round turn: RM 120

Profit (Without Commissions) : (Sell-Buy) * 100
= (681.4 – 455.9) *100
= RM 22,550.00

Profit (With Commissions) : (Sell-Buy) * 100
= (681.4 – 455.9) *100
= RM 22,550.00 – RM 120.00
= RM 22,430.00

Table 5.13

Comparison of Returns for Log Linear Distributive Lag Model and Log Linear Distributive Lag Dummy Model (Ex-Post) with Buy-And-Hold Strategy

Technique	Commissions Profit/Loss	Without Commissions Profit/Loss
Log Linear Distributive Lag Model	7,170.00	10,770.00
Log Linear Distributive Lag Dummy Model	36,130.00	39,730.00
Buy-and-Hold	22,550.00	22,430.00