CHAPTER 4

DECOMPOSING NOMINAL STOCK RETURNS

4.1 Introduction

The main objective of this chapter is to decompose nominal stock returns into a real component by taking into consideration the inflation effect, i.e. to analyze whether inflation exert any influence on the trend of stock returns.[3] The overall results between stock returns and inflation in Chapter Three are relatively weak. Thus, it would be of great interest to use the charting method to enhance the evidence in Malaysia. Technical analysis or to be more specific Elliott Wave Theory, is one of the charting methods to examine the past stock movements to forecast future stock returns. This type of analysis focuses on the formation of charts to capture the major and minor trends in assessing the extent of market turnarounds.

4.2 Elliott Wave Theory

Dow Theory is the oldest theory in technical analysis, developed by Charles Dow and refined by William Hamilton. Recent variation on the Dow Theory is Elliott Wave Theory, developed in 1930s by R.N. Elliott. Elliott focused on classifying market activity according to a set of cycles and ratios of movements. Market activity ebbs and flows in the cycles that repeat and can be subdivided into smaller cycles.

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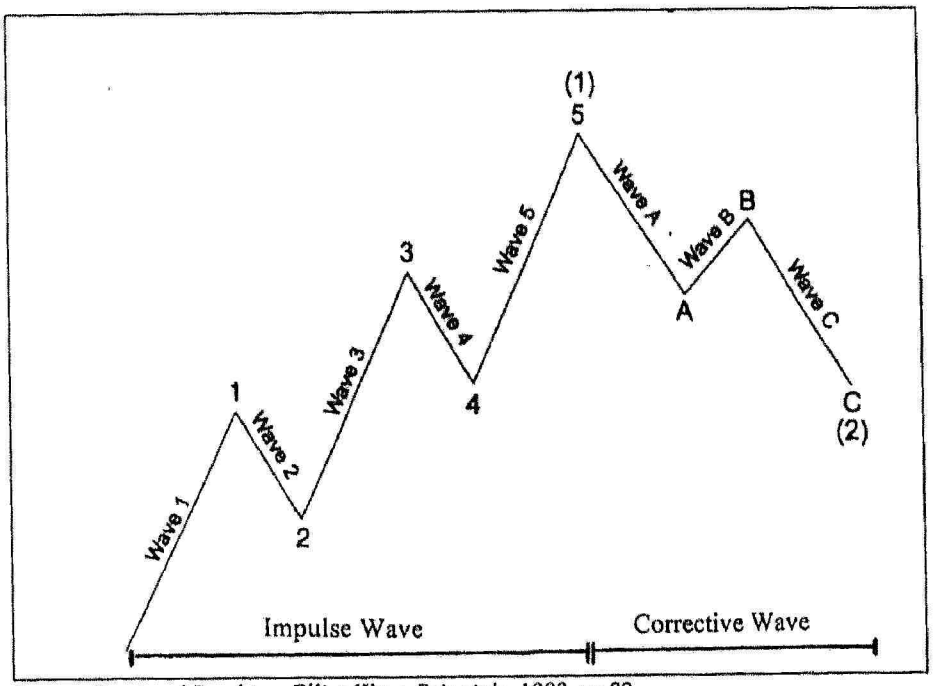
[3] Appendix I

4.2.1 Basic Pattern of a Complete Cycle

Elliott Wave Theory states that stock returns move in a repetitive pattern. The basic pattern refers to five waves advance or the impulse waves (Wave 1, Wave 2, Wave 3, Wave 4 and Wave 5); and three waves decline or the corrective waves (Wave A, Wave B and Wave C) as illustrated in Figure 4.1. Impulse waves refer to the waves that move the market in the direction of the trend. They are relatively easy to recognize and follow a few basic rules[4].

Figure 4.1 The Basic Pattern of Elliott Wave Theory



Source: Frost and Prechter, *Elliot Wave Principle*, 1989, pp.22

The corrective patterns, *zigzags* appear in a simple three-wave declining pattern labeled as A-B-C (Wave A, Wave B and Wave C) in the same figure. Wave A at first appears to be a normal corrective to the rally. Wave B is the bear market correction allowing a second chance for

[4] Appendix II

sellers to sell. Finally, Wave C breaks the support and moving downward. In summary, the essential tendency of the Elliott Wave Theory is that one complete cycle consists of eight waves, which is made up of two distinct waves (the impulse and the corrective wave).

As most observers of Elliott will criticize, there are many exceptions to the basic pattern. Extensions and diagonal triangles (wedges) bend the rules a bit but the underlying structures still show impulse waves in the direction with the trend and corrective waves against the trend.

4.2.2 Fibonacci Mathematics in the Structure of Elliott Wave Theory

Elliott claims that the Fibonacci Ratio analysis (0.618 to 1 and 1.618 to 1) and the Fibonacci Mathematics Sequence or the Time Sequence (1,1, 2, 3,5,8,13, 21, 34, 55, 89, 144 and so on to infinity) provide the mathematical basis for the Elliott Wave Theory. The Fibonacci Mathematics can be analyzed in the overall structure of Elliot Wave Theory by calculating in two main forms.

(i) Fibonacci Ratio Analysis

Fibonacci Ratio analysis is the assessment of the proportionate relationship of one wave to another. According to the Fibonacci Ratio (the Golden Ratio), the ratio of any number to the next higher is approximately .618 to 1 and to the next lower number approximately 1.618 to 1. This ratio can be further elaborated in two sub-categories, which is the retracement in Fibonacci Ratio and wave mutiples in Fibonacci Ratio in Table 4.2 and Table 4.3.

Table 4.2

(a) Calculation of Retracement in Fibonacci Ratio for Elliott Wave Theory

Fibonacci Ratio	Explanation
(i) Wave 2 = 0.618 of Wave 1	Wave 2 tend to retrace 0.618 from the distance of Wave 1
(ii) Wave 4 = 0.382 of Wave 3	Wave 4 tend to retrace 0.382 from the distance of Wave 3

Table 4.3

(b) Calculation of Wave Multiples in Fibonacci Ratio for Elliott Wave Theory

Fibonacci Ratio	Explanation
(i) First Wave Extension Wave 2 to Wave5 = 0.618 of Wave 1	When Wave 1 is extended, Wave 2 to Wave 5 tends to retrace 0.618 from the distance of Wave 1.
(ii) Third Wave Extension Wave 5 = Wave 1	When Wave 3 is extended, Wave 5 tends to retrace in equality or 0.618 from the distance of Wave 1.
(iii) Fifth Wave Extension Wave 4 to Wave 5 = 1.618 of Wave 1 to Wave 3	When Wave 5 is extended, Wave 4 to Wave 5 tends to retrace 1.618 from the distance of Wave 1 and wave 3.

(ii) Fibonacci Time Sequences for Elliott Wave Theory

In applying Fibonacci Time Sequences (1,1, 2, 3,5,8,13, 21, 34, 55, 89, 144 and so on to infinity) to the pattern of stock market, Elliot claims that this analysis added the perspective by indicating the possible turning point, if the sequences coincide with price targets and wave counts.

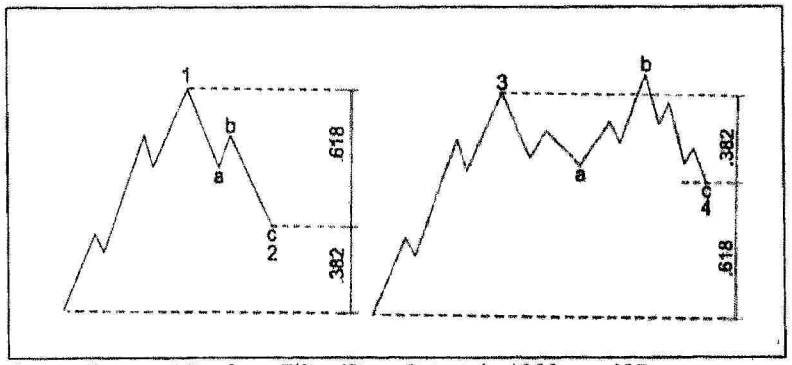
4.3 Calculation of Retracement and Wave Multiples

4.3.1 Calculation of Retracement in Fibonacci Ratio for Elliott Wave Theory

Fibonacci Ratio analysis is the assessment of the proportionate relationship in time and amplitude, which revealed a number of precise stock returns relationships that occur among waves.

Occasionally, a corrective wave retraces the Fibonacci Ratio of the preceding wave. As illustrated in Figure 4.4, sharp correction tend to retrace 0.618 of the previous wave, particularly referring to Wave 2 towards Wave 1 of an impulse wave, or Wave B towards Wave A of a zigzag. Side-ways corrections tend to retrace 0.382 of the previous impulse wave, particularly referring to Wave 4 towards Wave 3. However, retracements come in all sizes, the ratio shown in Figure 4.4 are merely tendencies[5].

Figure 4.4 Retracement in Fibonacci Ratio



Source: Frost and Prechter, *Elliot Wave Principle*, 1989, pp. 127.

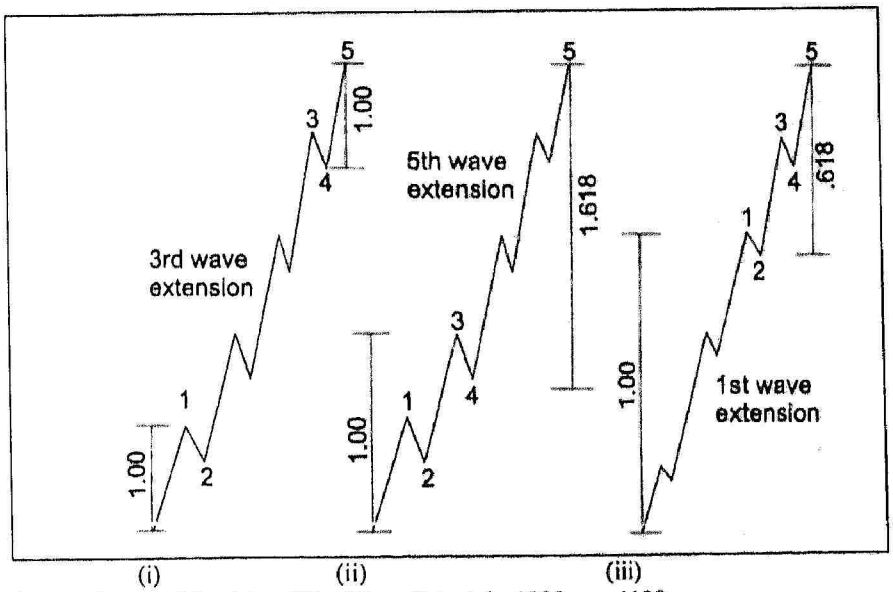
5 http://www.tradetalk.com/tutorial/elliot.html.

4.3.2 Calculation of Wave Multiples in Fibonacci Ratio for Elliott Wave Theory

The three impulse waves (Wave 1, Wave3 and Wave 5) tend to relate to Fibonacci Ratio, whether by equality, 1.618 or 0.618 when these waves multiple. One of the typical developments when Wave 3 is extended, Wave 1 and Wave 5 tend to move towards equality or 0.618, as illustrated in Figure 4.5 (i).

When the fifth wave is extended, Wave 5's length is related by the Fibonacci ratio to the length of Wave 1 through Wave 3 by the ratio of 1.618, as illustrated in Figure 4.5 (ii). In those rare cases when Wave 1 is extended, Wave 2 till Wave 5 often occurs in the 0.618 relationship with Wave 1, as shown in Figure 4.5 (iii).

Figure 4.5 Wave Multiples in Fibonacci Ratio



Source: Frost and Prechter, *Elliot Wave Principle*, 1989, pp. 1128.

4.4. Calculation of Fibonacci Time Sequences

Elliott notes that the time factor often confirms the pattern. Frequently, duration and time relationship themselves reflect Fibonacci measurements. Exploring Fibonacci Mathematics of time units appears to go beyond an exercise in numerology, fitting wave spans with remarkable accuracy. In short, Fibonacci Time Sequences serve to give analyst an added perspective by indicating possible times for a turn, especially if the sequences coincide with stock returns and wave counts.

The progression of Dow Jones Industrial Average (DJIA) from the 1928 and 1929 produces a remarkable Fibonacci Time Sequences[6], as shown in Table 4.6.

Table 4.6

Fibonacci Time Sequence on Dow Jones Industrial Average (DJIA) from 1929-1962

Year		Fibonacci Sequence	Description
(i)	1929	+3 years = 1932	1932 bear market bottom
(iii)	1929	+5 years = 1934	1934 corrective bottom
(iv)	1929	+8 years = 1937	1937 bull market top
(v)	1929	+13 years = 1942	1942 bear market bottom
(vi)	1928	+21 years = 1949	1949 bear market bottom
(vii)	1928	+34 years = 1962	1962 crash bottom

Source : Frost and Prechter, Elliott Wave Principle, 1989, pp. 140

4.5 Nominal and Real Stock Returns : Elliott Wave Theory

Many stocks tend to move more or less in harmony with the general market. It has been shown that on average, seventy-five percent of all stocks

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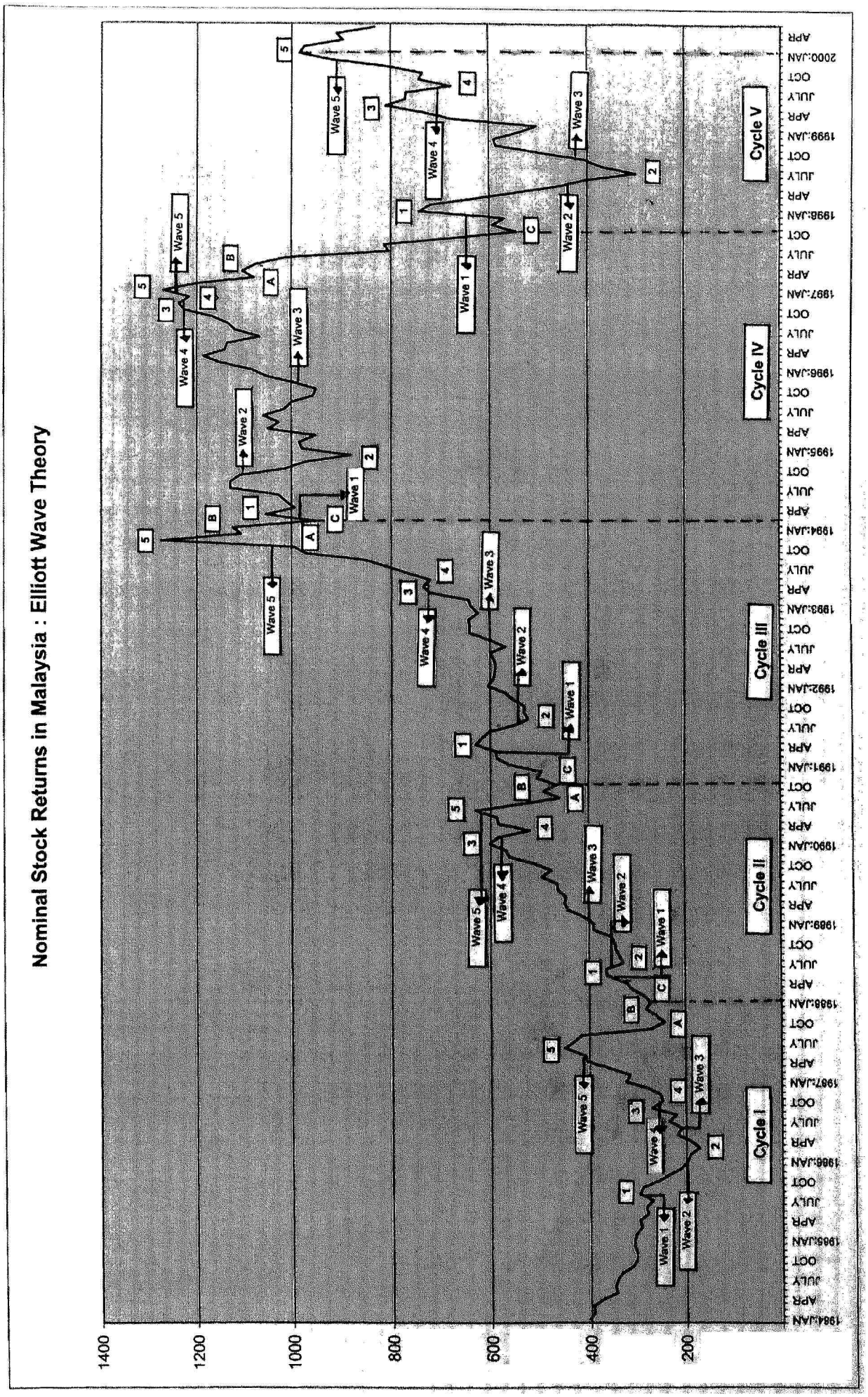
[6] Appendix IV

move up with the market, and ninety percent of all stocks move down with the market, although stock returns of individual is usually more erratic than those of the average.

There are five cycles that can be identified in the KLSE composite index from August 1985 till February 2000 based on Elliot Wave Theory. The turning point and time frame of each cycle can be analyzed in Figure 4.7 (Nominal Stock Returns) and Figure 4.8 (Real Stock Returns), which subdivided the whole market into five complete cycles. In order to have a complete analysis, the five cycles will again be subdivided into five categories. (The details for each wave including the index, date and time frame is shown in Table 4.9)


Nominal Stock Returns in Malaysia : Elliott Wave Theory
Cycle I
Cycle II
Cycle III
Cycle IV
Cycle V
Wave 1
Wave 2
Wave 3
Wave 4
Wave 5
1400
1200
1000
800
600
400
200
1984:JAN
APR
JULY
OCT
1985:JAN
APR
JULY
OCT
1986:JAN
APR
JULY
OCT
1987:JAN
APR
JULY
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1999:JAN
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2000:JAN
APR

Figure 4.7

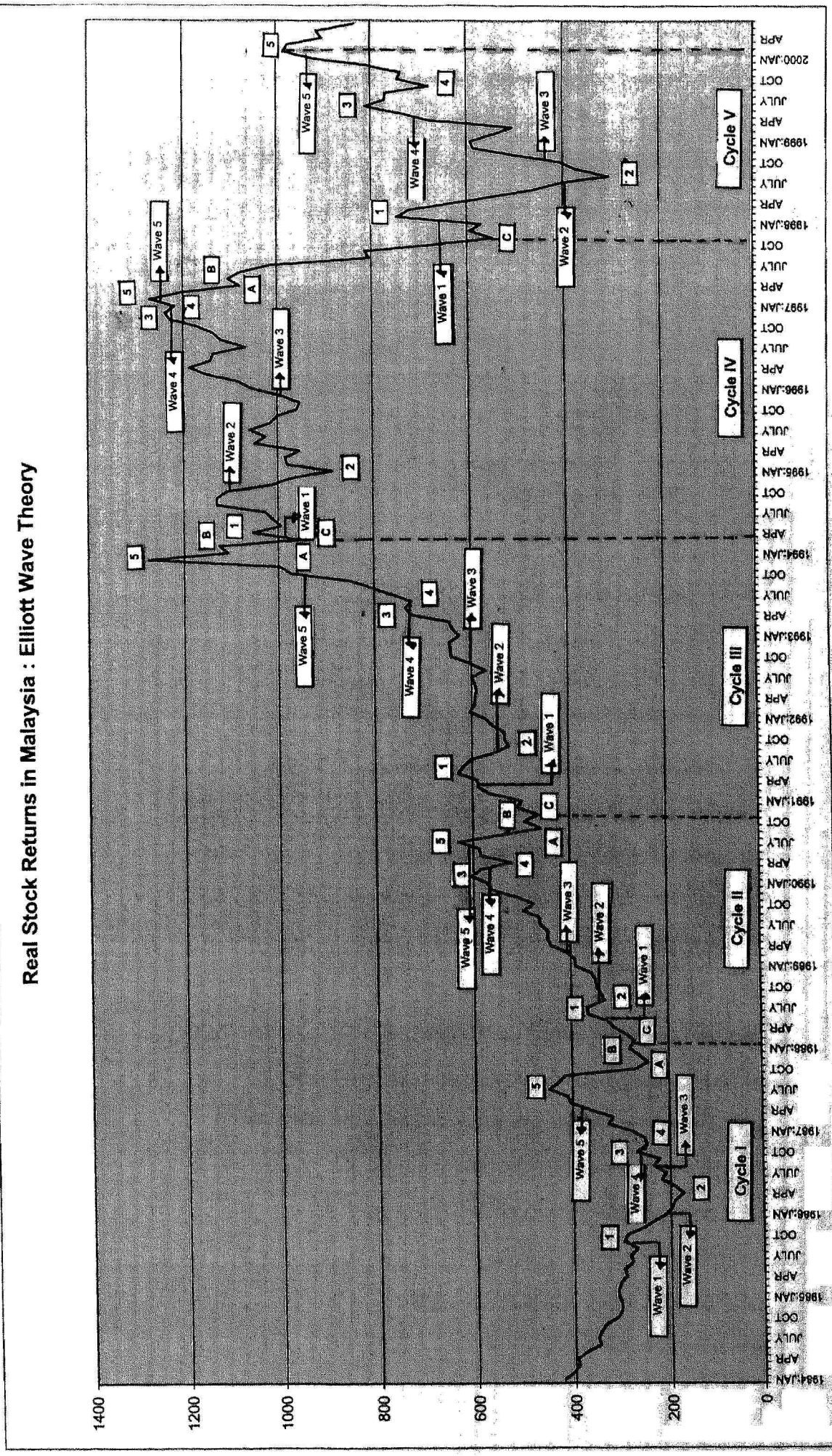
Real Stock Returns in Malaysia : Elliott Wave Theory
Cycle I
Cycle II
Cycle III
Cycle IV
Cycle V
Wave 1
Wave 2
Wave 3
Wave 4
Wave 5
1400
1200
1000
800
600
400
200
0
1964:JAN
1966:JAN
1968:JAN
1970:JAN
1972:JAN
1974:JAN
1976:JAN
1978:JAN
1980:JAN
1982:JAN
1984:JAN
1986:JAN
1988:JAN
1990:JAN
1992:JAN
1994:JAN
1996:JAN
1998:JAN
2000:JAN

Figure 4.8

Table 4.9 Nominal and Real Stock Returns : Elliott Wave Theory 1984-2001

Nominal Stock Returns				Real Stock Returns			
Wave	Index	Period	Time Frame	Wave	Index	Period	Time Frame
CYCLE I				CYCLE I			
Basic Pattern				**Basic Pattern**			
Wave 1	297.28	Sep-85	1 month	Wave 1	297.93	Sep-85	1 month
Wave 2	208.65	Jul-86	10 months	Wave 2	208.43	Jul-86	10 months
Wave 3	326.81	Feb-87	7 months	Wave 3	326.81	Feb-87	7 months
Wave 4	317.2	Mar-87	1 month	Wave 4	317.63	Mar-87	1 month
Wave 5	448.71	July-87	4 months	Wave 5	449.04	July-87	4 months
Zigzag				**Zigzag**			
A	243.24	Nov-87	4 months	A	242.91	Nov-87	4 months
B	282.85	Jan-88	2 months	B	282.74	Jan-88	2 months
C	271.76	Feb-88	1 months	C	271.54	Feb-88	1 months
CYCLE II				CYCLE II			
Basic Pattern				**Basic Pattern**			
Wave 1	367	Jul-88	5 months	Wave 1	366.47	Jul-88	5 months
Wave 2	331.24	Aug-88	1 month	Wave 2	331.31	Aug-88	1 month
Wave 3	603.18	Feb-90	18 months	Wave 3	602.37	Feb-90	18 months
Wave 4	520.57	Apr-90	2 months	Wave 4	519.86	Apr-90	2 months
Wave 5	630.29	Jul-90	3 months	Wave 5	630.59	Jul-90	3 months
Zigzag				**Zigzag**			
A	459.08	Sep-90	2 months	A	458.68	Sep-90	2 months
B	491.71	Oct-90	1month	B	491.21	Oct-90	1month
C	464.71	Nov-90	1 month	C	464.11	Nov-90	1 month
CYCLE III				CYCLE III			
Basic Pattern				**Basic Pattern**			
Wave 1	629.54	May-91	6 moths	Wave 1	629.06	May-91	6 moths
Wave 2	522.69	Sep-91	4 months	Wave 2	522.89	Sep-91	4 months
Wave 3	735.25	May-93	20 moths	Wave 3	734.89	May-93	20 moths
Wave 4	721.17	Jun-93	1 month	Wave 4	720.9	Jun-93	1 month
Wave 5	1275.32	Dec-93	6 months	Wave 5	1274.62	Dec-93	6 months
Zigzag				**Zigzag**			
A	1106.99	Jan-94	1 month	A	1106.21	Jan-94	1 month
B	1125.63	Feb-94	1 month	B	1124.42	Feb-94	1 month
C	952.72	Mar-94	1 month	C	953.14	Mar-94	1 month
CYCLE IV				CYCLE IV			
Basic Pattern				**Basic Pattern**			
Wave 1	1054.5	Apr-94	1 month	Wave 1	1054.67	Apr-94	1 month
Wave 2	993.73	May-94	1 month	Wave 2	993.56	May-94	1 month
Wave 3	1237.96	Dec-96	31 months	Wave 3	1237.8	Dec-96	31 months
Wave 4	1216.72	Jan-97	1 month	Wave 4	1216.25	Jan-97	1 month
Wave 5	1270.67	Feb-97	1 month	Wave 5	1270.12	Feb-97	1 month
Zigzag				**Zigzag**			
A	1080.17	Apr-97	2 months	A	1080.32	Apr-97	2 months
B	1104.83	May-97	1 month	B	1104.44	May-97	1 month
C	545.44	Nov-97	6 months	C	545.05	Nov-97	6 months

Nominal Stock Returns				Real Stock Returns			
Wave	Index	Period	Time Frame	Wave	Index	Period	Time Frame
CYCLE V				CYCLE V			
Basic Pattern				**Basic Pattern**			
Wave 1	745.36	Feb-98	3 months	Wave 1	743.35	Feb-98	3 months
Wave 2	302.91	Aug-98	6 months	Wave 2	302.84	Aug-98	6 months
Wave 3	811.1	Jun-99	10 months	Wave 3	811.24	Jun-99	10 months
Wave 4	675.45	Sep-99	3 months	Wave 4	675.45	Sep-99	3 months
Wave 5	984.24	Feb-00	5 months	Wave 5	984.17	Feb-00	5 months

4.5.1 Nominal Stock Returns: Elliott Wave Theory

Refer to Table 4.9, Cycle I of nominal stock returns starts from August 1985 till February 1988. The first cycle consists of five impulse waves plus a simple zigzag pattern. The complete cycle takes about 30 months with the peak index at 448.71 (July, 1987) and the lowest point at 208.65 (July, 1986). Clearly there is a third wave extension, where Wave 1 and Wave 5 has a tendency towards equality or a 0.618 ratio according to Fibonacci Ratio. Far from the standard ratio, the empirical result indicates that Wave 5 retraces 4.6 times more than Wave 1.[7]

Cycle II starts from February 1988 till November 1990 which consists of 33 months. This cycle is a clear cut five-wave sequence according to rules established by Elliott with the peak index at 630.29 (July, 1990) and lowest point at 331.24 (August, 1988). In this cycle, Wave 2 retraces 0.374 of Wave 1, far from the correction retracement of Fibonacci Ratio, which is 0.618.[8]

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7 Appendix V(i)

8 Appendix V(ii)

Since Wave 3 is extended, the ratio between Wave 1 and Wave 5 is almost in equality relationship, which is 1: 1.15 in ratio.[9]

The third cycle starts from November 1990 till March 1994, which consists of 40 months. In this particular cycle, both Wave 3 and Wave 5 are extended. Thus, the Fibonacci Ratio cannot be applied in this section. Also, the impulse wave in this stage achieves the highest point throughout the period of study. The complicated subdivision in Wave 3 and Wave 5 suggests a long bull market with short corrective phase, where the peak index occurs at 1275.32 during December 1993.

The forth cycle starts to trigger back after the "boom", ranging from March 1994 till November 1997 with the highest index at 1270.67 (February, 1987) and the lowest point at 993.73 (May, 1994). The end of this cycle indicates the start of the financial crisis with a sharp decline in the zigzag pattern at 545.44 point (November, 1997), which looks 'extra ordinary' compare with the previous wave behavior. At these points, panic suddenly impressed itself upon the mass psyche and indicates that, "Things have gone too far, the current levels are not justified by reality." The time frame of this cycle is getting longer, which takes 44 months to complete.

The final cycle is incomplete, stock returns from KLSE from November 1997 till February 2000 are still in the stage of the basic 5 impulse waves. The fifth cycle takes 27 months to reach the peak index at 984.24

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9 Appendix V(iii)

(February, 2000) before the corrective zigzag wave. In this cycle, Wave 2 retraces at the ratio of 2.2 of Wave 1.[10] This shows that Wave 2 is not going along with the basic rule of Elliott Wave Theory, where Wave 2 can never be retraced more than 100% of Wave 1. However, this is merely a tendency and not necessity. According to Fibonacci Ratio, when there is a slight extension in Wave 5, the last wave should retrace 1.618 the distance of Wave 1 to Wave 3. Very near to this ratio, Wave 5 in this cycle retraces 1.16 the distance of the wave mentioned above.[11]

4.5.2 Real Stock Returns: Elliott Wave Theory

The same exercise is once again tested on the real stock returns, the exact same trend is found in Table 4.9, with only minor difference in term of indexes. For real stock returns, Cycle I starts from August 1985 till February 1986 and having the same trend as the nominal stock returns. The complete cycle takes about 30 months with the peak index at 449.04 (July, 1987) and the lowest point at 208.43 (July, 1986). With the third wave extension, Wave 5 retraces 4.5 times more than Wave 1, far from the standard equality ratio according to Fibonacci Ratio.[12]

By replacing the nominal stock returns with real stock returns in Cycle II, the cycle reaches the peak and lowest at the same time frame as the nominal stock returns, which is 630.59 (July,1990) and 330.31 (August,1988). The difference in indexes between the real and nominal stock returns is less than

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10 Appendix V(iv)
11 Appendix V(v)
12 Appendix V(vi)

0.3. Similarly, Wave 3 is extended, the ratio between Wave 1 and Wave 5 is almost in equality relationship, which is 1:1.16 in ratio.[13]

In the third cycle of real stock returns, both Wave 3 and Wave 5 are extended. Thus, the Fibonacci Ratio cannot be applied in this section. The complicated subdivision in Wave 3 and Wave 5 suggests a long bull market with short corrective phase. The impulse wave in this stage achieved the highest point throughout the period of study at 1274.62 (December, 1993). The difference of nominal and real stock returns index during the peak is very small, i.e. 0.7.

After triggering back from the "boom" in Cycle III, Cycle IV achieves its peak at 1270.12 (February, 1997) and the lowest point at 993.56 (May, 1994). Similar to the nominal stock returns, the zigzag pattern drops tremendously from 1080.32 from Wave A (April, 1997) to 545.05 in Wave C (November, 1997), which is almost 49.5% in ratio. This indicates that public is less confident and panic with the current level of stock returns.

The final cycle is from November 1997 till February 2000, which is still in the stage of the basic 5 impulse waves before the zigzag. This cycle is a clear cut five-wave sequence according to rules established by Elliott with the peak index at 984.17 (February, 2000) and lowest point at 302.84 (August, 1988). In this cycle, Wave 2 retraces at the ratio of 2.2 of Wave 1.[14] This

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13 Appendix V(vii)
14 Appendix V(viii)

shows that Wave 2 is not going along with the basic rule of Elliott Wave Theory, where Wave 2 can never be retraced more than 100% of Wave 1. Besides, Wave 5 in this cycle retraces 1.16 the distance of Wave 1 and Wave 3, similar to the Fibonacci Ratio of 1.816 when there is an extension in Wave 5.[15]

From the empirical results for stock returns in Malaysia, a few common characteristics are found. First, both the nominal and real stock returns have the same trend and the difference in indexes is very minor and insignificant as illustrated in Table 4.9. In other words, inflation is proven to be a weak variable in determining the stock returns.

Second, the time frame of each cycle is getting longer, this explains that there are more extensions or new formations occurred in each individual wave. As the Malaysian's stock market develops into a more complicated structure, the chart will be dealing with more rare waves and patterns that does not exists in recent history. Besides, the results do not reject the idea that exogenous forces may be triggering the cycles and patterns.

In both nominal and real stock returns, most of the wave patterns satisfied the rules under Elliott Wave Theory. However, none of the cycle is following the Fibonacci Time Sequence. Thus, it could be assumed that no matter how sophisticated a market can be, either bull or bear, the wave

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15 Appendix V(ix)

principle can be used on either a stand-alone basis or in conjunction with indicators to help the traders to identify the opportunities in the market.

4.6 Conclusion

By analyzing both nominal and real stock returns with technical analysis or to be more specific Elliott Wave Principle, shows that inflation is not an influencing factor in determining the stock market activities in Malaysia. The empirical results once again enhance the evidences in Chapter 3, where there are other factors which investors shall look into before an investment decision is made.

For the reliability of the empirical results, technical analysts consider the market to be 80% psychological and 20% logical. There are limitations and weaknesses in using the wave principles. Firstly, identifying waves is often a difficult activity because there are a number of exceptions and variations in the waves. Technical analysis is subjective and personal biases can be reflected in the analysis. It is important to be aware of these biases when analyzing chart. If the analyst is a perpetual bull, then a bullish bias will overshadow the analysis. On the other hand, if the analyst is a disgruntled eternal bear, then the analysis will be probably have a bearish tilt.

Furthering the bias argument is the fact that technical analysis is open to interpretation. Even through there are standards, many times two analysts will look at the same chart and paint two different scenarios or see different

patterns. Both will come up with logical support and resistance levels to justify their position.

Technical analysis has been criticized for being too late. By the time the trend is identified, a substantial portion of the moves has already taken place. After such a large move, the reward to risk ratio is no longer great. Delay is a particular criticism of Elliott Wave Theory. Even after a new trend has been identified, there is always another "important" level close at hand. Analysts have been accused of sitting on the fence and never taking an unqualified stance. Even if they are bullish, there is always some indicator or some level that qualify their opinion.

In short, psychological or logical may be open for debate, but it is available for all to see and nobody doubts the wave principle's legitimacy. The motto of technical analysis is "the trend is your friend", finding the prevailing trend will help the investor to become aware of the overall market direction and offered a better visibility.