

**COMP 4971C: Independent Study (Spring 2016)**



**Analysis of Hong Kong Stock Exchange (HKEx)  
Stocks with Variables Relating to Closing Price**

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## **ABSTRACT**

Rational investors are always risk averse, however financial concepts state that assets with high risk are the ones that have the potential to generate a higher return. The Hong Kong Stock Exchange (HKEx) market is a relatively new international market when compared with more established and larger counterparts such as NYSE and NASDAQ, but does not lack the potential of having anomalous, high-risk and high-return assets. In order to identify those performers, a comprehensive analysis of the current HKEx market is needed. This study is focused on analyzing the patterns of the closing price movements of companies listed on HKEx by taking three variables into account: minimum change as a ratio, moving average, and consecutive days. After running the analysis using Excel and Excel VBA, tables filled with the highest likelihood of occurrences in which these three variables have been generated.

# CHAPTER 1: INTRODUCTION

## 1. Background

Rational investors are always risk averse, however financial concepts state that assets with high risk are the ones that have the potential to generate a higher return. A form of asset every average investor has access to are stocks. In order for a person to invest in a stock with high expected return, this investor must first identify stocks with relatively higher risks and higher expected returns than the average market portfolio. Investors can do this by selecting a particular stock and then benchmarking it against the market performance to spot these stocks. These stocks are anomalous in nature, as they give drastic increases in returns over a certain period. Hence, identifying anomalous stocks would mean indicating stocks that have potential for generating high returns.

Numerous analyses of the stock market have been done and are available for those listed in large stock exchanges such as NYSE and NASDAQ. However, there seems to be a lack of consolidated data of the stocks listed on Hong Kong Stock Exchange (HKEx). To find anomalies in the Hong Kong stock market, a comprehensive analysis on HKEx as a whole must be conducted first as a benchmark. Only after a market standard has been obtained can anyone benchmark an individual stock's performance against it.

## 2. Problem Statement

When creating a standard to benchmark against, frameworks and variables that would be useful for future analysis have to be taken into account. This boils down to the problem statement of the study:

How can we create an analysis of the performance of stocks listed on HKEx over the past 10 years that can be used as a benchmark for identifying anomalous stocks?

### **3. Scope of Study**

Albeit the analysis concept being universal, this study is limited to analysis of a certain scope of data. Data used for analysis in this study come from the Hong Kong Stock Exchange, which are mainly stocks that are listed on HKEx (from 0001.HK to 2343.HK). The prices used with respect to each stock are the closing prices daily (Berk, et al., 2015), and the time frame of the data collected is 10 years.

### **4. Goals**

The goals of this study are:

- i. To determine the variables used to measure performance of companies listed on HKEx
- ii. To design a framework for current market analysis and how to identify anomalies by benchmarking individual stocks' performance against it
- iii. To conduct the market analysis and analyze the results

## CHAPTER 2: METHODOLOGY

### 1. Programming Language

When conducting this study, the software used is Microsoft Excel, and the language used to conduct the analysis is Excel VBA, combined with a few existing features of Microsoft Excel for easier data visualization. A list of macros used to conduct this study is listed in Appendix A.

### 2. Data Source

The sources of the data are grabbed from Yahoo! Finance and are of the stocks listed on Hong Kong Stock Exchange. The two elements used from each stock are the 1) date and 2) that day's closing price for the given stock.

### 3. Variables

Variables used for the analysis are:

- a. *Minimum change as a ratio*: measures the minimum change of closing price today compared to the previous day's. This variable's value will span from 1.00 to 2.00 with increments of 0.01.
- b. *Moving average*: taken into account to reduce the noise of the market's data (O'Neil, 2009). This variable's value will span from 1 to 4 days with increments of 1 day.
- c. *Consecutive days*: measures over how many consecutive days does the price increase last. This last variable is most useful to measure anomalies in the stock

market to identify the lasting effect of these stocks. This variable’s value will span from 2 to 4 days with increments of 1 day.

The table generated to account for these variables is:

Minimal Change as a Ratio	1.00	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2				
	3				
	4				

Table 1: Analysis Table

in which each cell will account for the number of occurrences in which all three variables are valid in any given date and stock.

#### 4. Analyzing Data

The automation of the data analysis is conducted in two steps:

- a. Grabbing data from Yahoo! Finance

Data for each stock’s closing price will be grabbed by a macro from Yahoo! Finance according to the specified date range, and the two columns taken from their publicly available CSV sheet are “Date” and “Closing Price”. The data will be placed in a new sheet renamed after each stock, and additional columns will be created to calculate the other required variables.

In order to visualize the data, data used to count these occurrences are listed in each separate column. For example, the column “Price Increase [1]” is the

minimum change as a ratio of “Close”. “Moving Average [2]” refers to the moving average of “Close” over 2 days, and “Price Increase [2]” is the minimum change as a ratio for “Moving Average [2]”. Similarly, “Moving Average [3]” and “Moving Average [4]” are moving averages of “Close” for 3 and 4 days respectively. “Price Increase [3]” and “Price Increase [4]” refers to the minimum change as a ratio for “Moving Average [3]” and “Moving Average [4]” respectively.

A sample sheet generated can be seen below, which is for the stock 0100.HK, Clear Media Limited.

Date	Close	Price Increase [1]	Moving Average [2]	Price Increase [2]	Moving Average [3]	Price Increase [3]	Moving Average [4]	Price Increase [4]
10/5/2016	7.84	1.071038251	7.58	1.036935705	7.486666667	1.028388278	7.42	1.020632737
9/5/2016	7.32	1.002739726	7.31	1.006887052	7.28	1.003676471	7.27	1.004143646
6/5/2016	7.3	1.011080332	7.26	1.004149378	7.253333333	1.004616805	7.24	1
5/5/2016	7.22	0.997237569	7.23	1.001385042	7.22	0.996320147	7.24	0.997245179
4/5/2016	7.24	1.005555556	7.22	0.995862069	7.246666667	0.997247706	7.26	0.994520548
3/5/2016	7.2	0.98630137	7.25	0.993150685	7.266666667	0.990909091	7.3	0.989830508
2/5/2016	7.3	1	7.3	0.993197279	7.333333333	0.990909091	7.375	0.993265993
29/4/2016	7.3	0.986486486	7.35	0.986577181	7.4	0.991071429	7.425	0.986710963
28/4/2016	7.4	0.986666667	7.45	0.993333333	7.466666667	0.986784141	7.525	0.990131579
27/4/2016	7.5	1	7.5	0.986842105	7.566666667	0.991266376	7.6	0.993464052
26/4/2016	7.5	0.974025974	7.6	0.987012987	7.633333333	0.991341991	7.65	1.013245033
25/4/2016	7.7	1	7.7	1	7.7	1.026666667	7.55	1.023728814
22/4/2016	7.7	1	7.7	1.040540541	7.5	1.032110092	7.375	1.024305556
21/4/2016	7.7	1.084507042	7.4	1.04964539	7.266666667	1.033175355	7.2	1.024911032
20/4/2016	7.1	1.014285714	7.05	1.007142857	7.033333333	1.004761905	7.025	1.010427904
19/4/2016	7	1	7	1	7	1.009130226	6.9525	1.014593214
18/4/2016	7	1	7	1.013758146	6.936666667	1.019598236	6.8525	1.01480933
15/4/2016	7	1.027900147	6.905	1.029828486	6.803333333	1.019990005	6.7525	1.017709118
14/4/2016	6.81	1.031818182	6.705	1.015909091	6.67	1.014191586	6.635	0.996994741
13/4/2016	6.6	1	6.6	1.005331302	6.576666667	0.985514486	6.655	0.989591078
12/4/2016	6.6	1.010719755	6.565	0.978390462	6.673333333	0.986206897	6.725	0.990427099
11/4/2016	6.53	0.947750363	6.71	0.974582426	6.766666667	0.984003878	6.79	1.004809471
8/4/2016	6.89	1.001453488	6.885	1.002183406	6.876666667	1.024329692	6.7575	1.018846589

Table 2: Sheet for 0100.HK. The first two columns’ values come directly from Yahoo! Finance, whilst the rest are calculated within Excel

b. Tabulating occurrences

Once all the data is stored in Excel, another macro will run to tabulate every instance across all stocks in the last decade in which the three variables are valid.



The number for occurrences will then be filled into each of the empty cells in Table 1, and the results are 100 tables of such (to account for three variables). An example of the results can be seen below.

<b>Minimal Change as a Ratio</b>	<b>1.00</b>	<b>Moving Average (Days)</b>			
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Consecutive Days</b>	<b>2</b>	154400	148400	148300	149200
	<b>3</b>	201835	101500	112000	116500
	<b>4</b>	48000	65500	83200	91900

Table 3: Analysis table for stocks 0001.HK to 0100.HK across 10 years of closing prices

## **CHAPTER 3: RESULTS**

### **1. Tables**

The results for the first ten stocks (0001.HK to 0010.HK) can be seen in Appendix B.

### **2. Issues**

While conducting this study, several issues were experienced that hindered the study from being completed, including Microsoft Excel's capacity to run the macros. Microsoft Excel seems to experience problems when running workbooks with large amounts of data. Each additional sheet, which represents 10 years of data for one stock, contributes to about 300KB increase in file size. It is not an issue when analyzing 10 stocks, but Microsoft Excel stops responding once the sample data is upscaled.

### **3. Conclusion**

A market analysis of one hundred stocks (0001.HK to 0100.HK) has been done, but the analyzed data is insufficient to represent the whole Hong Kong Stock Exchange market. The data used for analyses are only a small portion (currently accounting for 4.27% out of 2343 stocks) of the whole HKEx market. To fully understand the market, more stocks have to be taken into account when analyzing the data, especially because the first one hundred stocks are the first one hundred most established listed companies in Hong Kong.

#### **4. Discussion**

Suggestions future development of this study include:

1. Changing the programming platform from Excel and Excel VBA, because external (Microsoft Excel) limitations restrict the capacity of the data analyzed
2. Benchmarking individual stock's performances to the HKEx market performance to discover anomalies in the stock market to then identify the high risk and high expected return performers

## **BIBLIOGRAPHY**

Berk, Jonathan B, Peter M DeMarzo, and Jarrad V. T Harford. *Fundamentals Of Corporate Finance*. Malaysia: Pearson, 2015. Print.

O'Neil, William J. *How To Make Money In Stocks*. New York: McGraw-Hill, 2009. Print.

## APPENDIX A:

### List of macros used for analysis

**Macros in user GUI:** the workbook investors will work with. Investors can determine their own start and end date of analysis, and can also choose the range of stocks they would like to look at. Other variables they can choose are the moving average (“Smooth data by (1) days”), and minimal change as a ratio (“Min price increase ratio”). Ideally, the values for these two would be those that have the highest likelihood of identifying the anomalous stocks. This study was focused on identifying those recommended values. For users to perform their own analysis, this workbook also allows users to generate graphs regarding their stocks of choice.

The screenshot shows a window titled "Stock Analysis". At the top left is a "Reset Settings" button. Below it are input fields for "End Date" (24-05-2016) and "Start Date" (24-05-2015). To the right are "Start stock" (0001.HK) and "End stock" (0200.HK). Below these are "Smooth data by" (1 days) and "Min price increase ratio" (1). A "Generate Analysis" button is located on the right side. At the bottom left, the text "Buy these stocks:" is visible.

Figure 1: Graphic User Interface for investors to use

1. generateStockData: generates one sheet per stock by grabbing data from Yahoo! Finance. Users can determine the starting and ending stock code, as well as the start and end date.
2. generateGraph: generates a time-series graph for a given stock and plots both the average and moving average on it.

3. resetform: resets the inputs of the GUI to the default (and recommended) values.

**Additional macros for market analysis:** this is the workbook used to analyze the stock data. Apart from the features available in the user GUI, this workbook is also equipped with other macros that enable analysis, such as generating the analysis tables and other macros for convenience in navigation between the numerous sheets.

1. generateTable: generates the tables used for analysis that encompasses three variables. The inputs for the analysis include starting and ending stock codes, and those values will be taken from the “Home” GUI sheet.
2. Additional macros such as deleteSheet (a loop to delete numerous sheets at a time), viewAnalysis (to move the sheet containing the analysis tables to the beginning of a worksheet) have also been created to increase the convenience of data analysis.

## APPENDIX B

### Results: Analysis tables for stocks 0001.HK to 0010.HK with three variables

Minimal Change as a Ratio	1.00	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	15440	14840	14830	14920
	3	19135	10150	11200	11650
	4	4800	6550	8320	9190

Minimal Change as a Ratio	1.01	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	6670	5240	3980	3220
	3	4540	2330	2130	1850
	4	390	790	990	1040

Minimal Change as a Ratio	1.02	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	3260	1650	990	600
	3	926	610	400	290
	4	40	200	170	140

Minimal Change as a Ratio	1.03	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	1390	570	350	230
	3	220	180	150	90
	4	10	60	40	30

Minimal Change as a Ratio	1.04	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	670	220	130	70
	3	77	50	40	20
	4	10	20	20	0

Minimal Change as a Ratio	1.05	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	400	140	50	40
	3	41	30	0	10
	4	10	0	0	0

Minimal Change as a Ratio	1.06	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	260	80	40	10
	3	1	20	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.07	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	190	50	30	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.08	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	100	30	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.09	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	60	20	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.10	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	50	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.11	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	40	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.12	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	40	10	10	10



	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.13	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	40	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.14	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	40	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.15	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	20	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.16	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	20	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.17	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.18	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.19	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.20	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.21	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.22	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.23	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.24	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.25	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10

	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.26	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.27	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.28	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.29	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.30	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.31	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.32	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.33	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.34	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.35	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.36	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.37	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.38	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10

	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.39	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.40	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.41	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.42	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.43	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.44	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.45	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.46	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.47	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.48	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.49	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.50	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.51	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10

	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.52	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.53	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.54	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.55	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.56	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.57	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.58	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.59	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.60	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.61	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.62	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.63	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.64	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10



	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.65	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.66	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.67	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.68	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.69	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.70	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.71	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.72	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.73	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.74	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.75	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.76	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.77	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10

	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.78	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.79	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.80	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.81	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.82	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.83	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.84	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.85	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.86	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.87	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.88	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.89	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.90	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10

	<b>3</b>	0	0	0	0
	<b>4</b>	0	0	0	0

Minimal Change as a Ratio	1.91	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.92	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.93	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.94	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.95	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.96	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.97	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.98	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	1.99	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0

Minimal Change as a Ratio	2.00	Moving Average (Days)			
		1	2	3	4
Consecutive Days	2	10	10	10	10
	3	0	0	0	0
	4	0	0	0	0