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Aplikace Matlabu v optimalizaci portfolia
Application of Matlab in Portfolio Optimization

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1. Introduction
2. Description of Matlab
3. Description of Portfolio Optimization
4. Calculation of Portfolio Optimization in Matlab
5. Conclusion

Bibliography
List of Abbreviations
Declaration of Utilisation of Results from the Diploma Thesis
List of Annexes
Annexes

References:

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The declaration
"Herewith I declare that I elaborated the entire thesis, including all annexes, independently."

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Contents

1 Introduction

Assets portfolio is calculated for diversifying the risk of financial assets. Because of using the different portfolio strategies can help us obtain the different returns, and we desire to obtain high returns, so it is important for us to choose the correct strategy to invest in the financial market.

The goal of thesis is to apply different portfolio optimization strategies and to compare their out-of-sample results. From the price of financial assets, we can calculate the returns and risks of these assets, so according to the expected return and covariance, we can obtain the portfolio weights, portfolio returns and risk by using of different portfolio optimization strategies. In compliance with the results of all strategies that used, we make the ranking of the performance for these strategies, and choose which is the best strategy to invest.

The calculation data that we apply in this thesis are weekly stock prices of HANG SENG Index component stocks on Hong Kong stock market from 2006 to 2015. We collect the price data, and use the Matlab software to work out portfolios by applying different strategies. The thesis consists of five chapters; the first chapter is introduction; the second chapter is the description of Matlab; in the third chapter, we introduce several different portfolio optimization strategies; and the fourth chapter we analyze and compare the results of portfolio strategies; finally, the last chapter is conclusion, in this part we can decide the best portfolio optimization strategy for investors in our thesis.

In the second chapter, we describe the development of Matlab software, and introduce the appearance of Matlab window. We also expound how to operate the software and introduce the basic language rules of Matlab. Furthermore, we introduce the basic function command in Matlab, which can help us easily understand Matlab programs in Annex A.

In the third chapter, we describe the theories of strategies that we apply in practical part. The strategies including Markowitz model, minimum variance strategy, utility function of portfolio, Bayesian strategy, and portfolio with risk-free rate strategy. Furthermore, we introduce two performance ratios: Sharpe ratio and Maximum drawdown.

In the fourth chapter, we apply the different portfolio optimization strategies by using the Matlab software, and analyze the results of these strategies. Finally, after comparing the performance ratios, we give out the recommendation of these strategies.

2 Description of Matlab

Matlab is a scientific computing programming language of 21st century. It has unique advantage in quantitative analysis and scientific computation. Using Matlab and its relevant products can speed up product research and reduce development time. Matlab can also be applied to analyze data and risk assessment in finance filed. Therefore, knowing the features and operations of Matlab is necessary for people who want to work efficiently with Matlab. In this chapter we introduce the Matlab. The description of Matlab is based on *Wang and Jinsiboge (2012), Wang, Gong, and He (2009)*.

2.1 Matlab development

Matlab is a numerical computing and graphic processing scientific software developed by MathWorks company. Matlab is the abbreviation of Matrix Laboratory, the first version (DOS 1.0) was published in 1984, after more than 30 years' improvement, the company has developed Matlab R2015b now. Matlab was admitted as the standard computing software in 1990s.

Matlab has powerful ability of computing and plotting, and provides a plenty of function libraries, toolboxes, which almost contain all computational engineering filed. The main advantages of Matlab are:

a) Matlab gathered many algorithms in science research and engineering calculation, and very convenient to compute; in addition, default double precision[1]array achieves high-precision calculation;
b) Matlab assembles powerful functions of calculation and visualization. Furthermore, Matlab provides built-in functions, programs and data interface. Therefore, it can be applied in scientific computing, control system and information processing filed to make analysis, simulation, and design work;
c) Matlab provides basic normal operation toolboxes such as algebraic, matrix, array

[1] Double precision refers to a type of floating-point number that has more digits to the right of the decimal point than single precision. For example, if a single precision number requires 32 bits, its double precision number will be 64 bits long.

operations, root-finding problems, optimizing calculations, derivate functions. Meanwhile Matlab can solve complicated engineering problems through programs computing and plot two-dimensional and three-dimensional graphics;

d) Matlab language is a kind of implementation and expatiation script language, which can quicken the speed of research and people can also use Matlab to reduce time and money cost in programs design and algorithm development.

2.2 Basic operation in Matlab

Opening the Matlab software, we can see a main window like figure in 2.1. This window consists mainly of a current folder, a command history window, a workspace, and a commands window.

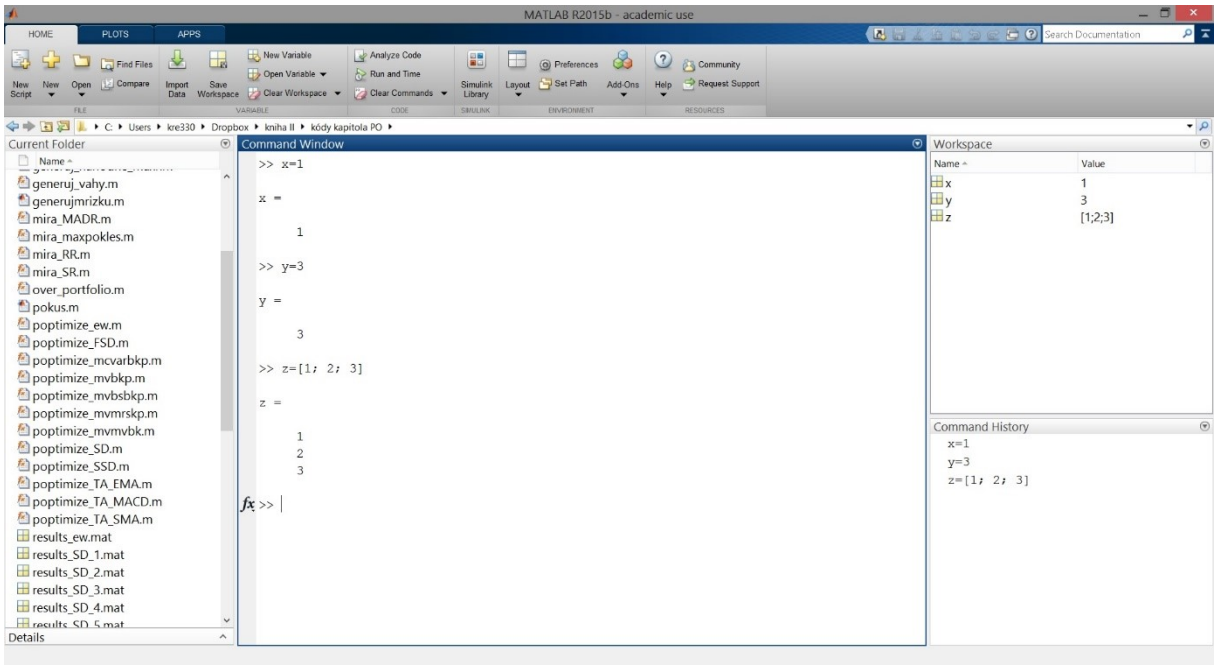

Figure 2.1 Matlab main window

2.2.1 Main window

In the top of Matlab main window we can see buttons such as *new*, *open*, and *import data*. All buttons have corresponding commands, so we can use either buttons or corresponding commands for simple steps. In addition, Matlab includes main sources such as toolboxes,

Simulink, block sets, link and target.

Toolboxes are the subroutine libraries of Matlab, every toolbox is designed for a specified professional subject, for example, finance toolbox is designed for application in finance field.

Simulink is an important component of Matlab. Simulink provides an integrated environment for dynamic systems modeling, simulation and comprehensive analysis. Simulink is a visualization simulation tool which is based on Matlab block diagram design environment, and users can construct complicated systems by clicking mouse rather than writing a lot of programs.

Block sets are many mathematics software packages; they are collections of Simulink sets that designed for special application field.

Link and target can automatically convert Simulink programs into embedded ANSIC programs, it helps the third-party software to apply Simulink.

When users want to close Matlab, they can click *Exit Matlab* in file menu, or input *exit* in command window, or click close icon in the top right of main window.

Matlab saves all input data until we use *clear* commands to clear data, or close the Matlab software.

Figure 2.2 Command window

2.2.2 Command window

Users can input commands in command window, and then calculation results are shown. Pressing *Enter* after we finish inputting commands, the commands are carried out, and then results are shown in the window. Figure 2.2 is appearance of command window, we can see there is an icon of function *fx*, when we click this icon and input a function name in a search box, we obtain the explanations and examples of this function in Matlab.

If there are any mistakes in the commands, Matlab can show us in which lines and why the commands are wrong. There are many short commands we often use in command window, and these commonly used commands are listed in table 2.1.

Table 2.1 Commonly used commands and functions in Matlab command window

Commands	Functions
clc	clear all content in command window
clear	clear all variables in workspace
clear all	clear all variables and functions
clear *variable name*	clear specified variable
delete (*file name*)	delete specified file in disc
help (*command name*)	query help information about command
which (*file name*)	query the folder of specified file
what	list *.m* and *.mat* files in current folder
disp (*variable*)	show the variable
Ctrl+P	call the last line command
Ctrl+N	call the next line command
Home (alternatively Ctrl) +A	cursor move to the beginning of line
End (alternatively Ctrl) +E	cursor move to the end of line
Esc (alternatively Ctrl) +U	clear the line
Del (alternatively Ctrl) +D	clear the character behind cursor
Ctrl+C	stop running programs

2.2.3 Matlab workspace

Workspace list relevant information about variables like variables' name, value, class. When users double clicks the variable, variable editor appears. Users can observe and change, but not calculate the variable data in variable editor. In table 2.2 we list commands relevant to workspace.

Table 2.2 Commonly commands about workspace

Commands	Functions
clear	clear all variables in workspace
who	display a simple list of all variables in current workspace
whos	list the details of variables like size and data format
load *name*	load all variables in specified file into workspace
load *name x y*	load variables *x* and *y* in specified file into workspace
save	save all variables into default file (*matlab.mat*)
save *name*	save workspace variables into specified file (*name.mat*)
save *name x y*	save workspace variables *x* and *y* into specified file
pack	arrange workspace internal storage
size (*variable*)	show the size of variable
length (*variable*)	show the length of variable

Except command window and workspace, there are current folder and command history windows in the main window. Files in current folder can be run directly, Matlab programs file is saved as *.m* extension format called M file. Users can click "file/new/M-file" in main window to create a new M file. if users want to execute a M file that is not in current folder, this M file cannot be recognized by Matlab, therefore users should add M file in the current folder. In command history window, we can look through all history commands and results that we ever did.

2.2.4 M file editor

Users can edit programs by using of M file editor, and save programs as M file. When users write the programs, Matlab can immediately point out mistakes and structure problems that users made and provides modification suggestion simultaneously.

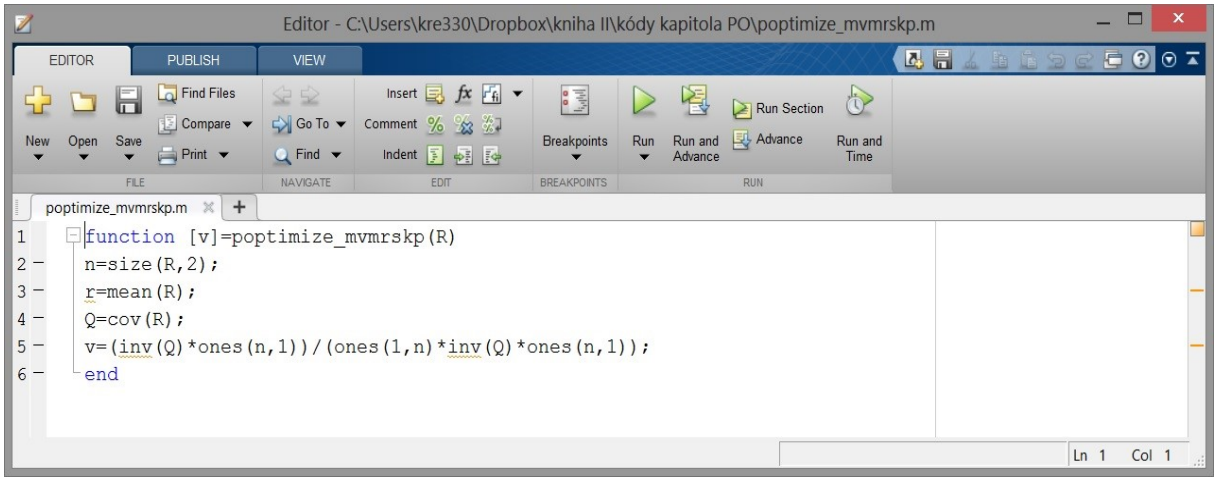

Figure 2.3 M file editor

In figure 2.3, there are different colors commands. Structure languages are in blue; command main body is black. If we click percentage button (%), the words behind percentage punctuation becomes green. Table 2.3 shows usage of punctuation in Matlab.

2.3 Matlab computing rules

Matlab commands and programs' structure are easier to learn than C/C++ and Java, therefore Matlab is convenient for users to make financial field computations.

Matlab has three basic data types: double precision array, cell array, and structure array. The data can be saved as these types. There are naming rules:

a) variable's name is case sensitive, so *r* and *R* means different variables;

b) variable's name starts with English character. Letter, number, and underline can be used after the first character, but spacing and punctuation are not allowed;

c) the length of variable name should not longer than 31 characters, the exceeding part will be ignored.

Table 2.3 Functions of punctuation in Matlab

Punctuations	Functions
spacing	separator between input variables; separator between array's columns
,	separator between command results; separator between input variables; separator between array's columns
.	decimal point
;	at the end of each command line not to show the calculation results; separates rows in matrices.
:	all component in one dimension
%	comment
( )	quote component in array; input function; confirm the computation sequence
[ ]	make up a vector or a matrix; function output
_	hyphen of function or file's name
…	connect two lines and construct a long command
@	to put before function name and construct a function handle

Furthermore, arrays in Matlab can be divided into:

- empty array without any factor;
- scalar which just has one factor;
- vector has one row or one column of factors, also called one-dimension array;
- two-dimension array with multi-row and multi-column;
- multi-dimension array such as three-dimension array.

The basic arrays' computations are adding (+), subtraction (-), multiplication (·), division (/) and power (^). When we add or subtract two arrays, the size[2] of these two arrays should be the same. When we multiply two arrays, the size of first array's columns and second array's rows should be the same. In Matlab, there are two types of division:

[2] Size refers to the number of rows and columns in matrices.

a) the equation A\ B means *inv* (A)·B or *pinv* (A)·B;

b) the equation A/ B means A·*inv* (B) or A·*pinv* (B).

In these two types of division, *inv* refers to inverse function for arrays have same size, *pinv* is the function for calculating generalized inverse

Moreover, we can multiply or divide factors at the same position in two arrays by using point calculation (.·, or . /) under condition that two arrays have the same size. In table 2.4 we introduce functions for matrices.

Table 2.4 Functions for matrices

Functions	**Explanations**
zeros ( )	create an all zero arrays
ones ( )	create an all one arrays
rand ( )	create pseudorandom matrices drawn from the standard uniform distribution
randn ( )	create pseudorandom matrices drawn from standard normal distribution
magic ( )	create a magic matrix[3]
diag ( )	create a diagonal matrix[4]
triu ( )	create an upper triangle matrix
tril ( )	create a lower triangle matrix
flipud ( )	up-down flip
eye ( )	create a unit matrix

In addition to value calculation, we have relations operators and logic operators in Matlab. When users input value as relation or logic expression in Matlab, input 1 means *true*, and 0 means *false*. When the result is expressed as relation or logic, output 1 refers to *true* and 0 refers to *false*. In table 2.5 and table 2.6 we list operational characters and functions.

[3] Magic matrix is a matrix that the sum of each row, each column, and the main and secondary diagonal are the same.

[4] Diagonal matrix is the matrix that all factors outside the main diagonal are zero.

Table 2.5 Relation and logic character

Characters	Functions	Characters	Functions
<	less than	>=	greater than or equal
<=	less than or equal to	=	equal to
>	greater than	~=	inequality sign
&	logical and	~	logical not
|	logical or		

Table 2.6 Relation operation functions

Functions	Explanations
all	all factors not equal to 0 is true
any	at least one factor not equals to 0 is true

2.4 Matlab programming principles

By means of Matlab editor users can edit and debug Matlab programs. Developing Matlab programs usually go through three phases: compilation, debugging, and improvement.

2.4.1 Basic design principle

Programs are written in Matlab editor and saved as M files. M files are divided into two types: script file and function file.

Script file consist of many Matlab programs, and these programs are arranged in order, script file shares the variables with workspace. Users can input script file's name in command window to run it.

Moreover, users can also put a large series of programs that achieve comprehensive functions into the same script file, when they need to compute comprehensive functions, just run this script file.

Function file is designed for single function programs. The difference between function and script is that parameter values for input and output are needed. Function file generally only

solves the problem of input parameters, and then return the output parameters to Matlab workspace. When users run the function file, they need to set actual parameter value. Many functions provided by Matlab are compiled by M file. When users complete a function, they can save and apply this function many times.

If users want to save the programs when they are compiling, they could use *Save* button to save current M file. When finished compilation, they can run the programs and check whether exist mistakes in programs, then modify the programs in terms of the prompted mistakes.

Inputting M file's name in command window and press *Enter* on keyboard can run the M file. Furthermore, users can run M file by clicking *Save file and Run* in *Debug* button or just pressing *F5* on keyboard.

The basic design principle for Matlab programs are as follows:

a) punctuation percentage (%) means comments, in this way users can explain what they want to do and what can be done next by using programs;
b) developing a habit that use *clear* command before the starting of main programs, this behavior can reduce the bad influence from other variables in workspace when users run the programs, but do not use *clear* in subprograms;
c) parameter values should be placed at the starting part of programs, using semicolon (;) after the end of each line can help us to prevent results display on the screen, this action increases the operating speed of programs;
d) trying to modularize the programs, when users compile the main programs, they can call the subprograms that users already saved rather than write a subprogram again;
e) using the *Debugger* button debug the programs including setting breakpoints, single step execution, continuous execution;
f) setting Matlab operating folder in order to successfully run the programs.

The basic structure of Matlab programs is shown in program 2.1, according to this structure, we can design a complete program.

Program 2.1 Basic structure of Matlab programs.

```
% note, explanation
clear command
define variables
carry out the commands line-by-line
…
…
…
control loops (including for, if then, while etc.)
carry out the command line-by-line
…
…
…
end
plot command (plot the results of program)
```

2.4.2 Program language structures

Matlab provides many program language structures, next we introduce these structures.

a) Branch structures

Branch structure means a program can be run only if condition is fulfilled. There are two types of branch structure: *if* structure and *switch* structure.

Generally, structure *if* is used together with *else* or *else if*. *If* structure bias to yes or no choice. Matlab runs the program sentences that follow the word *if* when condition is fulfilled. If the conditions are not fulfilled, Matlab runs the program sentences that follow the word *else*.

Structure *switch* is used together with *case* and *otherwise*. *Switch* structure bias to enumerate the situations. When the conditions are fulfilled with one or more values, run the program sentences that follow each *case*, if not, run the program sentences that follow *otherwise*.

b) Loop structures

Using loop structures can run a part of a program more than once, loop structures have two types: *for* structure and *while* structure.

Usually *for* structure can be used when users are able to set the times of loop, and *while* structure can be used until the case fulfills exit conditions. Furthermore, *break* can help exit the loop.

2.4.3 Function handle

Function handle provide a channel for us to apply function indirectly. Input @ character can create a function handle. For example:

Y=@*function_name*.

In this example *function_name* refers to the name of a specified M file or name of Matlab internal function. The meaning is saving *function_name* into variable Y.

Function handle have several advantages:

- it can help users calling functions conveniently;
- expanding the use range of sub functions;
- improving the reliability of function calling;
- reducing the lengthiness of programs design;
- increasing the efficiency of repeated executive programs.

2.4.4 Programs debugging

After completing a program, we should run it and check if there are any mistake. Common mistakes in matrices and functions are described below.

Dimensions are not match

When we calculate the matrices in Matlab, the dimensions of two matrices should match. For example, in program 2.2 *x* is a matrix with 2 rows and 2 columns, *y* is a matrix with 3 rows and 1 column. If we multiply *x* and *y*, Matlab outputs error because the number of matrix *x*'s columns is not equal to the number of matrix *y*'s rows.

Program 2.2 An example of arrays' dimensions are not match

```
x= [1 1; 2 2]
x =
     1     1
     2     2
y= [1; 2; 3]
y =
     1
     2
     3
x·y
Error using ·
Inner matrix dimensions must agree.
```

Computing between matrices and factors

We use punctuation dot (.) to distinguish the calculation between two matrices, matrix and factor. When we want to calculate matrix and factor, dot (.) should be applied.

Function definition mistake

If users do not input the correct name (including capital and small letter) of file, or the file does not exist in the current folder, the software prompts such as program 2.3

Program 2.3 An example of function definition mistake

```
>> m_fun
??? Undefined function or variable 'm_fun'.
```

Function output parameter mistake.

In a Matlab function, if one or more output parameters are not set, Matlab can prompt error when users run it.

Users have two choices to debug a program, one is direct method, another is debug by tool. Direct way is remove the semicolon (;) at the end of each line, then run this program, M file will output calculation process, users can check the process and find the mistakes. In addition,

users can debug by tool, setting sections and run sections one by one, then find which sections cannot be run successfully, and debug by using buttons in *Debug* menu.

2.5 Graph plotting

Matlab has powerful graphic processing functions, we can plot two-dimension and three-dimension graphs in Matlab. In this section we introduce how to plot two-dimension graph, we mainly describe three types of commands for plot two-dimension graph.

a) *plot (A, 'c')*

If A is a real matrix, the graph horizontal axis will be [1,2,3…], and each column of matrix A will be the vertical axis. *'c'* means the color and type of figure line.

If A is a complex matrix, the real component of each column will become the horizontal axis, and imaginary component of each column will become the vertical axis.

We can choose different colors and types of figure line in table 2.7.

Table 2.7 Colors and types of figure line

Letter	Color	Punctuation	Type of line
y	yellow	.	point line
m	pink	◦	cycle line
r	light blue	×	X line
g	green	-	full line
b	blue	*	star line
w	white	+	cross line
k	black		

Figure 2.4 is an example of *plot (A, 'c')*, we set matrix A= [2 3 4; 1 5 8; 3 6 1], then input commands in command window as follows in program 2.4.

Program 2.4 Commands of *plot (A, 'c')*

```
>> A= [2 3 4; 1 5 8; 3 6 1];
>> plot(a,'-g')
```

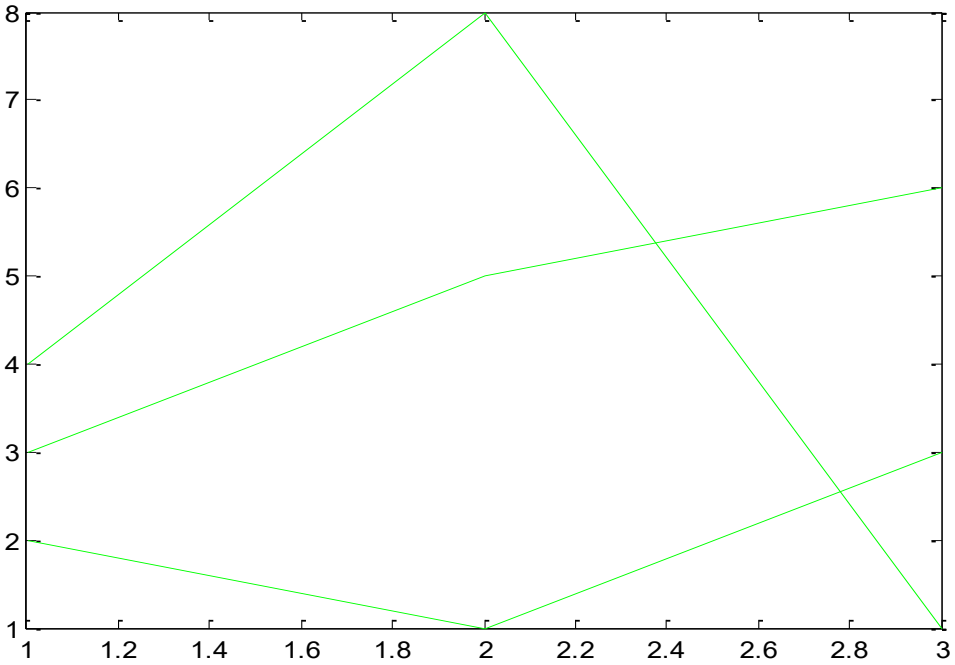

Figure 2.4 Result of *plot (A, '-g')*

b) *plot (A, B, 'c')*

If matrix A and matrix B have the same dimensions, the command means set each column of A as horizontal axis, and each column of B as vertical axis. Lines' type set by *'c'*, and the number of lines equal to the columns' number of A and B. Figure 2.5 is an example of *plot (A, B, 'c')* command, matrix A= [1 1; 3 2; 4 3; 7 5], matrix B= [6 2; 5 4; 3 4; 2 6], then we input program 2.5.

Program 2.5 Commands of *plot (A, B, 'c')*

```
>> A= [1 1; 3 2; 4 3; 7 5];
>>B= [6 2; 5 4; 3 4; 2 6];
>>plot (A, B,'-k')
```

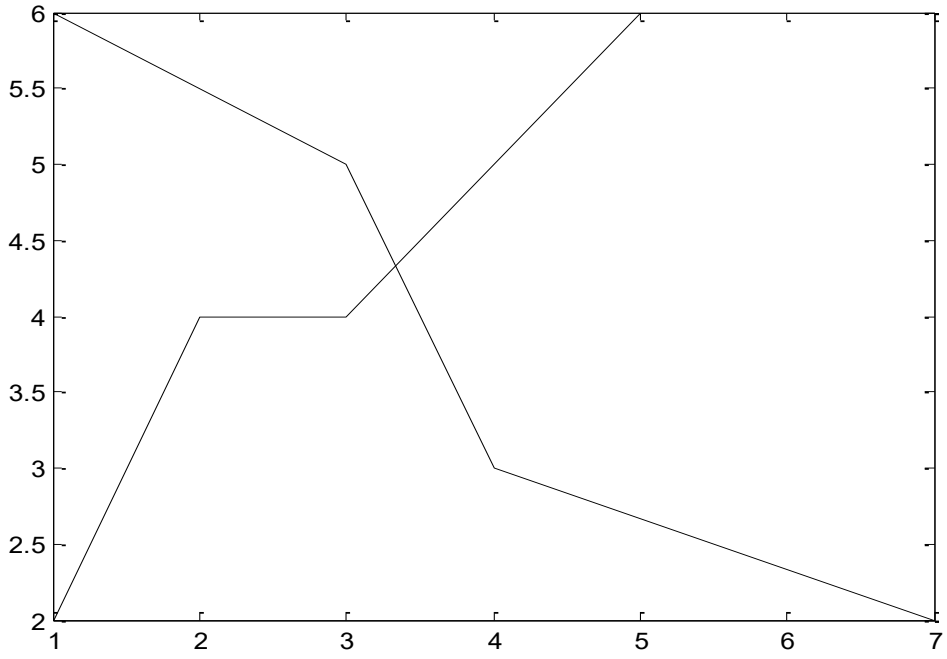

Figure 2.5 Result of *plot (A, B,'-k')*

c) *plot (A1, B1,'c', A2, B2, 'c'...)*

The meaning if this command is similar to *plot (A, B, 'c')*, Matlab can output graph of A1 and B1, A2 and B2. For example, we draw the lines of $y = 3 \cdot x + 1$, and $y = x^2$, then we input program 2.6 and obtain result in figure 2.6.

Program 2.6 Commands of *plot (A1, B1,'c', A2, B2, 'c'...)*

```
>> x1=0:0.5:10;
>>y1=3*x1+1;
>>x2=0:0.1:10;
>>y2=x2. ^2;
>>plot (x1, y1,'*b', x2, y2,'-m')
```

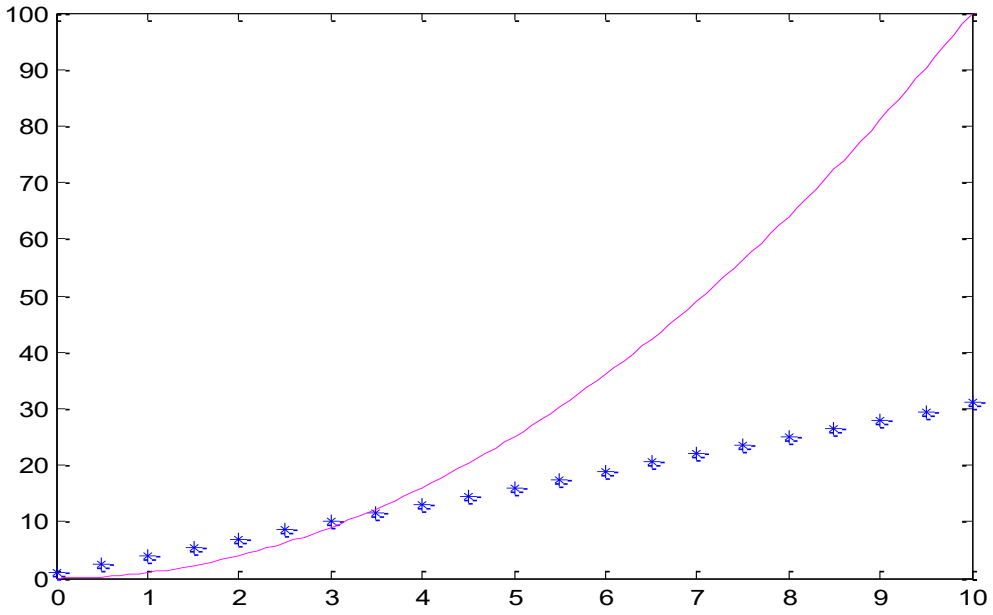

Figure 2.6 Result of *plot (x1, y1,'*b', x2, y2,'-m')*

Another method to draw multiple lines is using *hold* command. If users have already drawn a graph, using *hold on* command then new line of new plot can be added in this graph. Finally input *hold off* command and finish this process.

Besides, Matlab also provides functions for marking the graph, such as add grid lines, title of graph, axis name. In table 2.8, we can see common functions for plotting graph.

Table 2.8 Functions of graph

Functions	Explanations
title	add graph title
xlabel	add x axis titles
ylabel	add y axis titles
text	add text explanation for graph
grid	add grid lines

Furthermore, *subplot (m, n, p)* command can be applied to plot several frames of axes in one graph. Variable *p* means the order of area. For example, draw graph for $y=\sin x$, $y=\cos x$, $y=\log x$, $y=x^2$. We can obtain figure 2.7[5].

[5] The program of figure 2.7 is shown in Annex A program A1.

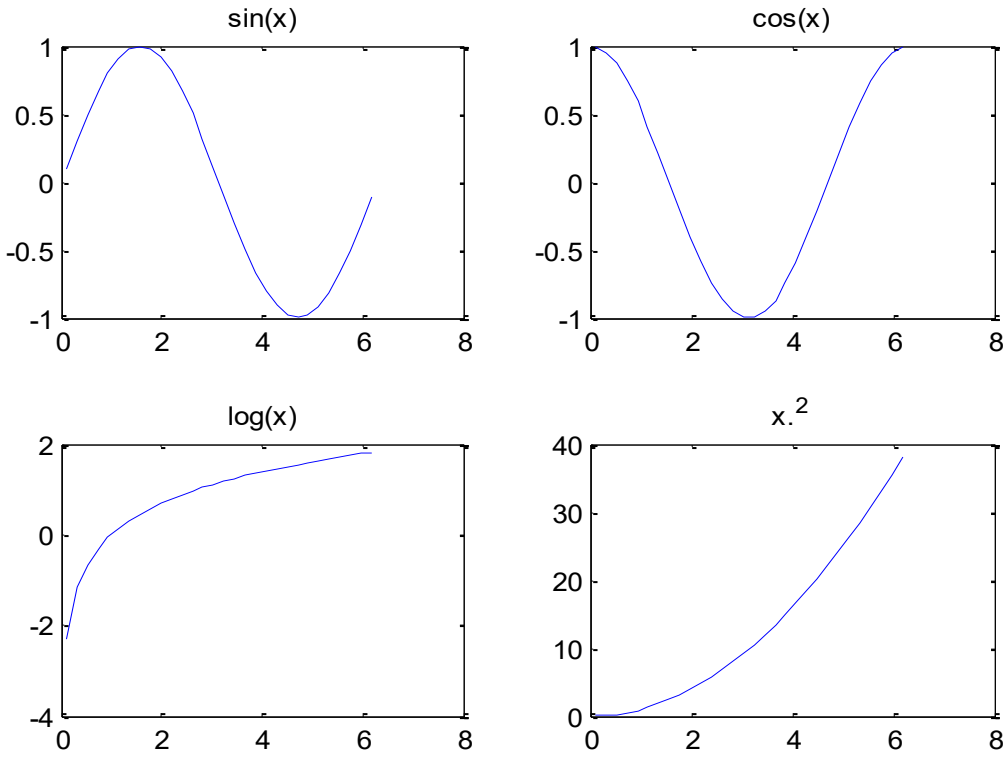

Figure 2.7 Result of *subplot (m, n, p)*

3 Description of portfolio optimization

Markowitz (1952) published the optimal investment strategy of numerous assets portfolios by using of mean-variance rule, which focus on the maximization of except return on portfolios in terms of different assets risk. Investors can use historical data to calculate mean, and then obtain efficient frontier of assets portfolios. However, the strategy performed poorly out-of-sample in practical process due to the estimation error.

Subsequently, many strategies were created to reduce estimation errors and improve the mean-variance model such as *Jorin (1986)* who applied Bayesian strategy to shrinkage estimator.

Best and Grauer (1992), *Jagannathan and Ma (2003)* proposed minimum-variance strategy which ignore the expected return and minimize the variance of portfolio.

Others non-Bayesian strategies including *Jagannathan and Ma (2003)* applied short sales constraints to reduce estimation error of minimum-variance model.

In this chapter we describe several assets portfolio allocation strategies such as naive portfolio strategy, sample based mean-variance model, minimum variance model, Bayes-Stein strategy, and portfolio with particular restrictions in detail. Then we introduce two performance ratios that can help us assess the performance of these portfolio allocation strategies.

3.1 Naive portfolio

Naive portfolio strategy is also known as $1/n$ portfolio strategy. Investors who follow the naive portfolio strategy hold a number of risky assets, and weights of these assets are the same. In naive portfolio strategy, we ignore the price volatility. No matter what price of risky assets are, we continue to invest these assets at same relative weight in a specified period. Investors who are risk-averse and have low expected return can decide to apply naive portfolio strategy.

The advantages of naive portfolio strategy are simple to understand and implement. This strategy is not sensitive to estimation error because in $1/n$ strategy there do not exist

complicated estimation factors. Theoretically, if investors invest in large amount of assets under equal weights, they can obtain the market return.

3.2 Markowitz model

Markowitz model is also called sample based mean-variance model. *Markowitz (1952)* showed that if we denoted x_i as the weight to invest in asset i in a portfolio, and exclude short sales at the same time, which means $x_i \geq 0$ for all assets in the portfolio, and we assume $x = [x_1, x_2, ..., x_n]^T$, expected return is $E(R)$ that $E(R) = [E(R_1), E(R_2), ..., E(R_n)]^T$. Then the expected return of portfolio is $E(R_p)$,

$$E(R_p) = \sum_{i=1}^{n} x_i \cdot E(R_i) = x^T \cdot E(R). \tag{3.1}$$

Variable $E(R_i)$ in equation (3.1) is expected return on asset i, which is independent of x_i for all assets. We constrain x_i equals or greater than 0, and the sum of x_i each portfolio equals to 1. Therefore, we can see the expected return of portfolio $E(R_p)$ is the weighted average of $E(R_i)$.

In general, people who want to obtain the maximum profit from their investment should put all of money in one asset that has the greatest expected return, but we all know there exist risk in financial market. We cannot put all eggs in one basket. Therefore, in order to reduce potential risk, we need to diversify portfolio. After calculating the expected return of portfolio $E(R_p)$, we should pay attention to the risk of this portfolio.

Markowitz model regards portfolio variance as risk, we assume $n \times n$ covariance matrix is denoted as $\boldsymbol{Q}$ in which $\boldsymbol{Q}=[\sigma_{i,j}, i=1, 2, ..., n, j=1, 2, ..., n]$. The equation of variance and standard deviation of portfolio are showed in equations (3.2) and (3.3) respectively,

$$\sigma_p^2 = \sum_{i=1}^{n}\sum_{j=1}^{n} x_i \cdot \sigma_{i,j} \cdot x_j = x^T \cdot \boldsymbol{Q} \cdot x, \tag{3.2}$$

$$\sigma_p = \sqrt{\sigma_p^2}\ . \tag{3.3}$$

Investors are concerned about maximization of the expected return. The diversification reduces risk and at the same time reduce expected return. They still want to find the maximum return from variety of portfolio compositions, so when we meet several portfolio compositions which have the same variance (or standard deviation), the maximum expected return portfolio should be chosen.

On the perspective of risk, people should choose the portfolio that has smaller variance (or standard deviation) when an array of portfolios have the same expected returns.

Combining two rules above, we can obtain a portfolio compositions line, which is called efficient frontier. Summarizing the conditions, we find the steps and constraints to carry out efficient frontier:

a) find the portfolio with maximum expected return;

b) find the portfolio with minimum standard deviation;

c) calculate the expected return and the standard deviation of portfolios in equidistant intervals.

Equation (3.4) is the constraints of maximum expected return portfolio,

$$\begin{cases} \max\ E(R_p) \\ x_i \geq 0,\ i = 1,\ 2,\ \ldots,\ n. \\ \sum_{i=1}^{n} x_i = 1 \end{cases} \tag{3.4}$$

Equation (3.5) is the constraints of minimum variance portfolio,

$$\begin{cases} \min\ \sigma_p^2 \\ x_i \geq 0,\ i = 1,\ 2,\ \ldots,\ n. \\ \sum_{i=1}^{n} x_i = 1 \end{cases} \tag{3.5}$$

In order to construct efficient frontier, we need to find the efficient frontier points between maximum expected return and minimum standard deviation, in line with *Kresta (2015)*, the constraints of efficient frontier are listed as follows:

$$\begin{cases} \min\ \sigma_p^2 \\ E(R_{j,generated}) = E(R_{p-\min}) + j \cdot \dfrac{E(R_{p-\max}) - E(R_{p-\min})}{100} \\ E(R_p) \geq E(R_{j,generated}) \\ x_i \geq 0,\ i = 1,\ 2,\ \ldots,\ n \\ \sum_{i=1}^{n} x_i = 1 \end{cases} . \qquad (3.6)$$

Variable $E(R_{p\text{-}max})$ in equation (3.6) is the expected return of maximum expected return portfolio, and $E(R_{p\text{-}min})$ is the expected return of minimum variance portfolio. Variable $E(R_{j,generated})$ on behalf of the portfolios that the values of expected returns are between the expected return of maximum expected return portfolio and minimum variance portfolio in equidistant intervals. Variable j in equation (3.6) refers to the j^{th} interval in which $j \in (0,100)$.

Figure 3.1 is a graph of constrained efficient frontier. In Matlab we can use *portopt* function to obtain efficient frontier. For example, we input *portopt (expected return, covariance, the number of generated portfolio)* and obtain figure 3.1.

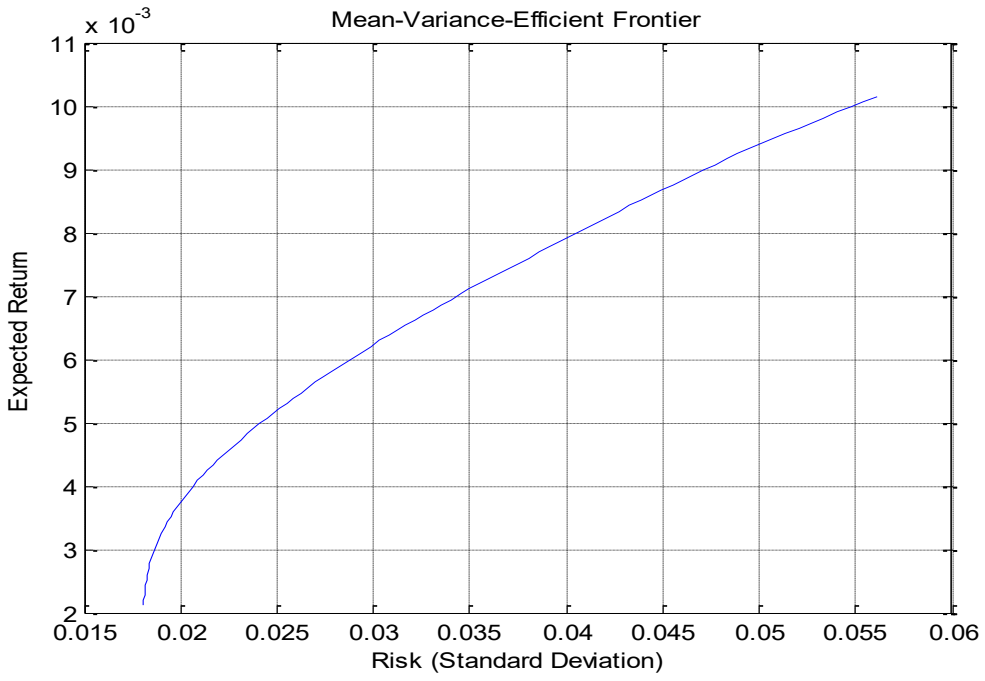

Figure 3.1 Efficient frontier

3.3 Minimum variance portfolio

Minimum variance portfolio is a strategy that investors only focus on the portfolio with the minimum variance. Under this strategy, investors ignore the expected return of the portfolio. The constraints of the minimum variance strategy are listed in equation 3.7,

$$\begin{cases} \min\ x^T \cdot \boldsymbol{Q} \cdot x \\ x_i \geq 0,\ i = 1,\ 2,\ \ldots,\ n. \\ \sum_{i=1}^{n} x_i = 1 \end{cases} \tag{3.7}$$

In order to implement this strategy, we can find out the portfolio which has minimum variance on the efficient frontier, or set the parameter k in equation (3.8) to high value. In compliance with expected utility theory in chapter 3.4, if parameter k goes to positive infinity value, the variance goes to minimum value. Therefore, we can set a very large value of parameter k and estimate the minimum variance portfolio. For example, in figure 3.2, red star point is the minimum variance portfolio on efficient frontier.

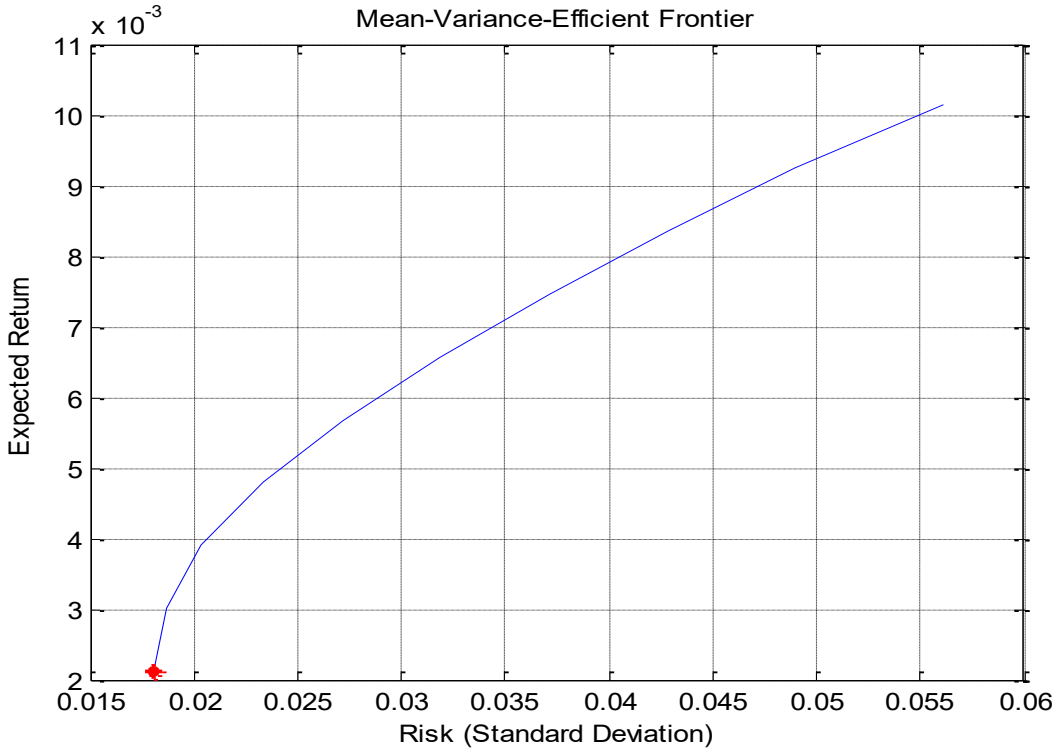

Figure 3.2 Minimum variance portfolio

3.4 Expected utility function

Except using Markowitz model to obtain the efficient frontier of portfolios, we apply utility function to determine the optimal portfolio compositions.

According to *Zmeskal et al. (2004)*, the utility function is showed in equation (3.8),

$$U = E(R_p) - k \cdot \sigma_p^2 . \tag{3.8}$$

Variable $E(R_p)$ is portfolio expected return, and σ_p^2 is variance of the portfolio, and parameter k is investor's attitude to risk. The explanations are as follows:

a) when $k > 0$, the investor is risk aversion;

b) when $k=0$, the investor is risk neutral;

c) when $k < 0$, the investor is risk seeking.

Figure 3.3 shows risk attitudes of investors. Risk aversion refers to investors that do not like risk, they just want to keep their investment away from high risk. In contrast, the risk seeking refers to the investors that chase risk. Risk neutral refers to the investors that have no preference on risk degree.

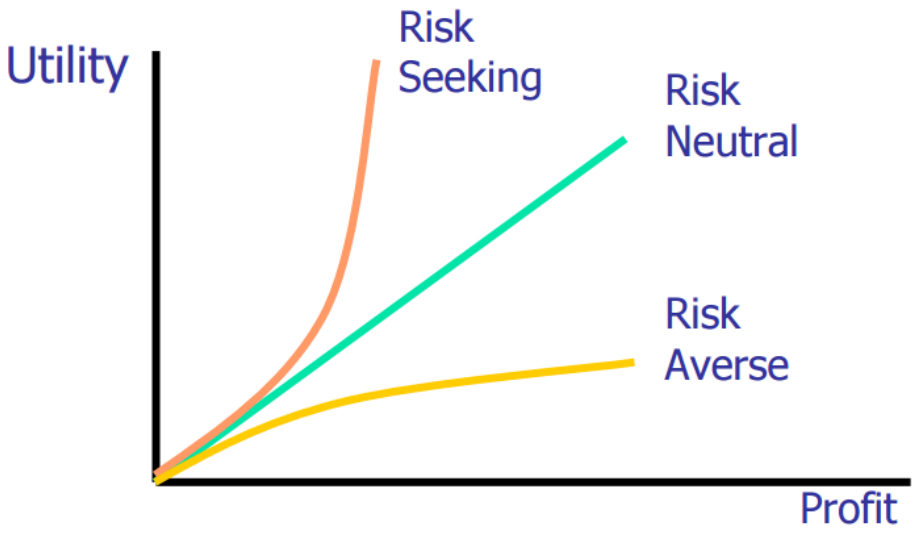

Figure 3.3 Risk preference of investors

Source:http://www.econ.jku.at/members/WinterEbmer/files/Teaching/managerial/lecture8.pdf

Investors can also obtain the optimal set of portfolios by using of utility function, the constraints are written in equation (3.9),

$$\begin{cases} \max\ E(R_p) - k \cdot \sigma_p^2 \\ x_i \geq 0,\ i = 1,\ 2,\ \ldots,\ n. \\ \sum_{i=1}^{n} x_i = 1 \end{cases} \tag{3.9}$$

From equation (3.8) we can find the risk seeking investor have greater expected return, which means if parameter k becomes lower, the utility becomes higher, and at the same time the expected return will become higher. We limit that parameter $k \in [0, +\infty)$, when parameter k equals to 0, the expected return can be the maximum expected return among portfolios, and when parameter k trends to $+\infty$, we obtain the portfolio with minimum variance. If we set a lot of values of k in equidistant interval, we can also obtain the efficient frontier.

3.5 Historical data estimation

We assume that there are n risky assets, and the length of historical data is m, so we have a $m \times n$ matrix, and then set $R_{i,t}$ as the return of asset i at time t. Variable $P_{i,t}$ in equation (3.10) is the price of asset i at time t, and $P_{i,t-1}$ is the price of asset i at one period before time t,

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}}. \tag{3.10}$$

Variable $E(R_i)$ in equation (3.11) is denoted as the mean of return on asset i over m period, in a word $E(R_i)$ is the mean of $R_{i,t}$. Generally, mean of returns can be applied as the expected return of asset i,

$$E(R_i) = \frac{1}{m} \cdot \sum_{t=1}^{m} R_{i,t}. \tag{3.11}$$

Equations (3.12) and (3.13) are variance and standard deviation of asset i over m period

respectively, which stand for the risk of return on asset i,

$$\sigma_i^2 = \frac{1}{m} \cdot \sum_{t=1}^{m} [R_{i,t} - E(R_i)]^2, \tag{3.12}$$

$$\sigma_i = \sqrt{\sigma_i^2} \quad . \tag{3.13}$$

Equation (3.14) shows the covariance of asset i and asset j, which means if return of asset i changes, how much return of asset j changes either. When the value of $\sigma_{i,j}$ is positive, asset i and j have the same trend, when the value of $\sigma_{i,j}$ is negative, asset i and j have opposite trends,

$$\sigma_{i,j} = \frac{1}{m} \cdot \sum_{t=1}^{m} [R_{i,t} - E(R_i)] \cdot [R_{j,t} - E(R_j)]. \tag{3.14}$$

Because we totally have n risky assets, the covariance matrix of n assets' returns should be a $n \times n$ matrix.

3.6 Bayesian strategy

Stein (1956) is the pioneer of Bayes-Stein strategy on portfolio allocation strategy. *Jorin (1986)* applied shrinkage estimation in assets portfolio selection, and provided sound rationale for estimators.

As a result of instability of classical mean-variance optimal portfolio strategy, many studies about how to reduce estimation error of mean-variance optimal portfolio were appeared. Under Bayes-Stein strategy, the expected return of the assets should be estimated by special estimators in equations (3.15) and (3.16),

$$\mu_t^{BS} = (1 - \delta_t) \cdot \mu_t + \delta_t \cdot \overline{\mu_t}, \tag{3.15}$$

$$\delta_t = \frac{n+2}{n+2+m \cdot (\mu_t - \overline{\mu_t})^T \cdot \boldsymbol{Q}_t^{-1} \cdot (\mu_t - \overline{\mu_t})}. \tag{3.16}$$

Variable μ_t^{BS} in equation (3.15) is the expected return under Bayesian strategy, and μ_t is sample estimated expected return of asset i, we can apply equation (3.2) to calculate μ_t,

variable $\overline{\mu_t}$ is the mean of sample estimated expected returns over all assets. Estimator δ_t is an estimator to help us calculate μ_t^{BS}, equation (3.16) shows the method how we can obtain this estimator δ_t.

In equation (3.16), variable n is the number of assets that investors intend to invest. Variable n refers to the range of historical data, and $\boldsymbol{Q}_t$ is covariance matrix.

Bayesian strategy not only shrinks the expected return, but also shrinks the covariance. The method is described in equations (3.17), and (3.18),

$$\boldsymbol{Q}_t^{BS} = \boldsymbol{Q}_t \cdot (1 + \frac{1}{m+\tau_t}) + \frac{\tau_t}{m \cdot (m+1+\tau_t)} \cdot \frac{1_n \cdot (1_n)^T}{1_n \cdot \boldsymbol{Q}_t^{-1} \cdot (1_n)^T}, \tag{3.17}$$

when

$$\tau_t = \frac{m \cdot \delta_t}{1 - \delta_t}. \tag{3.18}$$

Variable $\boldsymbol{Q}_t^{BS}$ in equation (3.17) is covariance matrix under Bayesian strategy, and $\boldsymbol{Q}_t$ is sample estimated covariance matrix, and 1_n is an n by 1 vector with all ones. Variable τ_t is precision of the informative prior on μ.

The new expected return μ_t^{BS} and new covariance matrix $\boldsymbol{Q}_t^{BS}$ can be applied in utility function to obtain optimal portfolios. The relative weights of Bayes-stein portfolio are as follows:

$$x_t^{BS} = \frac{(\boldsymbol{Q}_t^{BS})^{-1} \cdot \mu_t^{BS}}{(1_n)^T \cdot (\boldsymbol{Q}_t^{BS})^{-1} \cdot \mu_t^{BS}}. \tag{3.19}$$

In more recently studies, *Pastor (2000)*, *Pastor and Stambaugh (2000)* stated that the investor's beliefs are built by particular asset pricing model, and the extent of shrinkage is determined by the strength of violation of the model in the data and investor's confidence degree in the model.

3.7 Portfolio with particular restrictions

There are portfolio strategies with particular restrictions, such as investment with risk-free asset, and investment under short sale constraints.

Investment with risk-free assets

In Markowitz model, we assume that investors invest only in risky assets, but when investors want to hold risk-free assets, we can relax this restriction and invest in risk-free assets.

Firstly, we suppose there are n risky assets, and the length of historical data is m. Then we can invest in one more asset which is government bond, the expected return of risk-free rate asset is government bond return rate. Because the covariance of risk-free asset is equal to 0, we can obtain the covariance matrix of $(n+1)$ assets. Finally, we can find the efficient frontier by using constraints in equation (3.4), (3.5), and (3.6).

Investment under short sale constraints

Short sale means an investor borrow assets and sell them in the market in anticipation of assets' price decrease, and then buy and return these assets in the future. The goal of short sale borrowers is selling assets and obtaining profits, and then pay off them in the future at low price.

In the sample based mean-variance model, minimum variance model, and Bayesian strategy that we described before, we assume short sales are not allowed, which means the weight of each asset cannot be negative value. According to *DeMiguel, Garlappi and Uppal (2009)*, we relax this restriction and allow short sales in optimal portfolio problem.

Base on the optimal portfolio strategy equation (3.8), we introduce a new parameter L, the estimation of L is in equation (3.20),

$$L=x_t^T \cdot \mu_t - k \cdot x_t^T \cdot \boldsymbol{Q}_t \cdot x_t + x_t^T \cdot \lambda_t . \tag{3.20}$$

Variable λ_t in equation (3.20) is a n by 1 vector, which is Lagrange multipliers for the short sale constraints. The equation can also be seen as ordinary mean-variance portfolio with adjusted mean, such as equation (3.21):

$$L=x_t^T \cdot \varepsilon_t - k \cdot x_t^T \cdot \boldsymbol{Q}_t \cdot x_t . \tag{3.21}$$

In which $\varepsilon_t=\mu_t+\lambda_t$, so λ_t is the shrinkage of expected returns. when expected return is a negative value, and short constraints increase this value $(\lambda_t>0)$, the adjusted expected return ε_t can be increased.

3.8 Back testing of portfolio allocation strategies

Portfolio back testing is the process of testing one or more different assets allocation strategies by using of historical data. Because we assume that what happened in the past can reflect the future, before investing the assets portfolio in real market, we can make a simulation of our assets allocation strategies according to the past data. Then we can assess the performance of different portfolio strategies and decide which strategy is better for us.

In back testing process, we set T as observation period. Variable *m* stands for historical data, based on historical data, we can make estimation on different portfolio strategies; variable t is the date that back testing start. In other words, we know the historical price of assets in period T, in order to assess the effectiveness of different strategies, we apply asset prices data during period $(t\text{-}m)$ and $(t\text{-}1)$, and we can obtain the weights of a portfolio. Then simulate to invest the portfolio under estimated weights at time t. Next, we repeat this action, calculating the weights for time $(t+1)$ until we obtain the weights at time T. Finally, we have a weights matrix, then invest portfolios according to these weights, we gain the returns and final wealth of assets. Comparing final wealth, we can find the performance of different portfolio strategies. Equations (3.22) and (3.23) are return and wealth in time t,

$$R_{p,t}=\sum_{i=1}^{n} R_{i,t}\cdot x_{i,t}\,, \tag{3.22}$$

$$W_{t+1}=W_t+W_t\cdot R_{p,t}=W_t\cdot(1+R_{p,t})\,. \tag{3.23}$$

Variable $R_{i,t}$ in equation (3.22) is return on asset i at time t, variable $x_{i,t}$ is weight of asset i at time t, and $R_{p,t}$ is return of portfolio at time t. In equation (3.23), variable W_0=1

is initial wealth, or initial investment, and W_{t+1} is accumulated wealth after time t which means when $t=T$, wealth W_T is final wealth.

In accordance with final wealth, we obtain the annual return of portfolios. If we use weekly data, the relation of portfolios annual return and final wealth become the formula in equation (3.24), and we can obtain portfolios annual return (R_a) in equation (3.25),

$$W_0 \cdot (R_a + 1)^{\frac{T-(t-1)}{52}} = W_T, \tag{3.24}$$

$$R_a = \sqrt[\frac{T-(t-1)}{52}]{\frac{W_T}{W_0}} - 1, \tag{3.25}$$

3.9 Performance on portfolio allocation strategies

In this section we introduce two performance ratios that measure the effectiveness of different assets allocation strategies, and we apply these two ratios to assess the performance of portfolio in this thesis.

3.9.1 Sharpe Ratio

Sharpe ratio was derived in 1966 by William Sharpe who won a Nobel Memorial Prize in Economic and Sciences in 1900 for his work on capital assets pricing model. Sharpe ratio becomes one of the most famous ratios to measure return and risk performance on financial assets. This popularity of Sharpe ratio can be attributed to its simple measure.

In financial investment activities, an investor who has higher expected return can endure higher risk. In contrast, an investor who has lower expected return cannot endure high risk. The core concept of Sharpe ratio states rational investors should choose and hold high effectiveness assets portfolio. These high effectiveness assets portfolio include the maximum expected return portfolio under set risk level, or minimum variance portfolio under set expected return level. In other words, William Sharpe thought when investors build a portfolio with all risky assets, they should require their expected return of portfolio at least not lower than risk-free rate. Equation

(3.26) is the formula of Sharpe ratio,

$$Sharpe\ ratio = \frac{E(R_p) - R_f}{\sigma_p}. \tag{3.26}$$

In equation (3.26), variable $E(R_p)$ is expected return of portfolio, and R_f is return rate on risk-free asset. Variable σ_p is portfolio standard deviation.

This ratio is aim to calculate how many excess return can we obtain when we take per one unit of risk. Negative value of Sharpe ratio means assets portfolio expected return is lower than risk-free rate, it is better to invest in risk-free asset instead of risky assets portfolio. When Sharpe ratio is greater than zero but smaller than 1, which means the portfolio risk is higher than excess return. If Sharpe ratio is greater than 1, which means the excess return of portfolio is greater than risk, and in general we say this risky assets portfolio has good performance and we can invest this portfolio rather than government bounds.

Although Sharpe ratio is useful and easy to calculate portfolio performance, we should mention that only when we need to compare different portfolios' performance, the Sharpe ratio can make efforts. We cannot calculate just one portfolio and estimate its Sharpe ratio, if there are no comparison with other portfolios, Sharpe ratio makes no sense.

Furthermore, Sharpe estimates historical data, the results stand for past performance instead of future performance, we can only expect what happened in past can reflect the future.

3.9.2 Maximum drawdown

Maximum drawdown is an indicator of maximum loss from a historical peak to a trough of a portfolio. Maximum drawdown measures the downturn risk of portfolio over a specified time period. Maximum drawdown is expressed in equation (3.27):

$$Maximum\ drawdown = \frac{Peak\ value - Trough\ value}{Peak\ value}. \tag{3.27}$$

Equation (3.27) is the basic idea of Maximum drawdown, if we use it to measure performance of portfolios, we should substitute into variable W_t, for $t \geq 0$ which means a process of portfolio wealth. The peak value appears at time θ, so wealth at time θ should be

denoted as W_θ. We use DD_t to denote drawdown,

$$DD_t = \frac{\max_{\theta\in(0,t)} W_\theta - W_t}{\max_{\theta\in(0,t)} W_\theta} = 1 - \frac{W_t}{\max_{\theta\in(0,t)} W_\theta} . \tag{3.28}$$

Because of whole investment period is T so we measure Maximum drawdown (MDD) during the period $(0,T)$ equation (3.29):

$$MDD_{(0,T)} = \max_{t\in(0,T)} \left(1 - \frac{W_t}{\max_{\theta\in(0,t)} W_\theta}\right) . \tag{3.29}$$

4 Calculation of Portfolio Optimization in Matlab

In previous two chapters we introduce the basic characteristics and usage of Matlab software, and describe several different assets portfolio allocation strategies. In this chapter, we apply actual data in financial market to solve portfolio optimization problem by applying Matlab. We choose different assets portfolio allocation strategies and calculate the out-of-sample returns of portfolios, then compare performance of the chosen strategies, and find the best assets portfolio allocation strategies for selected data.

The chapter is divided into six sections, first section is description of data that we apply to make calculations. From the second section to the fifth section, we describe the calculation procedure and results of optimal portfolio returns by apply naive strategy, sample based mean-variance strategy, minimum variance strategies, Bayesian strategy, and sample based mean-variance strategy with risk-free investment possibility. In the sixth section, we collect the performance results of different strategies and make comparison, finally analyze which strategy performs the best. Because we need to compare the return and performance of all strategies, in this chapter we apply back testing on each strategy and set the back testing start at the same date.

4.1 Data description

There are many different types of assets in financial market, in this thesis we calculate the portfolios of stocks. The main internet resource of stock price is available on Yahoo Finance[6]. We select 43 stocks listed in Hong Kong Exchanges (HKEx) during past ten years. These stocks are the components of Hang Seng Index which is the main indicator of Hong Kong stock market performance. In fact, up to the end of 2015 Hang Seng Index consists of 50 component stocks in total, these 50 companies represent more than 50% of the capitalization of Hong Kong

[6] http://finance.yahoo.com/q/cp?s=%5EHSI+Components

Exchange. We select 43 stocks from 50 component stocks, because these 43 stocks have complete stock prices data from January 16th, 2006 to December 28th, 2015. The 10 years' data are collected in the form of weekly data of stock adjusted close prices on Yahoo Finance, so we have accurately 520 weeks' stock prices data. The stock prices are expressed in Hong Kong dollars (HKD). The name of selected 43 stocks are listed in the table 4.1, and stock prices are in the Annex B.

Table 4.1 Selected stock names and abbreviations

Names	Abbreviations	Names	Abbreviations
BANK OF E ASIA	BEA	BANKCOMM	BC
CATHAY PAC AIR	CPA	BELLE INT'L	BI
CHINA MER HOLD	CMH	BOC HONG KONG	BOC
CHINA RES BEER	CRB	CCB	CCB
CITIC	CIT	CHINA LIFE	CL
CKH HOLDINGS	CKH	CHINA MOBLIE	CM
CLP HOLDINGS	CLP	CHINA OVERSEAS	CO
GALAXY ENT	GE	CHINA RES LAND	CRL
HANG LUNG PPT	HLP	CHINA RES POWER	CRP
HANG SENG BANK	HSB	CHINA SHENHUA	CS
HENDERSON LAND	HL	CHINA UNICOM	CU
HK&CHINA GAS	HCG	CNOOC	CNO
HSBC HOLDINGS	HSBC	HENGAN INT'L	HGI
KUNLUN ENERGY	KE	HKEX	HKEX
MTR CORPOTATION	MTR	LENOVO GROUP	LEN
NEW WORLD DEV	NWD	LI&FUNG	LF
POWER ASSETS	PA	MENGNIU DAIRY	MND
SHK PPT	SHK	PETRO CHINA	PC
SINO LAND	SL	PING AN	PA
SWIRE PACIFIC A	SPA	SINOPEC CORP	SC
TINGYI	TY	TENCENT	TC
WHARF HOLDINGS	WHA		

We have 520 weeks' stock prices data that from January 16th, 2006 to December 28th, 2015. Then we can obtain 519 weekly returns for each stock by using of equation (3.10). In order to estimate back test in all strategies in this thesis, we assume to start our investment on January 22nd, 2007, and investment frequency is once a week. Therefore, the whole investment period is from January 22nd, 2007 to December 28th, 2015. The initial wealth is 1 HKD.

Furthermore, the mean return is regarded as the expected return of each stock, which can be calculated by using of equation (3.11). Most of the stocks returns in past 10 years have moderate fluctuation. However, there are two companies' stock returns decreased more than 50% during one week, these two companies are MENGNIU DAIRY and CITIC.

The stock price of MENGNIU DAIRY had a huge decrease because of milk powder quality problem in 2008. There was a series of milk powder incident in Chinese dairy product industry in 2008. This incident was result from Sanlu Group. Sanlu Group was a famous dairy product company in China, but it was detected that their infant milk powder products contained melamine chemical raw materials which caused a number of infants in many areas suffered from kidney stone. This news has caught a great attention by the public, and MENGNIU DAIRY was detected melamine in their infant milk powder products and liquid milk products in September 2008. That caused a panic to public because MENGNIU DAIRY was one of the most famous companies in Chinese dairy industry and people almost use its products every day. Soon afterwards, MENGNIU DAIRY apologized to people who suffered damages from their products, and their stock was suspended on HONG KONG Exchanges from September 17, 2008 to September 23,2008. After the resumption of trading, their stock price decreased 58.55%.

Another company that stock price dropped more than 50% is CITIC. CITIC was founded by Chinese former vice president Rong Yiren on October 4th, 1979. The company mainly invest in finance, real estate, and other services industry. On October 20th, 2008, the subsidiary company of CITIC which called CITIC Pacific issued a profit warning. CITIC Pacific pointed out that in order to decrease the currency risk of western Australia iron mine project, CITIC signed many currency future contracts with HSBC and BNP Paribas, but due to the inflation of Australian dollar, CITIC would loss around 15 billion Hong Kong dollars, and full year profits would be negative. After this warning issued, the stock price of CITIC decreased 65.15%.

4.2 Portfolio optimization of naive strategy

The main idea of naive strategy is no matter how changes in stock prices, investor always invest in the same stocks at the same relative weight. Because the relative weight invested in

43 stocks is $\frac{1}{43}$, we can directly estimate the return of portfolio and corresponding wealth in each week through equation (3.22) and equation (3.23) respectively. Running the program A2 in Annex A, we can obtain the portfolio returns and wealth of naive strategy. From table 4.2 we can see the final wealth on December 28th, 2015 is 2.27 HKD.

Table 4.2 Portfolio returns and wealth in naive strategy

Date	Portfolio Returns	Wealth	Date	Portfolio Returns	Wealth
1/22/07	-1.05%	0.99	6/22/15	-0.29%	2.74
1/29/07	1.62%	1.01	6/29/15	-1.94%	2.69
…	…	…	7/6/15	-4.12%	2.58
10/6/08	-17.71%	0.82	7/13/15	2.04%	2.63
10/13/08	-0.29%	0.81	7/20/15	-1.12%	2.60
10/20/08	-12.73%	0.71	7/27/15	-2.26%	2.54
…	…	…	8/3/15	-0.93%	2.52
11/17/08	-7.03%	0.70	8/10/15	-1.98%	2.47
…	…	…	8/17/15	-6.81%	2.30
4/27/15	0.67%	2.89	8/24/15	-2.47%	2.25
…	…	…	8/31/15	-4.40%	2.15
6/1/15	-0.20%	2.81	…	…	…
6/8/15	-0.45%	2.80	12/21/15	2.57%	2.29
6/15/15	-1.63%	2.75	12/28/15	-0.57%	2.27

From the calculation results of Matlab in table 4.2, we can find the value of wealth during whole investment period are between 0.70 HKD and 2.89 HKD. The wealth in figure 4.1 almost has increasing trend during past nine years. It had a great decrease in October 2008, which was influenced by losses of MENGNIU DIARY and CITIC. The wealth continuously decreased from June to September in year 2015, this decrease last around 5 months due to negative effect of mainland China stock market.

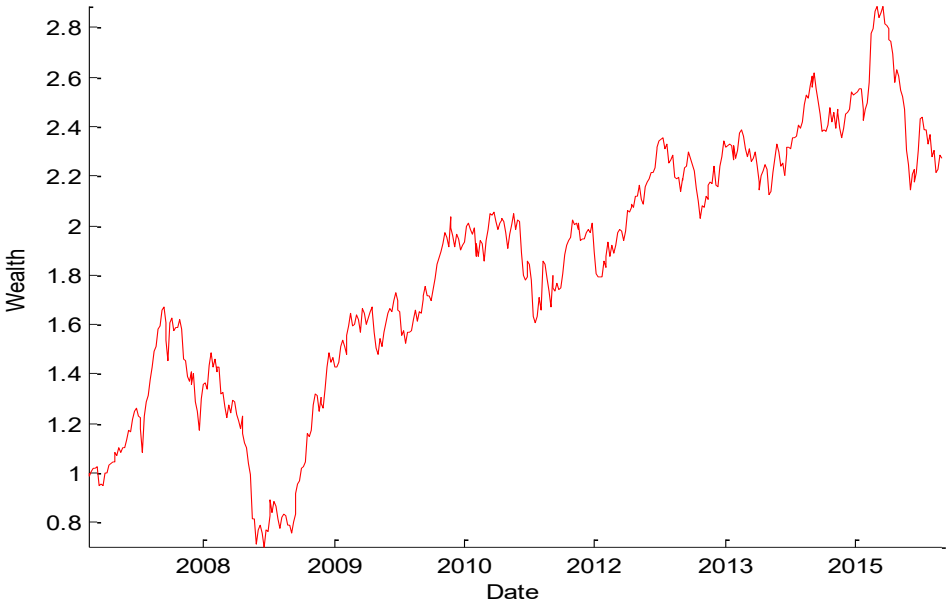

Figure 4.1 Wealth in naive strategy

In addition, we can use equation (3.26) and equation (3.29) to calculate Sharpe ratio and Maximum drawdown. The 10-year government bond return rate is 2.84%, the initial wealth is 1 HKD, so the weekly return of this government bond should be:

$$\textit{Weekly risk free rate}=1\cdot(1+0.0284)^{\frac{1}{52}}-1=0.000539\,. \tag{4.1}$$

Weekly risk free rate is 0.0539%, we calculate the mean of weekly portfolio returns is 0.21%, and standard deviation is 0.0319, the Sharpe ratio is:

$$\textit{Sharpe ratio}=\frac{0.0021-0.000539}{0.0319}=0.0489\,. \tag{4.2}$$

In table 4.3, we can see the final wealth, portfolio return, standard deviation, annual return, Sharpe ratio, and Maximum drawdown of our investment by using naive strategy. We calculate annual return by using of equation (3.25). The Maximum drawdown is 58.01%, which means the maximum loss from historical peak to trough is 58.01%.

Table 4.3 Results of naive strategy

Final wealth	2.27 HKD
Weekly portfolio return	0.21%
Weekly standard deviation	3.19%
Annual return	9.58%
Maximum drawdown	58.01%
Sharpe ratio	4.89%

4.3 In-sample portfolio optimization of Markowitz model

In mean-variance models, we calculate expected return and variance of each portfolio, and find the optimal portfolio by searching the expected returns or variances of portfolios under specified constraints. In this section, we estimate the in-sample efficient frontier by applying Markowitz model.

The expected return of portfolios can be calculated by equation (3.1). We regard mean of return as the expected return of each stock, and apply the program A3 in Annex A to find several permutation and combination of weights for portfolios. After calculating the expected return and variance of portfolios by different weights, we can obtain the feasible set portfolios. Figure 4.2 shows the feasible set portfolios, we use 520 weeks' historical stock prices which are from January 16th, 2006 to December 28th, 2015. The vertical axis is portfolio expected return in percentage, horizontal axis is standard deviation in percentage, which is the square root of variance. Each point represents a portfolio of 43 stocks, the interval of each portfolios is 0.25, so the step in program A3 in Annex A is 0.25.

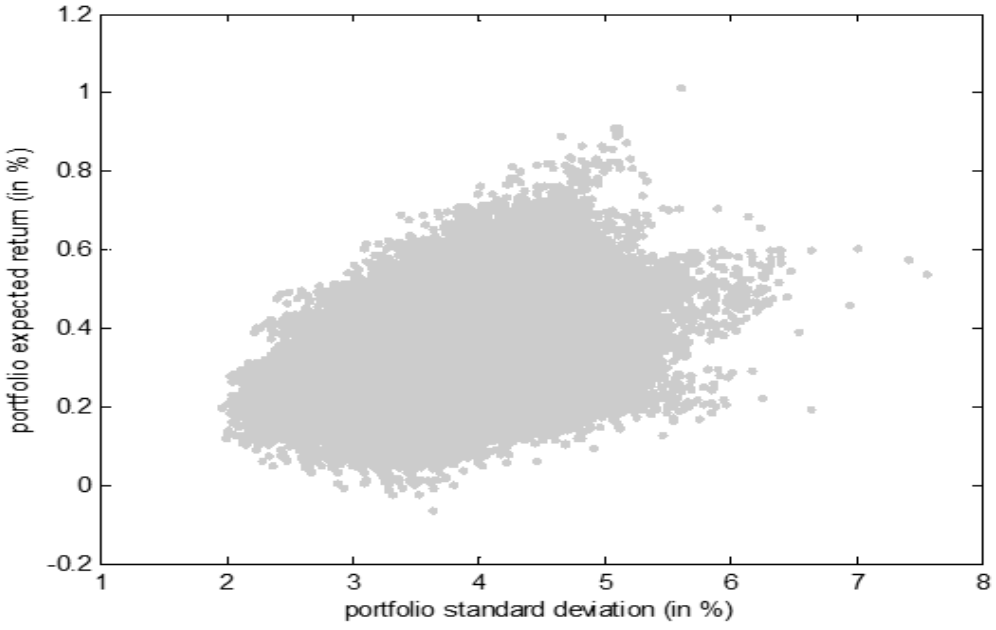

Figure 4.2 Feasible set portfolios

In order to find the optimal portfolio in Markowitz model, firstly we need to find the efficient frontier. The portfolios on efficient frontier have the greatest expected return than other

portfolios on the same variance level. At the same time these efficient portfolios also have the smallest variance than other portfolios on the same expected return level. The constraints of efficient frontier are shown in equation (3.6). Running the Matlab program A3 in Annex A, we can obtain figure 4.3. The black line in figure 4.3 is efficient frontier.

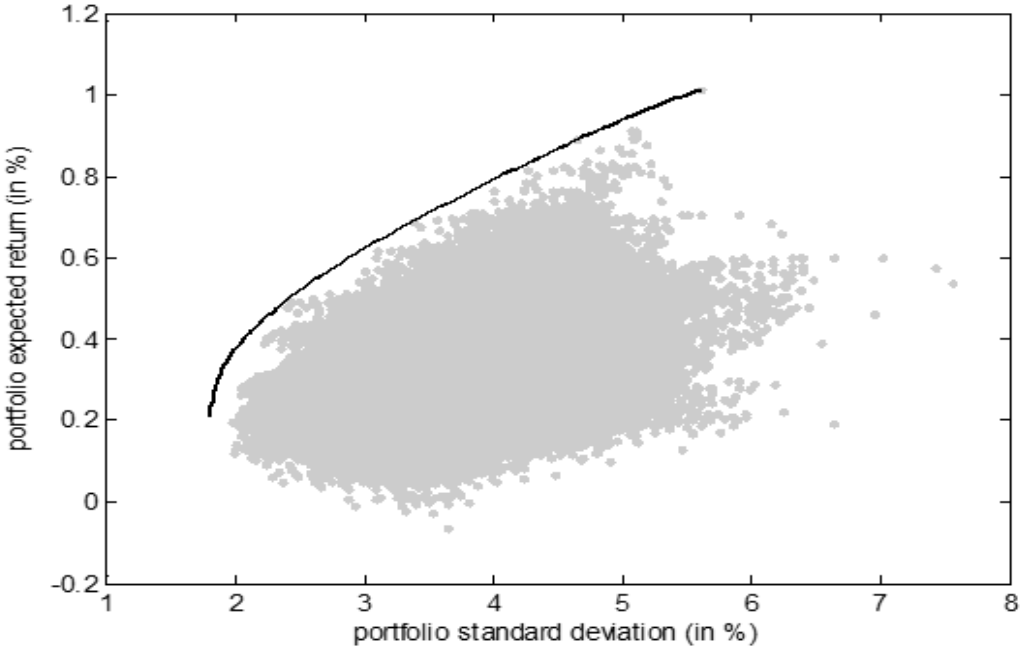

Figure 4.3 Feasible set and efficient frontier of portfolios

From figure 4.3 we can see the weekly expected return of portfolios on efficient frontier are between 0.21% and 1.01%, and standard deviation are higher than 1% and lower than 6%. These expected returns and standard deviations are calculated based on past 10 years' stock prices.

4.4 Portfolio optimization of Markowitz model

We estimate the in-sample efficient frontier by applying past ten years' data in section 4.3. In this section, we calculate the out-of-sample portfolio returns and wealth by applying Markowitz model with different value of k.

4.4.1 Back testing of Markowitz model with small value of *k*

In order to calculate portfolios back testing under Markowitz model, we apply utility theory

to determine the optimal portfolio. The back testing starts at January 22nd, 2007, and when we are in the back testing procedure, we do not know the return of next week. According to utility function and constraints of equation (3.8) and (3.9), we set a value of parameter k, and obtain the weights of investment stocks based on first 52 weeks' stock returns. Then we invest portfolio at week 53 according to these weights, and obtain the wealth at week 53. Next, we use the same way to calculate the new weights based on former weeks' data, and apply new weights to invest stocks at week 54. This procedure has been done continuously until the end of our investment date. We can use Matlab to calculate all procedure by running the program A3 in Annex A, then obtain the portfolio returns and wealth from January 22nd, 2007 to December 28th, 2015. In table 4.4 we can see a part of returns and wealth by using of Markowitz model. In all of this 5 strategies in table 4.4, the lowest wealth is 0.3 HKD on January 5th, 2009 when k=0, the highest wealth is 4.17 HKD on May 25th, 2015 when k=1.

Table 4.4 Returns and wealth in Markowitz model with small value of k

Dates	k =0		k =1		k =2		k =3		k =4	
	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth
1/22/07	-4.69%	0.95	0.16%	1.00	1.27%	1.01	1.28%	1.01	0.80%	1.01
1/29/07	-8.03%	0.88	-6.26%	0.94	-5.11%	0.96	-4.35%	0.97	-3.63%	0.97
…	…	…	…	…	…	…	…	…	…	…
5/21/07	-35.36%	0.69	-29.77%	0.78	-21.09%	0.89	-17.02%	0.93	-14.76%	0.96
…	…	…	…	…	…	…	…	…	…	…
1/5/09	-17.31%	0.30	-4.81%	0.47	-4.60%	0.48	-4.49%	0.54	-4.50%	0.60
…	…	…	…	…	…	…	…	…	…	…
5/25/15	1.63%	2.24	3.00%	4.17	3.35%	3.61	3.46%	3.23	2.14%	3.19
…	…	…	…	…	…	…	…	…	…	…
9/14/15	-45.82%	0.76	-8.19%	2.44	-4.12%	2.34	-2.77%	2.22	-2.09%	2.32
…	…	…	…	…	…	…	…	…	…	…
12/21/15	-0.47%	0.80	0.92%	2.57	1.08%	2.45	1.16%	2.32	1.20%	2.43
12/28/15	0.46%	0.80	1.02%	2.60	1.15%	2.47	1.51%	2.35	1.63%	2.47

At the end of 2015, k=1 strategy have the highest wealth in figure 4.4 (black line). When k=2 and k=4 we have the similar final wealth. All strategies except k=0 strategy in figure 4.4 obtain the final wealth between 2 HKD and 3 HKD, only in k=0 strategy we lose, the final wealth of this strategy is lower than initial wealth.

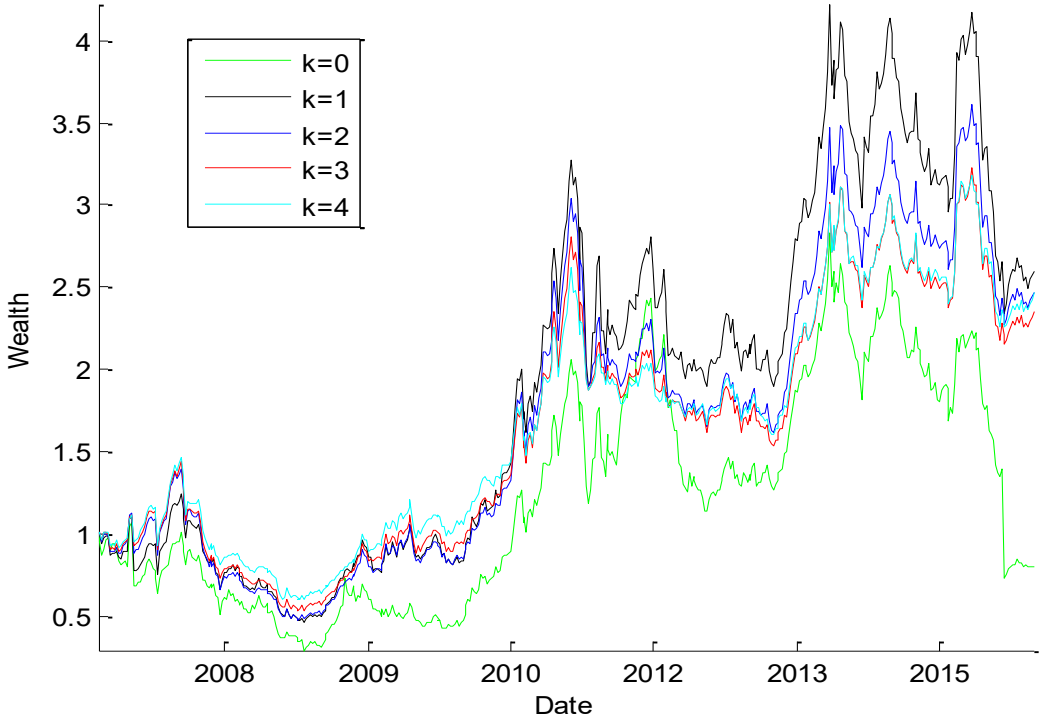

Figure 4.4 Wealth in Markowitz model with small value of k

In order to compare the wealth when we apply different values of k, we can find that in figure 4.4, we have the lowest wealth path in most of the time when k=0. Moreover, all of these 5 strategies' wealth suffered a decrease from 2008 to 2009 because of financial crisis influence. At the beginning of 2013 all strategies had obvious increase because of bull market. At third quarter of 2015, the wealth of all these strategies decreased due to negative influence of mainland China stock market.

Table 4.5 Results of Markowitz model with small value of k

k	0	1	2	3	4
Final wealth	0.80	2.60	2.47	2.35	2.47
Weekly portfolio return	0.19%	0.35%	0.30%	0.27%	0.27%
Weekly standard deviation	6.64%	5.30%	4.60%	4.14%	3.79%
Annual return	-2.43%	11.21%	10.61%	9.99%	10.57%
Maximum drawdown	74.20%	62.39%	65.41%	62.68%	59.11%
Sharpe ratio	1.80%	5.15%	4.98%	4.82%	5.17%

From table 4.5, we can compare the performance ratios of different parameter k strategies. When k=0, the wealth has the Maximum drawdown which is 74.20%, this is the greatest Maximum drawdown among these 5 strategies, and following this strategy we obtain the

smallest Sharpe ratio that is 1.8%, so k=0 is the worst performance strategy among others in table 4.5. When we follow the k=4 strategy, we obtain the smallest Maximum drawdown and greatest Sharpe ratio which are 59.11% and 5.17% respectively, so k=4 is the best performance strategy than other strategies in table 4.5.

From table 4.5 we can see when the values of k close to 0, portfolio returns trends to become greater and standard deviations become greater too. However, when k=0, the portfolio return is 0.19%; when k=1, the portfolio return is 0.35%. The return 0.19% is smaller than 0.35% because when k=0, we have riskier tendency than k=1, so we invest the stocks under riskier situation. In case the risk happens, we meet the losses. For example, when k=0, we invest 100% weight in BELLE INT'L on May 21st, 2007, but we can see in table 4.4, the return on this date is -35.36%; we invest 100% in TENCENT on January 5th, 2009, the return on this date is -17.31%; we invest 100% in CHINA RES BEER on September 14th, 2015, the return on this date is -45.82%. When k=0, our portfolios become more concentrate on one stock, it is riskier than other strategies that k>0.

The characteristics of invested stock quantities in table 4.6 can make this explanation clearer. The column named N in table 4.6 is the number of weeks that we invest only in one stock, from this column we can see when k=0, the number of weeks we invest in one stock is 461. Our investment last for 467 weeks from January 22nd, 2007 to December 28th, 2015, and during most of weeks in this period we invest in only one stock. Therefore, risk is gathered in one stock in our portfolio strategy when k=0. Comparing with other strategies in table 4.6, when k=4 there is no week that we invest in only one stock. At least we invest in 2 stocks and on average in 5.18 stocks. The maximum quantities of invested stocks are 11.

Table 4.6 Stock quantities in portfolios of Markowitz model with small value of k

k	Minimum	Mean	Median	Maximum	Standard deviation	N
0	1	1.01	1	2	0.11	461
1	1	2.43	2	6	1.09	98
2	1	3.65	4	10	1.66	54
3	1	4.48	4	10	1.74	11
4	2	5.18	5	11	1.76	0

4.4.2 Back testing of Markowitz minimum variance strategy

In Markowitz minimum variance strategy, we only concentrate on the risk of our portfolios, the portfolio with minimum variance can be chosen. We apply minimum variance constraints in equation (3.7) and utility function in equation (3.8), and run the program A4 in Annex A by Matlab to obtain the results. The calculation procedure is similar to Markowitz model in section 4.3.2, we just use different value of parameter k. Because in minimum variance strategy we make effort to avoid risk, so a huge value of parameter k should be set in utility function. In this case, we set k= 1,000,000 to calculate portfolio weights. The results are shown in table 4.7, table 4.8.

Table 4.7 Returns and wealth in Markowitz minimum variance strategy

Date	Portfolio Returns	Wealth	Date	Portfolio Returns	Wealth
1/22/07	-2.06%	0.98	10/20/08	-8.45%	0.88
1/29/07	1.82%	1.00	…	…	…
2/5/07	-1.01%	0.99	5/18/15	0.88%	2.96
2/12/07	1.55%	1.00	…	…	…
2/19/07	-0.55%	1.00	12/7/15	-0.90%	2.76
…	…	…	12/14/15	0.51%	2.77
10/6/08	-12.14%	1.00	12/21/15	1.10%	2.80
10/13/08	-4.80%	0.96	12/28/15	1.07%	2.83

In table 4.7, we obtain the lowest wealth that is 0.88 HKD on October 20th, 2008, and the highest wealth that is 2.96 HKD on May 18th, 2015. The lowest return is -12.14% on October 6th, 2008. The lowest return in Markowitz minimum variance strategy is higher than the lowest return in small k Markowitz model which is -45.82%. Therefore, wealth in Markowitz minimum variance strategy is more moderate than small k Markowitz model.

From figure 4.5 we can see there just appears one obviously decrease of wealth in October, 2008. As a result of financial crisis in 2008, most of stock had prices decrease. Especially on October 6th, 2008, all of 43 stocks in Hong Kong stock market had prices decrease, so no matter what stocks we choose, we have loss on this date. After 2008, the wealth had an increase trends.

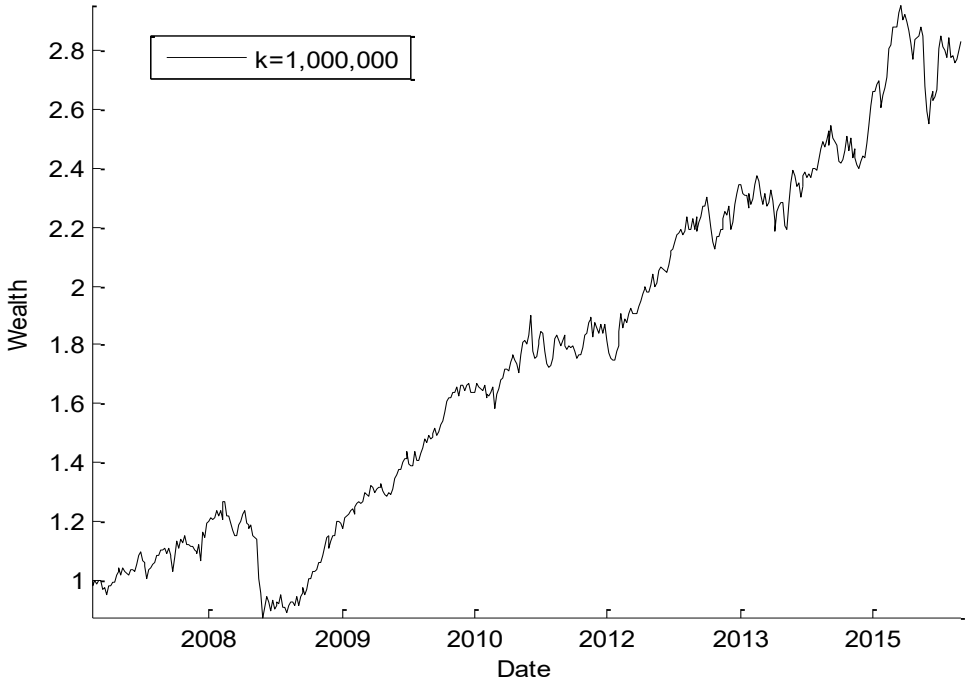

Figure 4.5 Wealth in Markowitz minimum variance strategy

We assume to start our investment at January 22nd, 2007 with 1 HKD, and finally obtain 2.83 HKD on December 28th, 2015. The average weekly portfolio return is 0.24% and annual return is 11.02%.

Table 4.8 Results of Markowitz minimum variance strategy

k	1,000,000
Final wealth	2.83
Weekly portfolio return	0.24%
Weekly standard deviation	1.98%
Annual return	11.02%
Maximum drawdown	31.1%
Sharpe ratio	8.8%

From table 4.9, we can see there is no week that we invest in one stock when k= 1,000,000. We invest at least 5 stocks and at most 15 stocks within one week, so the portfolios in minimum variance strategy have much lower risk than Markowitz model when k=0.

Table 4.9 Stock quantities in portfolios of Markowitz minimum variance strategy

k	Minimum	Mean	Median	Maximum	Standard deviation	N
1,000,000	5	9.34	9	15	1.88	0

4.5 Portfolio optimization of Bayesian strategy

Bayesian strategy of stock portfolio allocation is applied to reduce the estimation errors of mean-variance optimal portfolio, so we use the special estimators in equation (3.16) to calculate the Bayesian expected return of 43 stocks in equation (3.15), and apply estimators in equation (3.18) to calculate Bayesian covariance in equation (3.17). Then apply utility function with different values k to estimate the optimal portfolios.

4.5.1 Back testing of Bayesian strategy with small value of *k*

We use the new expected return and covariance of Bayesian strategy to calculate the optimal portfolios under constraints of utility function in equation (3.9), and set parameter k equal to 0, 1, 2, 3, and 4. The back testing period is 467 weeks. Running the program A5 in Annex A by Matlab, we can obtain returns and wealth by using of Bayesian strategy in table 4.10 and table 4.11.

Table 4.10 Returns and wealth of Bayesian strategies with small value of k

Dates	k =0		k =1		k =2		k =3		k =4	
	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth
1/22/07	-4.69%	0.95	0.37%	1.00	1.37%	1.01	1.12%	1.01	0.66%	1.01
…	…	…	…	…	…	…	…	…	…	…
5/21/07	-35.36%	0.69	-28.39%	0.80	-20.10%	0.90	-16.25%	0.94	-14.05%	0.97
…	…	…	…	…	…	…	…	…	…	…
3/17/08	-17.19%	0.51	-11.81%	0.68	-6.95%	0.70	-5.10%	0.77	-4.20%	0.88
…	…	…	…	…	…	…	…	…	…	…
1/5/09	-17.31%	0.30	-4.78%	0.48	-4.52%	0.51	-4.49%	0.57	-4.62%	0.64
…	…	…	…	…	…	…	…	…	…	…
9/19/11	-17.54%	1.30	-17.54%	1.99	-12.21%	1.96	-9.73%	1.87	-8.47%	1.86
…	…	…	…	…	…	…	…	…	…	…
9/14/15	-45.82%	0.76	-6.81%	2.32	-3.44%	2.25	-2.31%	2.23	-1.75%	2.26
…	…	…	…	…	…	…	…	…	…	…
5/25/15	1.63%	2.26	3.10%	3.90	3.40%	3.42	2.72%	3.19	1.54%	3.04
…	…	…	…	…	…	…	…	…	…	…
12/28/15	0.46%	0.81	0.96%	2.48	1.57%	2.41	1.72%	2.39	1.79%	2.41

During the back testing period for all strategies in table 4.10, our wealth is between 0.30 HKD and 3.9 HKD. From figure 4.6 we can find there are three times huge decreases of wealth

among all strategies. The first time is from 2008 to 2009 because of financial crisis, many real estate industry companies and financial industry companies were influenced by this crisis. In addition, milk powder incident of MENGNIU DAIRY and foreign currency investment loss of CITIC aggravate this situation. The second wealth decrease started from the third quarter of 2011 which is because of tight fiscal policy on real estate industry and potential problem of local government debt. Furthermore, slowed down of mainland China economic growth also influence the Hong Kong stock market. The third wealth decrease is in the third quarter of 2015, the decrease is caused by depression of manufacture industry in China. In September 2015, CHINA RES BEER divested non-beer assets and became a single beer stock, but due to the negative influence of macroeconomic and bad wealth, the profits of Chinese beer industry continue to decreased.

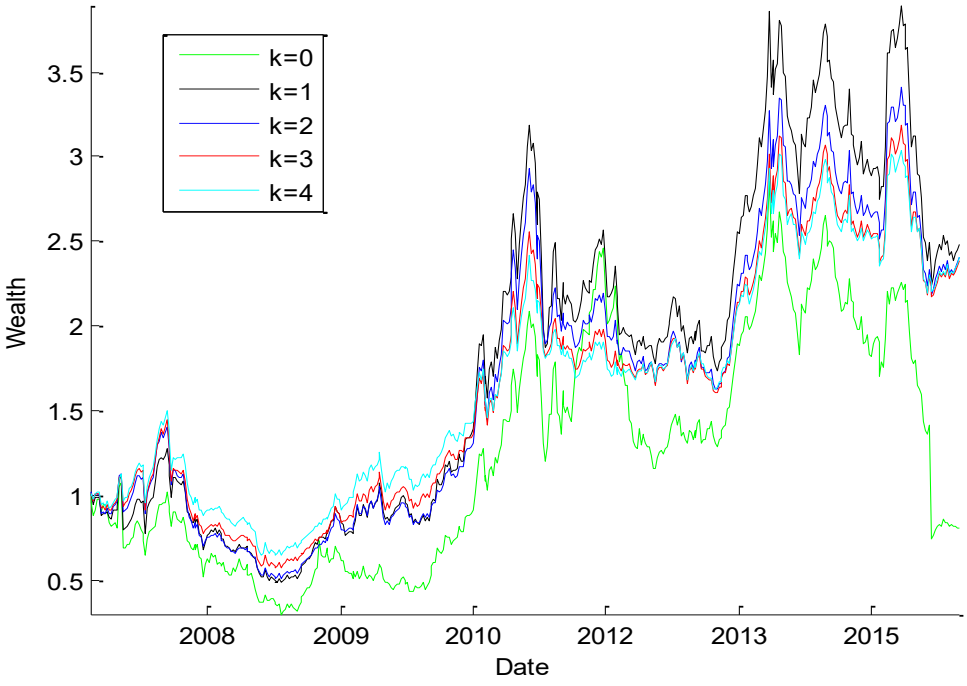

Figure 4.6 Wealth in Bayesian strategy with small value of k

From figure 4.6 we can see when k=0 we have the lowest wealth during most of time except in 2012. When k=1 we have the highest wealth after 2010, and when the value of k between 2 and 4, our wealth has smaller fluctuation than k=0, 1.

Table 4.11 Results of Bayesian strategies with small value of k

k	0	1	2	3	4
Final wealth	0.81	2.48	2.41	2.39	2.41
Weekly portfolio return	0.19%	0.32%	0.28%	0.26%	0.25%
Weekly standard deviation	6.65%	5.05%	4.35%	3.89%	3.55%
Annual return	-2.09%	9.53%	9.23%	9.14%	9.23%
Maximum drawdown	74.2%	62.5%	63.8%	60.4%	56.9%
Sharpe ratio	1.8%	5.0%	4.9%	5.0%	5.1%

When k=1, we obtain the highest weekly portfolio return that is 0.32% in table 4.11. When k=0, we obtain the lowest weekly return 0.19%. Therefore, we find that if the value of k becomes lower, the portfolio returns are not always higher, but the standard deviation becomes higher. If we apply k=0 strategy, we need to take a risk of stock market.

Because Bayesian strategy is an improved method of Markowitz model, we can compare the results in table 4.11 and table 4.5. The greatest weekly portfolio return in Markowitz model is 0.35% when k=1, and the smallest weekly portfolio return is 0.19% when k=0. However, the greatest weekly portfolio return in Bayesian strategy is 0.32% when k=1, and the smallest portfolio return is 0.19% when k=0. The weekly portfolio return in Markowitz model is greater than in Bayesian model when k=1

The greatest weekly standard deviation in Markowitz model is 6.64% when k=0 and the smallest weekly standard deviation is 3.79% when k=4. In Bayesian strategy, the greatest weekly standard deviation is 6.65% when k=0, and the smallest is 3.55% when k=4. Comparing the weekly standard deviation, we can find when k=0, risk in Markowitz model is lower than Bayesian strategy; when k>0, risk in Bayesian strategy is lower than Markowitz model. Although Bayesian strategy is an improved method of Markowitz model, the results of Bayesian strategy in our calculation are not always better than Markowitz model.

Table 4.12 Stock quantities in portfolios of Bayesian strategies with small value of k

k	Minimum	Mean	Median	Maximum	Standard deviation	N
0	1	1.01	1	2	0.12	460
1	1	2.84	3	7	1.35	83
2	1	4.13	4	10	1.72	23
3	2	5.09	5	10	1.71	0
4	2	5.75	6	12	1.85	0

In table 4.12, we can see when k=0, there are 460 weeks that our portfolio only consists of one stock. When the value of k is 3 or 4, there is no week that we invest in one stock. Comparing to Markowitz strategies with small value of k, Bayesian strategy's portfolios consist of more stocks.

4.5.2 Back testing of Bayesian strategy with great value of *k*

In order to better observe the Bayesian strategy, we set parameter k with greater values, the calculation procedure is the same with section 4.5.1, running the program A6 in Annex A by Matlab, we can obtain the returns and wealth in table 4.13.

Table 4.13 Returns and wealth of Bayesian strategy with great value of k

Dates	k=5		k=25		k=125		k=625		k=3,125		k=15,625	
	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth
1/22/07	0.38%	1.00	-0.39%	1.00	-1.79%	0.98	-2.02%	0.98	-2.05%	0.98	-2.06%	0.98
1/29/07	-2.82%	0.98	-0.99%	0.99	1.44%	1.00	1.76%	1.00	1.81%	1.00	1.82%	1.00
…	…	…	…	…	…	…	…	…	…	…	…	…
10/6/08	-10.75%	0.77	-11.90%	1.01	-12.04%	1.01	-12.11%	1.00	-12.13%	1.00	-12.14%	1.00
…	…	…	…	…	…	…	…	…	…	…	…	…
1/5/09	-4.65%	0.71	-4.52%	0.92	-4.35%	0.92	-4.31%	0.91	-4.30%	0.91	-4.29%	0.91
…	…	…	…	…	…	…	…	…	…	…	…	…
2/24/14	6.07%	2.98	3.19%	2.29	0.75%	2.26	0.51%	2.28	0.49%	2.28	0.48%	2.28
…	…	…	…	…	…	…	…	…	…	…	…	…
12/21/15	1.25%	2.39	1.12%	2.48	1.11%	2.77	1.11%	2.81	1.10%	2.80	1.10%	2.80
12/28/15	1.83%	2.43	1.38%	2.51	1.14%	2.81	1.08%	2.84	1.07%	2.83	1.07%	2.83

From table 4.13 we can see the lowest portfolio return is -12.14% when k=15,625, and the highest portfolio return is 6.07% when k=5. The wealth during investment period is between 0.71 HKD and 2.98 HKD. The wealth of different strategies in figure 4.7 are more centralized. Especially when $k > 25$, the wealth trends are almost the same. When k=5, the wealth is more fluctuation than other strategies, and both of the highest and the lowest wealth appeared in this strategy. When the value of k becomes higher and higher, which means our risk attitude become more conservative. The strategies with high value of k are close to minimum variance strategy, and wealth become very similar when $k \geq 625$.

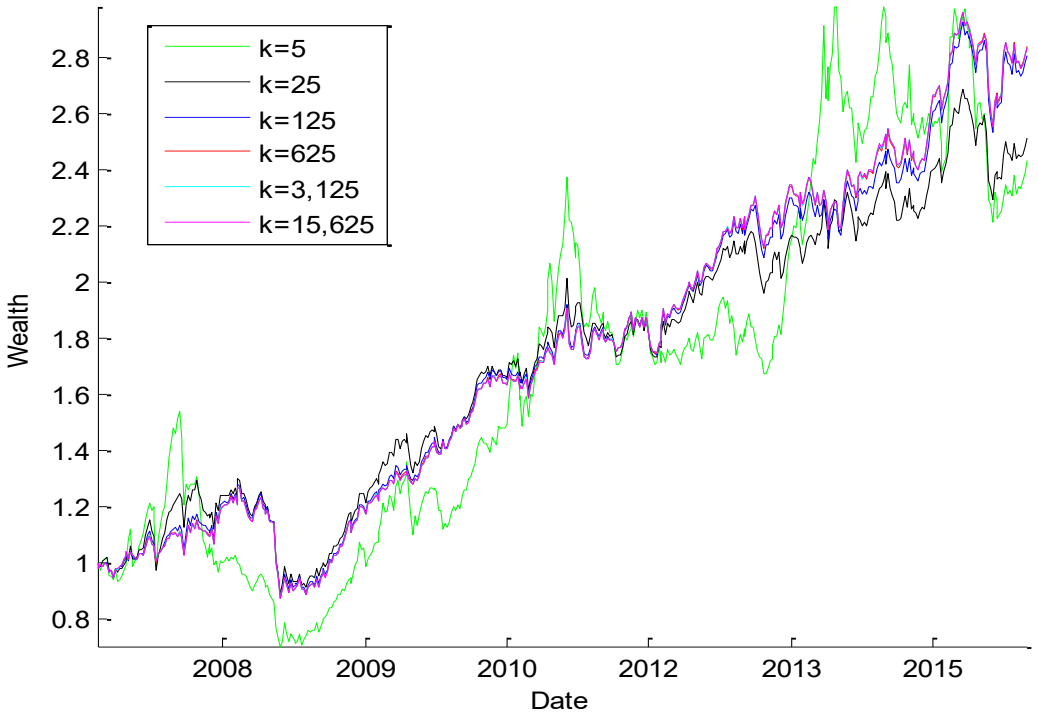

Figure 4.7 Wealth in Bayesian strategy with great value of k

We obtain the highest final wealth and annual return that are 2.84 HKD and 11.04% respectively when k=625, but the weekly standard deviation in this strategy is lower than k=125 strategy. According to Sharpe ratio in table 4.14, we obtain the highest Sharpe ratio which is 8.79% when k=625 and k=3,125, and the lowest Sharpe ratio which is 5.33% when k=5. Comparing the Maximum drawdown in table 4.14, we can find k=5 strategy performs much worse than k>5.

Table 4.14 Results of Bayesian strategy with great value of k

k	5	25	125	625	3,125	15,625
Final wealth	2.43	2.51	2.81	2.84	2.83	2.83
Weekly portfolio return	0.25%	0.22%	0.24%	0.24%	0.24%	0.24%
Weekly standard deviation	3.31%	2.20%	2.00%	1.98%	1.98%	1.98%
Annual return	9.32%	9.69%	10.91%	11.04%	11.02%	11.02%
Maximum drawdown	54.05%	31.37%	31.04%	31.05%	31.07%	31.07%
Sharpe ratio	5.33%	7.00%	8.62%	8.79%	8.79%	8.78%

Table 4.15 Stock quantities in portfolios of Bayesian strategy with great value of k

k	Minimum	Mean	Median	Maximum	Standard deviation	N
5	2	6.34	7	12	1.92	0
25	4	9.41	9	17	2.08	0
125	5	9.46	9	16	2.03	0
625	5	9.39	9	15	1.92	0
3,125	5	9.36	9	15	1.90	0
15,625	5	9.34	9	15	1.88	0

From table 4.15 we can see there is no strategy that invest in only one stock over whole back testing period, we invest at least 2 stocks at the same time. When k=125, the maximum quantity of portfolio stocks is 17. When $k \geq 625$, the quantities of portfolios become more stable which are between 5 and 15 stocks, and on average we invest 9 stocks at the same time.

4.6 Portfolio optimization with risk-free asset

In the previous strategies, we calculate the optimal portfolios without risk-free asset, but in this section we can add the risk-free asset to our portfolio. We choose 10-year Chinese government bond as our risk-free asset to invest, the annual return rate of this government bond is 2.84%. Therefore, the bond weekly return is 0.0539%. We add this risk-free rate into our return matrix, so the number of assets in our investment is 44 rather than 43. In addition, the new covariance matrix with 44 assets can be calculated by equation (3.14). After calculating the return of 44 assets from January 23rd, 2006 to December 28th, 2015, we obtain the expected returns for 44 assets by using equation (3.11).

4.6.1 Back testing of portfolio with risk-free asset under small value of *k*

The back testing procedure is similar to Markowitz model, the only difference is new return and covariance matrix with risk-free asset. We use the optimal portfolio constraints in equation (3.9), and run the program A7 in Annex A by Matlab, then obtain the results in table 4.16, 4.17 and 4.18. The portfolio returns and wealth during back testing period are partly shown in table

4.16. We apply small value of k, the general trends are similar to Markowitz model.

Table 4.16 Returns and wealth of portfolios with risk-free asset under small value of k

Dates	k =0		k =1		k =2		k =3		k =4	
	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth
1/22/07	-4.69%	0.95	0.16%	1.00	1.27%	1.01	1.28%	1.01	0.80%	1.01
1/29/07	-8.03%	0.88	-6.26%	0.94	-5.11%	0.96	-4.35%	0.97	-3.63%	0.97
…	…	…	…	…	…	…	…	…	…	…
5/21/07	-35.36%	0.69	-29.77%	0.78	-21.09%	0.89	-17.02%	0.93	-14.76%	0.96
…	…	…	…	…	…	…	…	…	…	…
1/5/09	-17.31%	0.29	0.01%	0.49	0.03%	0.51	0.04%	0.58	0.04%	0.67
…	…	…	…	…	…	…	…	…	…	…
1/13/14	10.86%	2.75	10.86%	4.02	10.35%	3.11	9.69%	2.69	9.36%	2.73
…	…	…	…	…	…	…	…	…	…	…
9/14/15	-45.82%	0.74	-8.19%	2.32	-4.12%	2.10	-2.77%	1.95	-2.08%	2.07
…	…	…	…	…	…	…	…	…	…	…
12/21/15	-0.47%	0.78	0.92%	2.44	1.08%	2.20	1.16%	2.03	1.20%	2.14
12/28/15	0.46%	0.78	1.02%	2.47	1.15%	2.22	1.51%	2.06	1.63%	2.18

From table 4.16 we can see, the lowest portfolio return appears on September 14th, 2015 when k=0, which is -45.82%. while if we apply k>0 strategies in table 4.16 at the same date, we can obtain the much higher portfolio returns. The lowest wealth is 0.29 HKD on January 5th, 2009 when k=0, and the highest wealth is 4.02 HKD on January 13th, 2014 when k=1. We can find the trends of wealth in figure 4.8 are similar to wealth in Markowitz model and Bayesian strategy with small value of k.

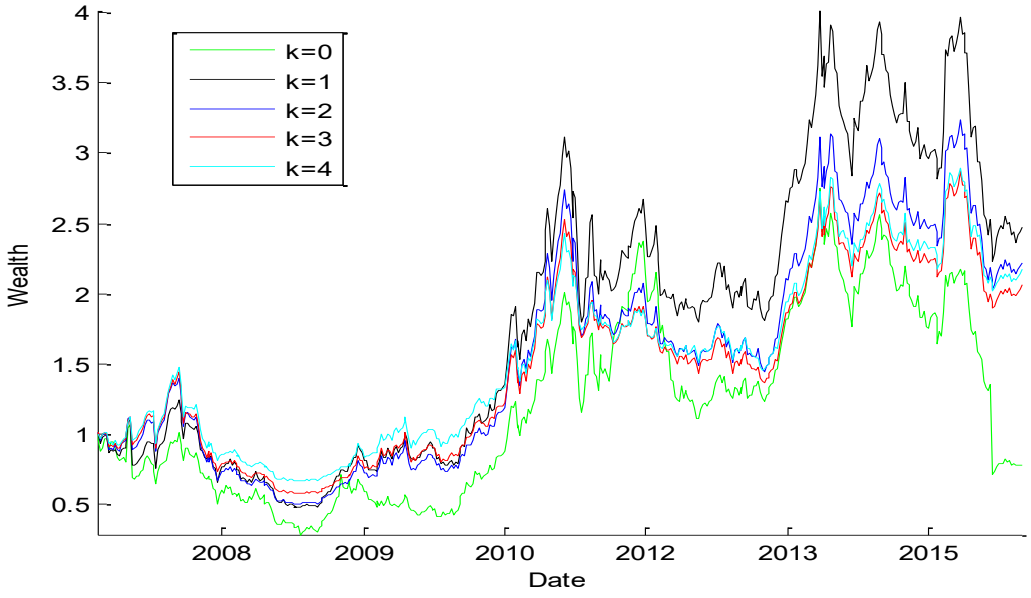

Figure 4.8 Wealth in portfolios with risk-free asset under small value of k

The final wealth of these strategies are listed in table 4.17, we can obtain the highest final wealth 2.47 HKD when k=1, and the lowest final wealth is 0.78 HKD when k=0. The k=1 strategy also obtain the highest weekly portfolio return, but the standard deviation of this strategy is lower than k=0, so k=1 is better than k=0. Comparing the Sharpe ratio of these strategies in table 4.17, we can find k=1 strategy has the highest Sharpe ratio that is 4.96%, and the second highest is 4.53% when k=4. However, if we compare the Maximum drawdown, we obtain the lowest Maximum drawdown which is 54.3% when k=4, and the third lowest Maximum drawdown is 61.5% in strategy k=1. Therefore k=1 strategy has better return to cover risk than k=4 , but k=4 strategy has smaller wealth plunge than k=1.

Table 4.17 Results of portfolios with risk-free asset under small value of k

k	0	1	2	3	4
Final wealth	0.78	2.47	2.22	2.06	2.18
Weekly portfolio return	0.18%	0.33%	0.28%	0.24%	0.23%
Weekly standard deviation	6.64%	5.26%	4.54%	4.05%	3.67%
Annual return	-2.44%	9.50%	8.34%	7.55%	8.13%
Maximum drawdown	74.2%	61.5%	63.6%	59.6%	54.3%
Sharpe ratio	1.72%	4.96%	4.51%	4.19%	4.53%

Table 4.18 Stock quantities in portfolios with risk-free asset under small value of k

k	Minimum	Mean	Median	Maximum	Standard deviation	N
0	1	1.01	1	2	0.10	462
1	1	2.46	2	6	1.11	97
2	1	3.64	4	10	1.67	54
3	1	4.46	4	10	1.77	12
4	1	5.13	5	11	1.84	1

According to table 4.18, all of these strategies invest in one asset at least 1 week. Especially when k=0, we invest in only one asset for 462 weeks, which is the longest period among our 467 weeks' investment. We invest at most 11 assets at the same time when k=4, but if we apply k=1 strategy, the portfolio consists of 6 assets at maximum. We find k=1 and k=4 strategies have the best performance in table 4.17, if transaction costs are considered during our investment period, the strategy k=1 is better.

4.6.2 Back testing of portfolio with risk-free asset under great value of k

In order to obverse deeply the performance of optimal portfolio with risk-free asset when we apply different value of k, we set greater value of k in back testing procedure. Running the program A8 in Annex A by Matlab, we can obtain the results. The returns and wealth of each strategy are shown in table 4.19. From table 4.19 we can see the lowest wealth is 0.76 HKD when k=5, and when k=5 we can also obtain the highest wealth which is 2.85 HKD.

From table 4.19 we can see when the value of k become greater, the portfolio returns are close to 0.05%. Our risk-free rate of 10-year government bond is 0.0539%. Because the value of k becomes higher means we want to avoid the risk, and we are inclined to invest in risk-free asset, so our portfolio returns are similar to risk-free rate.

Table 4.19 Returns and wealth of portfolios with risk-free asset under great value of k

Dates	k=5		k=25		k=125		k=625		k=3,125		k=1,5625	
	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth	Returns	Wealth
1/22/07	0.50%	1.00	-0.52%	0.99	-0.06%	1.00	0.03%	1.00	0.05%	1.00	0.05%	1.00
1/29/07	-3.03%	0.97	-0.76%	0.99	-0.11%	1.00	0.02%	1.00	0.05%	1.00	0.05%	1.00
…	…	…	…	…	…	…	…	…	…	…	…	…
11/10/08	-1.57%	0.76	-0.27%	1.04	-0.01%	1.05	0.04%	1.05	0.05%	1.05	0.05%	1.05
…	…	…	…	…	…	…	…	…	…	…	…	…
12/22/08	-0.01%	0.76	0.04%	1.04	0.05%	1.05	0.05%	1.06	0.05%	1.06	0.05%	1.06
…	…	…	…	…	…	…	…	…	…	…	…	…
3/2/09	-0.69%	0.76	-0.10%	1.05	0.02%	1.06	0.05%	1.06	0.05%	1.06	0.05%	1.06
…	…	…	…	…	…	…	…	…	…	…	…	…
5/25/15	1.30%	2.85	-0.43%	1.68	-0.04%	1.35	0.03%	1.28	0.05%	1.27	0.05%	1.27
…	…	…	…	…	…	…	…	…	…	…	…	…
12/21/15	1.12%	2.18	0.27%	1.59	0.10%	1.35	0.06%	1.30	0.06%	1.29	0.05%	1.29
12/28/15	1.57%	2.21	0.36%	1.60	0.11%	1.35	0.07%	1.30	0.06%	1.29	0.05%	1.29

From figure 4.9 we can see the when $k \geq 625$, the wealth nearly become straight lines, the straight line is the wealth of investing in the risk-free asset. The greatest final wealth in figure 4.9 is k=5 strategy, the second greatest final wealth is obtained by k=25 strategy, but the fluctuation in k=25 strategy is much smaller than k=5. In particular, the k=5 strategy has an obviously decrease in 2008, but k=25 strategy has moderate decrease in the same period.

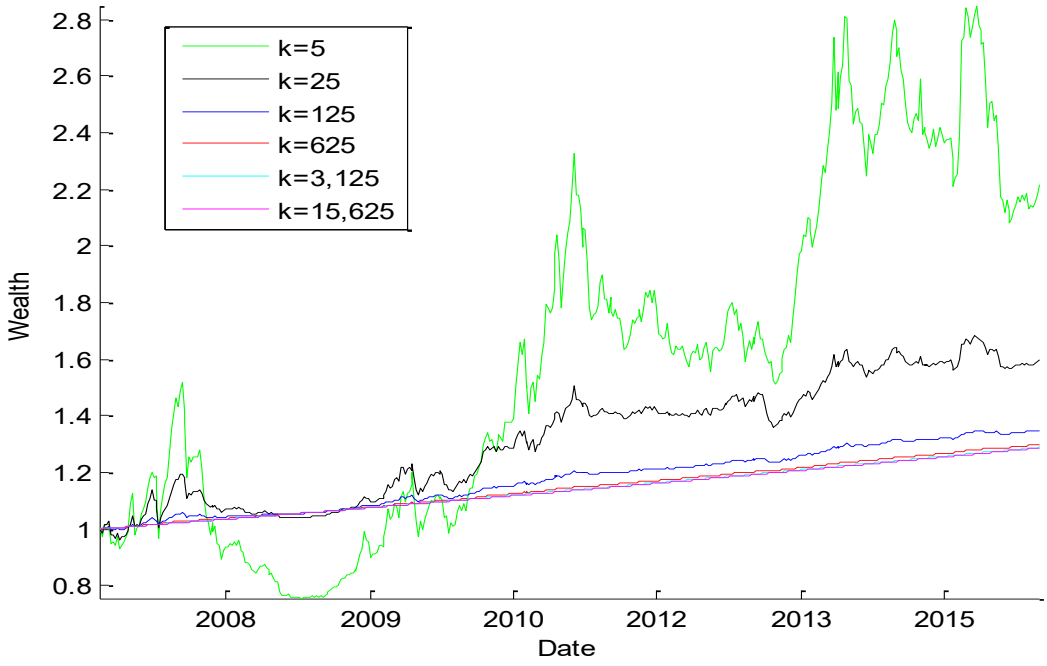

Figure 4.9 Wealth in portfolios with risk-free asset under great value of k

From table 4.20 we can compare these strategies more clearly, we obtain the greatest final wealth, weekly portfolio returns, and Sharpe ratio when k=5 , but the Maximum drawdown in k=5 strategy also become the greatest. When $k \geq 625$, the Sharpe ratio become negative due to the portfolio return lower than risk-free rate. When $k \geq 3{,}125$, the Maximum drawdown are 0% because of most investing in government bond.

Table 4.20 Results of portfolios with risk-free asset under great value of k

k	5	25	125	625	3,125	15,625
Final wealth	2.21	1.60	1.35	1.30	1.29	1.29
Weekly portfolio return	0.23%	0.11%	0.06%	0.06%	0.05%	0.05%
Weekly standard deviation	3.36%	1.18%	0.24%	0.05%	0.009%	0.002%
Annual return	8.31%	4.80%	3.06%	2.66%	2.58%	2.56%
Maximum drawdown	50.2%	12.9%	2.3%	0.3%	0.00%	0.00%
Sharpe ratio	4.7%	3.8%	1.9%	-7.1%	-26.6%	-32.3%

In Table 4.21 we can see when $k \geq 25$ and becomes higher, the number of assets in a portfolio becomes fewer. When k=15,625 , all of our capital are invested in one asset that is government bond. Therefore, the strategy that investors can extremely avoid risk is to invest in risk-free asset for all 467 weeks during our investment period

Table 4.21 Stock quantities in portfolios with risk-free asset under great value of k

k	Minimum	Mean	Median	Maximum	Standard deviation	N
5	1	5.67	6	13	2.03	1
25	1	7.90	8	17	2.84	1
125	1	7.44	7	16	2.76	3
625	1	5.47	5	14	2.50	22
3,125	1	1.66	1	5	0.83	245
15,625	1	1.00	1	1	0.00	467

4.7 Comparison of different strategies

In previous sections, we calculate the back testing results of portfolio, and obtain returns and wealth of different strategies from January 22nd, 2007 to December 28th, 2015. We also explain the reason of wealth fluctuation. In this section, we make the comparison of performance for these strategies, and find which is the best strategy for us to invest.

Comparing the highest wealth during back testing period, the highest wealth in naive strategy is 2.89 HKD; in Markowitz model is 4.17 HKD when k=1; in Markowitz minimum variance strategy is 2.96 HKD; in Bayesian strategy with small value of k is 3.90 HKD when k=1; in Bayesian strategy with great value of k is 2.98 HKD; in portfolio with risk-free assets under small value of k is 4.02 HKD; in portfolio with risk-free assets under great value of k is 2.85 HKD. We find when we chase risk and apply the small value of k, we can obtain the higher wealth than we avoid risk.

Comparing the lowest wealth among all strategies during whole back testing period, we obtain the lowest wealth in naive strategy is 0.7 HKD; in Markowitz model is 0.30 HKD when k=0; in Markowitz minimum variance strategy is 0.88 HKD; in Bayesian strategy with small value of k is 0.30 HKD when k=0; in Bayesian strategy with great value of k is 0.71 HKD when k=5; in portfolio with risk-free assets under small value of k is 0.29 HKD when k=0; in portfolio with risk-free assets under great value of k is 0.76 HKD when k=5. When we apply risk seeking strategies, we can obtain the lower wealth than apply risk averse strategies. Therefore, the wealth of risk seeking strategies is more fluctuant, if investors apply risk seeking strategies, they should catch the right time and opportunity to invest and exit.

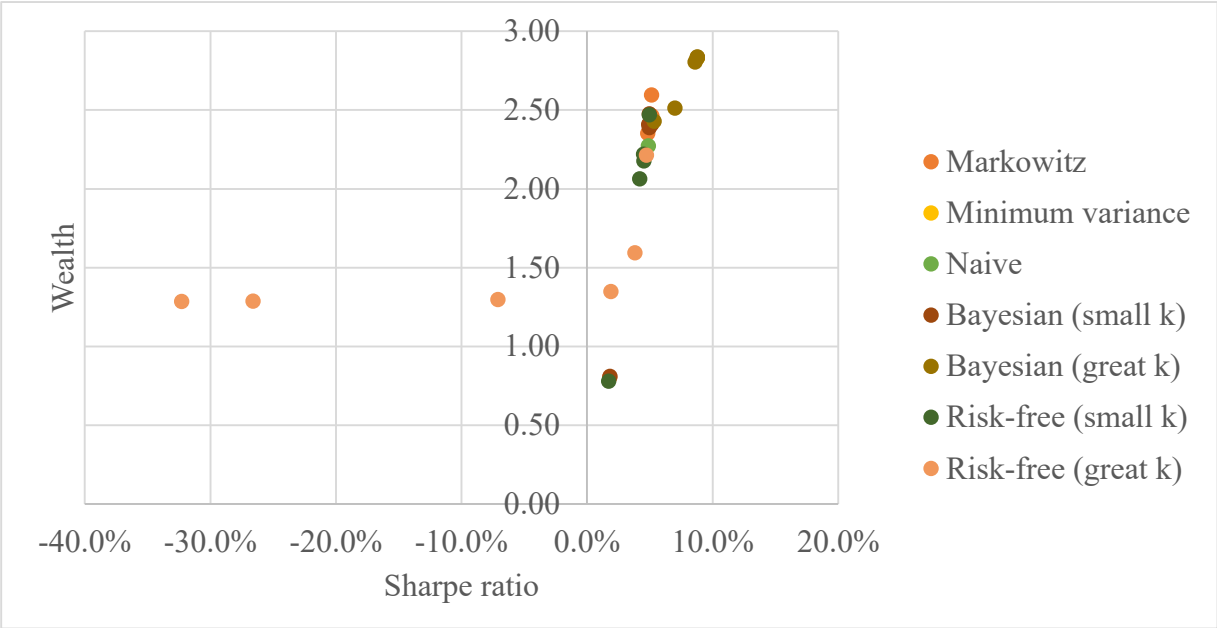

Figure 4.10 Sharpe ratio and wealth for different strategies

Comparing the Sharpe ratio of all strategies in figure 4.10, there are three strategies' Sharpe ratio smaller than zero. From table 4.22 we can see all of these three strategies belong to optimal portfolio with risk-free asset when $k \geq 625$. Although these three strategies have negative Sharpe ratio, the wealth of them are still greater than initial investment (1 HKD).

Table 4.22 Comparison of Sharpe ratio

Strategies		SR	Ranking	Strategies		SR	Ranking
Naive		4.88%	16	Bayesian (great *k*)	k=125	8.62%	5
					k=625	8.79%	1
Markowitz (small *k*)	k=0	1.80%	25		k=3,125	8.79%	2
	k=1	5.15%	9		k=15,625	8.78%	3
	k=2	4.98%	11	Risk-free (small *k*)	k=0	1.72%	26
	k=3	4.82%	17		k=1	4.96%	14
	k=4	5.17%	8		k=2	4.51%	20
Markowitz minimum variance	k=1,000,000	8.78%	4		k=3	4.19%	21
Bayesian (small *k*)	k=0	1.83%	24		k=4	4.53%	19
	k=1	4.97%	13	Risk-free (great *k*)	k=5	4.74%	18
	k=2	4.90%	15		k=25	3.81%	22
	k=3	4.97%	12		k=125	1.91%	23
	k=4	5.15%	10		k=625	-7.10%	27
Bayesian (great *k*)	k=5	5.33%	7		k=3,125	-26.61%	28
	k=25	7.00%	6		k=15,625	-32.29%	29

Sharpe ratio of all rest 26 strategies are more than zero. But there are three strategies' final wealth lower than 1 HKD, these three strategies are Markowitz model when k=0, Bayesian strategies when k=0, and optimal portfolio with risk-free asset when k=0. These three strategies also obtain the lowest three Sharpe ratio among all positive Sharpe ratio strategies.

From the ranking column of table 4.22, we can see the top three highest Sharpe ratio strategies are Bayesian strategy when $k \geq 625$, and these three strategies also have the top three final wealth. According to ranking of strategies, Bayesian with great value of k and Markowitz minimum variance strategies have the better Sharpe ratio than others. Naive strategy is the simplest way to invest, but its Sharpe ratio is ranked in the middle position. Moreover, all portfolio with risk-free asset strategies are not ranked in the top ten, the best one among portfolio with risk-free asset strategies is when k=1, which is ranked the fourteenth. Markowitz and Bayesian with small value of k strategies are performed worse than Markowitz minimum variance strategy and Bayesian with great value of k.

Therefore, according to our calculation results, if we do not invest in portfolio with risk-free asset, the risk averse strategies performed better than risk seeking strategies. Comparing all strategies, Markowitz minimum variance strategy and Bayesian with great value of k strategies have the similar and the best level of Sharpe ratios. Portfolio with risk-free asset under great value of k obtain the worst level of Sharpe ratio, because when the portfolio returns lower than risk-free rate, the Sharpe ratio of these strategies become negative value. Moreover, the standard deviation of these strategies are close to zero, so the absolute value of Sharpe ratio in these strategies are huge.

The comparison of Maximum drawdown for different strategies are shown in figure 4.11 and table 4.23. Because the rank of naive strategy in table 4.23 is the sixteenth, which is in the middle position of all strategies, and final wealth of this strategy is 2.27 HKD. Therefore, we can regard naive strategy as a benchmark, and the figure 4.11 can be divided into four parts. The first part is high final wealth with low Maximum drawdown strategies, the second part is high final wealth with high Maximum drawdown strategies, the third part is low final wealth with high Maximum draw down strategies, the fourth part is low final wealth with low

Maximum drawdown strategies.

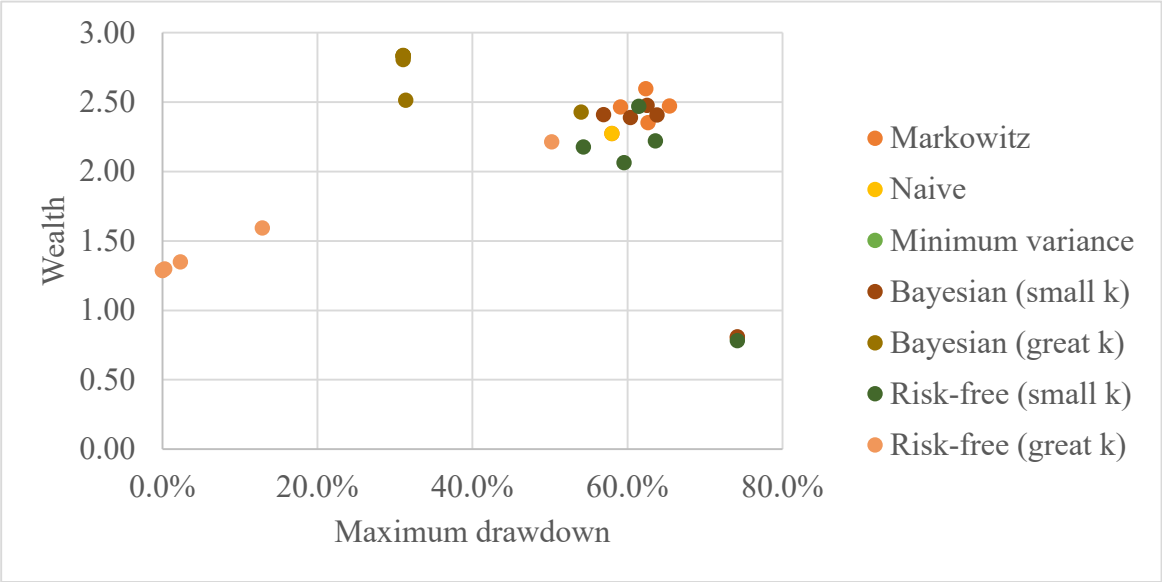

Figure 4.11 Maximum drawdown and wealth for different strategies

In figure 4.11, the first part strategies include Markowitz minimum variance strategy and Bayesian strategy when the value of $k \geq 4$. The first part strategies are the best among all strategies in our thesis, and compare these strategies in detail. We can find in Bayesian strategy, when k=625, we obtain the highest final wealth 2.84 HKD. The Maximum drawdown ranking of Bayesian with k=625 strategy is the seventh, all strategies that are ranked before seventh have lower final wealth than Bayesian with k=625. Therefore, Bayesian with k=625 is the best strategy in the first part of figure 4.11.

The second part strategies have the high final wealth and high Maximum drawdown, this part including Markowitz model when the value of k are from 1 to 4, Bayesian strategy when the value of k are from 1 to 3, and portfolio with risk-free asset when k=1. Using these strategies can obtain the final wealth not lower than naive strategy, but investors should undertake higher Maximum drawdown than the naive strategy.

The third part strategies are all strategies when $k = 0$, and portfolio with risk-free asset when k equal to 2 and 3. We should avoid to invest under these strategies, because they not only have the lower final wealth than naive strategy, but also cause the dramatically declines of wealth which are more than 58%.

The fourth part includes portfolio with risk-free asset when $k \geq 4$. These strategies have

low Maximum drawdown with low final wealth, so they are not recommended to apply unless the investors extremely avoid risk and pay no attention to high return.

Table 4.23 Comparison of Maximum drawdown

Strategies		MDD	Ranking	Strategies		MDD	Ranking
Naive		58.0%	16	Bayesian (great *k*)	k=125	31.0%	6
					k=625	31.0%	7
Markowitz	k=0	74.2%	28		k=3,125	31.1%	8
	k=1	62.4%	21		k=15,625	31.1%	9
	k=2	65.4%	26	Risk-free (small *k*)	k=0	74.2%	27
	k=3	62.7%	23		k=1	61.5%	20
	k=4	59.1%	17		k=2	63.6%	24
Markowitz minimum variance	k=1,000,000	31.1%	10		k=3	59.6%	18
Bayesian (small *k*)	k=0	74.2%	29		k=4	54.3%	14
	k=1	62.5%	22	Risk-free (great *k*)	k=5	50.2%	12
	k=2	63.8%	25		k=25	12.9%	5
	k=3	60.4%	19		k=125	2.3%	4
	k=4	56.9%	15		k=625	0.3%	3
Bayesian (great *k*)	k=5	54.0%	13		k=3,125	0.0%	2
	k=25	31.4%	11		k=15,625	0.0%	1

In table 4.23, we can find that in Markowitz model, Bayesian strategy and portfolio with risk-free asset strategy, when the value of k becomes greater, Maximum drawdown becomes lower. Therefore, if we apply risk averse strategies, our wealth drawdowns can be lower than risk seeking strategies. Comparing Maximum drawdown of strategies in table 4.23, when we apply risk averse strategies, portfolio with risk-free asset strategies have the lowest level of Maximum drawdown. Then, Markowitz minimum variance strategies and Bayesian strategies have the second lowest level of Maximum drawdown, which values are similar. The rank of Naive strategy is in the middle position.

5 Conclusion

Stock portfolios are estimated to diversify the risk in the financial market. When we invest in portfolios of stocks, we need to find the optimal portfolios with high expected return and low risk. Therefore, it is necessary to know which strategy performs the best and choose correct strategy to invest.

The goal of this thesis is to apply different portfolio optimization strategies and to compare their out-of-sample results. In this thesis, we apply different strategies to calculate the weights of stock portfolios, and apply back testing method to obtain the returns and wealth of portfolios, then compare the performance of different strategies by Sharpe ratio and Maximum drawdown. We model the risk attitude by the parameter k, so the portfolio strategies also differ in the value of k.

we find small k Markowitz model, small k Bayesian strategy, and small k portfolio with risk-free asset strategy have the similar wealth trends, and these strategies are close to the risk seeking strategies. Therefore, these strategies have higher risk than strategies that have the greater value of k. The fluctuation of wealth in k=0 strategies are higher than k>0 strategies. In Markowitz minimum variance strategy, Bayesian strategy with great value of k, and portfolio with risk-free asset under great value of k strategy, all of these strategies are risk averse strategies. Therefore, wealth fluctuation and the highest historical wealth of these strategies are lower than risk seeking strategies. In portfolio with risk-free asset strategy, when the value of k trends to infinite, the portfolios concentrate more on invest in risk-free asset.

Comparing the Sharpe ratio of all strategies, we find the portfolio with risk-free asset when $k \geq 625$ obtain the lowest Sharpe ratio. Bayesian strategy when $k \geq 625$ and Markowitz minimum variance strategy have the highest level of Sharpe ratio, and these group of strategies performed better than naive strategy. Bayesian strategy is created to improve the Markowitz model and minimum variance strategy. However, when the value of k is small, Bayesian strategy is not always performing better than Markowitz model. When the value of k is great, Bayesian strategy has the similar Sharpe ratio with Markowitz minimum variance strategy.

According to the results of Sharpe ratio, we can find Markowitz minimum variance model and Bayesian with great value of k strategy have the best and similar performance, which are always better than small k Markowitz model, small k Bayesian model, and portfolio with risk-free asset strategy. These comparison results are similar to results of *DeMiguel, Garlappi and Uppal (2009).*

According to the comparison results of Maximum drawdown, we set naive strategy as a benchmark, Bayesian with great value of k and Markowitz minimum variance strategy obtain the high final wealth and low Maximum drawdown. Furthermore, all risk averse strategies have lower Maximum drawdown than risk seeking strategies.

More precisely, after comparing the performance and final wealth of all strategies, we can find the strategies that have the highest final wealth are Markowitz minimum variance strategy and Bayesian when $k \geq 625$. The strategy that has the highest Sharpe ratio are Markowitz minimum variance strategy and Bayesian when $k \geq 625$. The strategies that Maximum drawdown lower than naive strategy and final wealth higher than naive strategy also include Markowitz minimum variance strategy and Bayesian when $k \geq 625$. Therefore, Markowitz minimum variance strategy and Bayesian when $k \geq 625$ are the best group of strategies among all strategies that we apply in our thesis.

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List of Abbreviations

x_i	the weight to invest in asset i in a portfolio
$E(R_p)$	the portfolio expected return
$\boldsymbol{Q}$	covariance matrix
σ_p^2	variance of the portfolio
$E(R_{p\text{-}max})$	the expected return of maximum expected return portfolio
$E(R_{p\text{-}min})$	the expected return of minimum variance portfolio
k	investor's attitude to risk
$R_{i,t}$	the return of asset i at time t
$P_{i,t}$	the price of asset i at time t
μ_t^{BS}	the expected return under Bayesian strategy
μ_i	sample estimated expected return of asset i
$\overline{\mu_t}$	the mean of sample estimated expected returns over all assets
$\boldsymbol{Q}_t^{BS}$	covariance matrix under Bayesian strategy
W_0	the initial wealth
W_{t+1}	accumulated wealth after time t
W_T	the final wealth
R_a	the portfolios annual return

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Ostrava dated 22. 04. 2016

Danye Wang

Student's name and surname

List of Annexes

Annex A

Program A1 Program of *subplot (m, n, p)* function

```
>> x=0.1: pi/15:2*pi;
>>y1=sin(x);
>>y2=cos(x);
>>y3=log(x);
>>y4=x.^2;
>>subplot (2, 2, 1);
>>plot (x, y1);
>>title('sin(x)');
>>subplot (2,2,2);
>>plot (x, y2);
>>title ('cos(x)');
>>subplot (2,2,3);
>>plot (x, y3);
>>title('log(x)');
>>subplot (2,2,4);
>>plot (x, y4);
>>title('x.^2')
```

Program A2 Naive strategy

```
%% naive portfolio strategy
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
composition=zeros(size(Returns));
t=53;
composition((t:end),:)=1/43; % the weight of all assets from time t to the
end equal to 1/43
Rp=sum(composition.*Returns,2);
wealth=cumprod(Rp+1);
%% performance of naive portfolio strategy
returns=wealth(2:end,:)./wealth(1:end-1,:)-1;
fianl_wealth=wealth(end,:);
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annualr=nthroot(wealth(end,:),(size(wealth,1)-(53-1))/52)-1; % portfolio
annual return
maxDD=perf_maxDD(wealth); %maximum drawdown
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% plot figure of wealth
figure; hold on;
plot(dates(2:end),wealth,'-r');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth)) max(max(wealth))]);
xlabel('Date'); ylabel('Wealth');
```

Program A3 Markowitz model

```
%% Markowitz model £¨sample based mean-variance portfolio£©
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
%% the population parameters are estimated based on historical observations
eRs=mean(Returns)';
covariance=cov(Returns);
%% we generate the matrix consisting of possible weights' vectors
% with the smallest recognizable change set to 1%
weights= generate_weights(size(eRs,1),0.25,0);
%fir each vector of weights we compute E(R) and standard dev.
for a=1:size(weights,1)
  eRp(a)=weights(a,:)*eRs;
  smodch(a)=sqrt(weights(a,:)*covariance*weights(a,:)');
end;
%% we plot the figure of feasible set
plot(smodch.*100,eRp.*100,'.', 'MarkerEdgeColor',[0.8 0.8 0.8]);
xlabel('portfolio standard deviation (in %)');
ylabel('portfolio expected return (in %)');
%% Find the efficient set of portfolios
% find the portfolio with the minimum risk
[ x, ERp_min, sd ]=portfolio_optimize( eRs, covariance, 0, 1, -1);
% find the expected return of the maximum-expected-return portfolio
ERp_max=max(eRs);

% find 99 inferior points
for j=1:1:101
  R_jg=ERp_min+(j-1)/100*(ERp_max-ERp_min);
  [x(:,j),ERp(j),sd(j)]=portfolio_optimize(eRs,...
covariance,0,1,R_jg);
end
x(x<0.00001)=0;
%% plot the efficient set
hold on;
plot(sd*100,ERp*100,'Color',[0 0 0],'LineWidth',2);
%% backtesting the portfolio and calculate final wealth
composition=zeros(5,size(Returns,1),size(Returns,2));
wealth=zeros(size(Returns,1),5);
for k=1:5
  [composition(k,:,:)]=portfolio_backtest(Returns, 53, 52, 1, 0, 1, k-1);
  composition(composition<0.00001)=0;
  wealth(:,k)=cumprod(sum(squeeze(composition(k,:,:)).*Returns,2)+1);
```

```
end
returns=wealth(2:end,:)./wealth(1:end-1,:)-1;
final_wealth=wealth(end,:);
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annual_return=nthroot(wealth(end,:),(size(wealth,1)-(53-1))/52)-1; % annual
return
%% performance measures
maxDD=perf_maxDD(wealth); %maximum drawdown
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% we plot the figure of wealth
figure; hold on;
plot(dates(2:end),wealth(:,1),'-g',dates(2:end),wealth(:,2),'-k',...
    dates(2:end),wealth(:,3),'-b',dates(2:end),wealth(:,4),'-r',...
    dates(2:end),wealth(:,5),'-c');

legend('k=0','k=1','k=2','k=3','k=4');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth)) max(max(wealth))]);
xlabel('Date'); ylabel('Wealth');
%% %% find compositions that greater than 0.1%
quantities=sum(composition(:,53:end,:)>0.001,3);
characteristics=[(0:4)' min(quantities,[],2) mean(quantities,2)...
    median(quantities,2) max(quantities,[],2) std(quantities,0,2)...
    sum(quantities==1,2)];
```

Program A4 Minimum variance strategy

```
%% minimum variance portfolio method
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
composition=portfolio_backtest(Returns,53,52,1,0,1,1000000);
composition(composition<0.00001)=0;
Rp=sum(composition.*Returns,2);
wealth=cumprod(Rp+1);
%% performanec of minimum variance portfolio
returns=wealth(2:end,:)./wealth(1:end-1,:)-1;
final_wealth=wealth(end,:); %fianl wealth
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annual_retuen=nthroot(wealth(end,:),(size(wealth,1)-1)/52)-1; %annual
return
max_DD=perf_maxDD(wealth); %maximum drawdown
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% plot the figure of wealth
figure; hold on;
plot(dates(2:end),wealth,'-k');
legend('k=1,000,000');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth)) max(max(wealth))]);
xlabel('Date'); ylabel('Wealth');
%% find compositions that greater than 0.1%
quantities=(sum(composition(53:end,:)>0.001,2))';
characteristics=[1000000 min(quantities,[],2) mean(quantities,2)...
    median(quantities,2) max(quantities,[],2) std(quantities,0,2)...
    sum(quantities==1,2)];
```

Program A5 Bayesian strategy with small value of *k*

```
%% Bayesian method for backtesting the portfolio and calculate final wealth
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
%% backtesting the portfolio and calculate final wealth
composition_BS=zeros(5,size(Returns,1),size(Returns,2));
wealth=zeros(size(Returns,1),5);
for k=1:5
  [composition_BS(k,:,:)]=portfolio_backtest_BS(Returns, 53, 52, 1, 0, 1,
k-1);
  composition_BS(composition_BS<0.00001)=0;
  wealth(:,k)=cumprod(sum(squeeze(composition_BS(k,:,:)).*Returns,2)+1);
end
returns=wealth(2:end,:)./wealth(1:end-1,:)-1;
final_wealth=wealth(end,:);
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annual_retuen=nthroot(wealth(end,:),(size(wealth,1)-1)/52)-1; %annual
return
%% performance measures
maxDD=perf_maxDD(wealth); %maximum drawdown
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% plot figure of wealth
figure; hold on;
plot(dates(2:end),wealth(:,1),'-g',dates(2:end),wealth(:,2),'-k',...
    dates(2:end),wealth(:,3),'-b',dates(2:end),wealth(:,4),'-r',...
    dates(2:end),wealth(:,5),'-c');

legend('k=0','k=1','k=2','k=3','k=4');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth)) max(max(wealth))]);
xlabel('Date'); ylabel('Wealth');
%% find compositions that greater than 0.1%
quantities=sum(composition_BS(:,53:end,:)>0.001,3);
characteristics=[(0:4)' min(quantities,[],2) mean(quantities,2)...
    median(quantities,2) max(quantities,[],2) std(quantities,0,2)...
    sum(quantities==1,2)];
```

Program A6 Bayesian strategy with great value of k

```
%% Bayesian method for backtesting the portfolio and calculate final wealth
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
%% backtesting the portfolio and calculate final wealth
composition_BS=zeros(6,size(Returns,1),size(Returns,2));
wealth=zeros(size(Returns,1),6);
for k=1:6
  [composition_BS(k,:,:)]=portfolio_backtest_BS(Returns, 53, 52, 1, 0, 1,
5.^k);
  composition_BS(composition_BS<0.00001)=0;
  wealth(:,k)=cumprod(sum(squeeze(composition_BS(k,:,:)).*Returns,2)+1);
end
returns=wealth(2:end,:)./wealth(1:end-1,:)-1;
final_wealth=wealth(end,:);
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annual_retuen=nthroot(wealth(end,:),(size(wealth,1)-1)/52)-1; %annual
return
%% performance measures
maxDD=perf_maxDD(wealth); %maximum drawdown
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% plot figure of wealth
figure; hold on;
plot(dates(2:end),wealth(:,1),'-g',dates(2:end),wealth(:,2),'-k',...
    dates(2:end),wealth(:,3),'-b',dates(2:end),wealth(:,4),'-r',...
    dates(2:end),wealth(:,5),'-c',dates(2:end),wealth(:,6),'-m');

legend('k=5','k=25','k=125','k=625','k=3,125','k=15,625');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth)) max(max(wealth))]);
xlabel('Date'); ylabel('Wealth');
%% find compositions that greater than 0.1%
quantities=sum(composition_BS(:,53:end,:)>0.001,3);
characteristics=[[5 25 125 625 3125 15625]' min(quantities,[],2)
mean(quantities,2)...
    median(quantities,2) max(quantities,[],2) std(quantities,0,2)...
    sum(quantities==1,2)];
```

Program A7 Portfolio with risk-free asset under with small value of *k*

```
%% portfolio with risk-free asset
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
%% the population parameters are estimated based on historical observations
eRs=mean(Returns)';
covariance=cov(Returns);
% with risk-free asset
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
Returns_rf=[Returns repmat(rf_rate,size(Returns,1),1)];
eRs_rf=mean(Returns_rf)';
covariance_rf=cov(Returns_rf);
%% Find the efficient set of portfolios
% find the portfolio with the minimum risk
[ x, ERp_min, sd ]=portfolio_optimize( eRs_rf, covariance_rf, 0, 1, -1);
% find the expected return of the maximum-expected-return portfolio
ERp_max=max(eRs_rf);

% find 99 inferior points
for j=1:1:101
  R_jg=ERp_min+(j-1)/100*(ERp_max-ERp_min);
  [x(:,j),ERp(j),sd(j)]=portfolio_optimize(eRs_rf,...
covariance_rf,0,1,R_jg);
end
x(x<0.00001)=0;
%% plot the efficient set
hold on;
plot(sd*100,ERp*100,'Color',[0 0 0],'LineWidth',2);
%% backtesting the portfolio and calculate final wealth
composition_rf=zeros(5,size(Returns_rf,1),size(Returns_rf,2));
wealth_rf=zeros(size(Returns_rf,1),5);
for k=1:5
  [composition_rf(k,:,:)]=portfolio_backtest(Returns_rf, 53, 52, 1, 0, 1,
k-1);
  composition_rf(composition_rf<0.00001)=0;

wealth_rf(:,k)=cumprod(sum(squeeze(composition_rf(k,:,:)).*Returns_rf,2)+1)
;
end
returns=wealth_rf(2:end,:)./wealth_rf(1:end-1,:)-1;
final_wealth=wealth_rf(end,:);
```

```
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annual_retuen=nthroot(wealth_rf(end,:),(size(wealth_rf,1)-1)/52)-1; %annual
return
%% performance measures
maxDD=perf_maxDD(wealth_rf); %maximum drawdown
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% plot figure of wealth
figure; hold on;
plot(dates(2:end),wealth_rf(:,1),'-g',dates(2:end),wealth_rf(:,2),'-k',...
    dates(2:end),wealth_rf(:,3),'-b',dates(2:end),wealth_rf(:,4),'-r',...
    dates(2:end),wealth_rf(:,5),'-c');

legend('k=0','k=1','k=2','k=3','k=4');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth_rf)) max(max(wealth_rf))]);
xlabel('Date'); ylabel('Wealth');
%% find compositions that greater than 0.1%
quantities=sum(composition_rf(:,53:end,:)>0.001,3);
characteristics=[[0 1 2 3 4]' min(quantities,[],2) mean(quantities,2)...
    median(quantities,2) max(quantities,[],2) std(quantities,0,2)...
    sum(quantities==1,2)];
```

Program A8 Portfolio with risk-free asset under with great value of *k*

```
%% with risk-free asset
load HS;
Returns=HS_data(2:end,:)./HS_data(1:end-1,:)-1;
%% the population parameters are estimated based on historical observations
eRs=mean(Returns)';
covariance=cov(Returns);
% with risk-free asset
rf_rate=power(1.0284,1/52)-1; %weekly return of risk free rate on 10 years
government bonds;
Returns_rf=[Returns repmat(rf_rate,size(Returns,1),1)];
%% backtesting the portfolio and calculate final wealth
composition_rf=zeros(6,size(Returns_rf,1),size(Returns_rf,2));
wealth_rf=zeros(size(Returns_rf,1),6);
for k=1:6
  [composition_rf(k,:,:)]=portfolio_backtest(Returns_rf, 53, 52, 1, 0, 1,
5.^k);
  composition_rf(composition_rf<0.00001)=0;

wealth_rf(:,k)=cumprod(sum(squeeze(composition_rf(k,:,:)).*Returns_rf,2)+1)
;
end
returns=wealth_rf(2:end,:)./wealth_rf(1:end-1,:)-1;
final_wealth=wealth_rf(end,:);
Rp_mean=mean(returns(52:end,:));
Rp_std=std(returns(52:end,:));
annual_retuen=nthroot(wealth_rf(end,:),(size(wealth_rf,1)-1)/52)-
1;  %annual return
%% performance measures
maxDD=perf_maxDD(wealth_rf); %maximum drawdown
SR=perf_Sharpe(returns,rf_rate); %Sharpe ratio
%% plot figure of wealth
figure; hold on;
plot(dates(2:end),wealth_rf(:,1),'-g',dates(2:end),wealth_rf(:,2),'-k',...
    dates(2:end),wealth_rf(:,3),'-b',dates(2:end),wealth_rf(:,4),'-r',...
    dates(2:end),wealth_rf(:,5),'-c',dates(2:end),wealth_rf(:,6),'-m');

legend('k=5','k=25','k=125','k=625','k=3,125','k=15,625');
dateaxis('x');
axis([dates(53) dates(end) min(min(wealth_rf)) max(max(wealth_rf))]);
xlabel('Date'); ylabel('Wealth');
%% find compositions that greater than 0.1%
```

```
quantities=sum(composition_rf(:,53:end,:)>0.001,3);
characteristics=[[5 25 125 625 3125 15625]' min(quantities,[],2)
mean(quantities,2)...
    median(quantities,2) max(quantities,[],2) std(quantities,0,2)...
    sum(quantities==1,2)];
```

Program A9 Generate weights

```
function [weights] = generate_weights(nassets,step,sum)
% function generating the weights vectors
weights=[];
for a=0:step:1-sum
  if nassets >2
    subweights= generate_weights (nassets -1, step, sum+a);
  else
    subweights =1-sum-a;
  end;
  weights=[weights; a*ones(size(subweights,1),1), subweights];
end;
end
```

Program A10 Sharpe Ratio

```
function [sharpe_ratio]=perf_Sharpe(returns,rf)
  sharpe_ratio=(mean(returns)-rf)./std(returns);
end
```

Program A11 Maximum drawdown

```
function [maxDD] = perf_maxDD(wealth)
maxDD=zeros(1,size(wealth,2));
for b=1:size(wealth,2)
    peak=-Inf;
    for a=1:size(wealth,1)
        peak=max(peak,wealth(a,b));
        maxDD(b)=max(maxDD(b),1-wealth(a,b)./peak);
    end
end
```

Program A12 Portfolio back testing

```
function [composition] = portfolio_backtest(Returns, backtesting_start, m,
horizon, lb, ub, k)
n_walkthrough=floor((size(Returns,1)-backtesting_start)/horizon)+1;
walkthrough=0;
composition=zeros(size(Returns));
t=backtesting_start;
while t<=size(Returns,1)
  tic;
  ERi=mean(Returns(t-m:t-1,:))';
  Q=cov(Returns(t-m:t-1,:));
  t_end=min(t+horizon-1,size(Returns,1));

composition(t:t_end,:)=repmat(portfolio_optimize_utility(ERi,Q,lb,ub,k)',t_
end-t+1,1);
  t=t_end+1;
  walkthrough=walkthrough+1;
  fprintf('%i of %i walkthoughs done. Time needed for actual
walkthough: %4.2f sec. \n', walkthrough, n_walkthrough, toc);
end
end
```

Program A13 Back testing for Bayesian strategy

```
function [composition_BS] = portfolio_backtest_BS(Returns,
backtesting_start, m, horizon, lb, ub, k)
n_walkthrough=floor((size(Returns,1)-backtesting_start)/horizon)+1;
walkthrough=0;
composition_BS=zeros(size(Returns));
t=backtesting_start;
while t<=size(Returns,1)
  tic;
  ERi=mean(Returns(t-m:t-1,:))';
  Q=cov(Returns(t-m:t-1,:));
  t_end=min(t+horizon-1,size(Returns,1));
  composition_BS(t_end,:)=portfolio_optimize_utilityBS(ERi,Q,lb,ub,m,k);
  t=t_end+1;
  walkthrough=walkthrough+1;
  fprintf('%i of %i walkthoughs done. Time needed for actual
walkthough: %4.2f sec. \n', walkthrough, n_walkthrough, toc);
end
end
```

Program A14 Portfolio optimize

```
function [ x, ERp, smodch ] = portfolio_optimize( ERi, Q, lb, ub, ERg)
nassets=length(ERi);

options=optimset( 'display','off','algorithm','active-set', 'tolfun',10^-
10, 'tolcon',10^-10, 'tolX',10^-10, 'maxiter',1000,
'maxfunevals',nassets*1000);

A=-ERi'; b=-ERg; %%A*x<=b
Aeq=ones(1,nassets); beq=1; %Aeq*x=beq, sum of weights equals to 1
lb=repmat(lb,nassets,1); %lb<=x<=ub
ub=repmat(ub,nassets,1); %lb<=x<=ub

variance=@(x)x'*Q*x; %function to optimize
[x,fval,~]=fmincon(variance,repmat(1/nassets,nassets,1),A,b,Aeq,beq,lb,ub,
[] ,options);

ERp=ERi'*x;
smodch=sqrt(fval);
end
```

Program A15 Optimal portfolio

```
function [ x, U, ERp, sd ] = portfolio_optimize_utility( ERi, Q, lb, ub, k)
nassets=length(ERi);
options=optimset( 'display','off','algorithm','active-set', 'tolfun',10^-
10, 'tolcon',10^-10, 'tolX',10^-10, 'maxiter',1000,
'maxfunevals',nassets*1000);
A=[]; b=[]; %A*x<=b
Aeq=ones(1,nassets); beq=1; %Aeq*x=beq
lb=repmat(lb,nassets,1); %lb<=x<=ub
ub=repmat(ub,nassets,1); %lb<=x<=ub
fun=@(x)-ERi'*x+x'*Q*x.*k; %function to optimize
[x,U,~]=fmincon(fun,repmat(1/nassets,nassets,1),A,b,Aeq,beq,lb,ub,
[] ,options);
U=-U;
ERp=ERi'*x;
sd=sqrt(x'*Q*x);
end
```

Program A16 Optimal portfolio for Bayesian strategy

```
function [ x, U, ERp_BS, sd_BS ] = portfolio_optimize_utilityBS( ERi, Q,
lb, ub,m,k)
nassets=length(ERi);
options=optimset( 'display','off','algorithm','active-set', 'tolfun',10^-
10, 'tolcon',10^-10, 'tolX',10^-10, 'maxiter',1000,
'maxfunevals',nassets*1000);
A=[]; b=[]; %A*x<=b
Aeq=ones(1,nassets); beq=1; %Aeq*x=beq
lb=repmat(lb,nassets,1); %lb<=x<=ub
ub=repmat(ub,nassets,1); %lb<=x<=ub
one=ones(nassets,1);
miu=mean(ERi);
delta=(nassets+2)/(nassets+2+m*(ERi-miu)'*Q^(-1)*(ERi-miu));
ERi_BS=(1-delta)*ERi+delta*miu;
tau=(m*delta)/(1-delta);
Q_BS=Q*(1+1/(m+tau))+(tau/(m*(m+1+tau)))*((one*one')/(one'*Q^(-1)*one));
fun=@(x)-ERi_BS'*x+x'*Q_BS*x.*k; %function to optimize
[x,U,~]=fmincon(fun,repmat(1/nassets,nassets,1),A,b,Aeq,beq,lb,ub,
[] ,options);
U=-U;
ERp_BS=ERi_BS'*x;
sd_BS=sqrt(x'*Q_BS*x);
end
```

Annex B Historical weekly stock prices

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
1/16/06	40.25	32.06	6.28	23.12	122.40	27.12	68.91	23.62	63.32	7.07	54.83	16.76	5.00	13.39	7.03	10.72	1.72	14.40	18.47	14.20	11.67	4.22
1/23/06	40.15	32.24	6.35	23.84	122.21	27.20	68.91	23.83	63.20	7.29	54.94	16.90	5.15	13.51	7.23	11.60	1.76	15.94	18.63	14.46	11.63	4.46
1/30/06	39.02	31.84	6.24	22.88	120.61	26.65	68.24	23.04	61.78	7.49	54.30	16.65	5.10	12.97	7.13	10.75	1.88	15.39	18.15	14.81	11.50	4.44
2/6/06	37.98	31.48	6.54	22.24	120.89	26.47	68.24	23.44	60.68	7.20	54.52	17.35	5.00	13.26	7.00	10.87	2.15	16.25	17.98	14.50	11.46	4.89
2/13/06	38.05	31.73	6.76	22.32	121.74	25.77	68.31	23.56	61.74	7.42	54.71	18.15	5.15	13.76	7.47	10.87	1.97	17.16	18.75	14.64	11.67	4.80
2/20/06	39.72	32.06	7.13	23.44	124.28	26.21	68.71	25.37	63.75	8.10	56.04	18.43	5.10	14.30	7.73	10.75	1.97	18.23	18.75	15.03	11.71	4.65
2/27/06	39.11	32.42	6.95	23.44	124.38	26.03	68.44	26.18	63.95	7.84	57.41	18.54	4.98	14.21	7.73	10.68	2.05	17.83	19.16	15.56	11.63	4.56
3/6/06	37.91	32.61	6.69	22.44	124.85	26.28	68.04	25.34	62.18	7.71	57.79	17.59	5.45	13.76	7.43	10.29	1.86	17.04	18.63	14.20	11.26	4.34
3/13/06	38.63	32.35	6.96	23.24	125.42	26.21	66.78	26.09	62.45	8.64	57.56	19.10	5.85	14.88	7.63	10.79	2.01	16.89	18.63	14.72	11.34	4.34
3/20/06	38.73	32.82	6.76	23.08	122.87	26.68	66.65	25.64	62.29	8.61	57.53	19.83	5.70	14.79	7.57	10.98	2.23	17.12	18.75	14.33	11.38	4.12
3/27/06	39.60	32.97	6.96	22.72	122.69	26.65	66.55	25.97	62.06	8.77	57.76	19.66	6.80	14.46	7.47	11.37	2.21	17.68	18.88	14.02	11.18	4.27
4/3/06	40.41	33.70	7.00	23.52	124.67	27.23	66.65	27.33	64.50	9.32	60.38	21.90	7.55	15.70	7.77	12.52	2.63	19.49	21.43	14.90	11.46	4.80
4/10/06	40.25	33.04	7.08	23.20	124.20	27.53	66.78	27.03	63.95	8.93	61.21	21.86	7.35	17.15	8.00	11.91	3.54	18.66	22.52	14.94	11.30	4.89
4/17/06	42.41	32.82	6.91	25.59	126.27	27.67	66.84	27.21	71.55	9.19	61.02	22.53	6.95	17.15	8.60	12.64	3.91	20.12	23.01	14.72	11.38	4.94
4/24/06	42.13	32.93	6.89	24.79	124.86	27.89	66.78	27.51	69.74	8.96	60.53	22.67	6.80	17.11	8.60	11.98	3.87	20.91	22.60	14.64	11.42	4.75
5/1/06	42.73	33.66	6.96	25.91	129.49	26.83	67.24	28.06	71.51	9.41	60.23	22.88	7.10	17.11	9.20	12.37	4.10	21.46	21.39	15.42	11.18	4.68
5/8/06	42.85	33.41	6.93	24.23	133.26	26.28	66.98	26.40	68.01	9.22	58.36	22.21	6.90	16.61	8.33	11.48	3.70	21.03	20.37	15.34	11.13	4.89
5/15/06	41.24	33.04	6.69	23.08	130.76	26.10	66.38	25.10	65.01	8.48	56.35	20.43	6.70	16.07	8.13	10.95	3.52	18.78	19.44	14.28	10.85	4.75
5/22/06	41.46	32.68	6.55	22.40	127.55	25.15	65.15	24.76	63.59	8.00	56.27	21.34	6.75	15.70	8.10	10.87	3.17	17.68	18.59	13.23	10.60	4.24
5/29/06	41.71	32.13	6.42	22.16	128.02	25.00	64.38	24.52	63.71	8.00	54.87	20.85	8.10	15.45	7.87	10.87	3.19	18.98	19.20	12.93	10.64	4.10
6/5/06	40.67	32.13	6.28	21.44	126.70	25.26	63.58	22.86	61.27	7.20	55.25	21.02	7.40	15.37	7.30	10.25	2.83	17.32	18.63	12.44	11.38	4.12
6/12/06	40.77	32.39	6.35	21.28	128.21	25.00	64.21	23.50	61.82	7.45	57.03	21.06	7.60	15.04	7.67	10.83	2.83	17.40	18.31	13.06	11.09	4.17
6/19/06	40.15	32.64	6.35	21.36	127.45	25.48	64.65	23.35	60.80	7.52	58.67	21.83	7.30	15.12	7.63	10.83	3.04	16.81	17.94	12.88	10.89	4.17
6/26/06	41.61	33.12	6.35	22.00	128.59	25.66	65.61	24.28	62.41	8.16	60.95	22.32	7.55	15.49	8.27	10.79	3.62	18.66	18.55	13.89	11.18	4.56
7/3/06	41.91	33.48	6.46	21.76	130.19	26.21	65.85	24.04	62.22	8.06	60.91	22.60	7.40	15.62	8.17	10.91	3.68	19.85	18.39	14.02	11.26	4.58
7/10/06	40.10	33.22	6.44	21.32	128.21	26.10	65.51	23.56	61.03	7.84	59.43	22.56	7.15	15.41	8.03	10.52	3.52	18.70	17.94	14.11	11.18	4.44
7/17/06	41.09	33.12	6.46	21.80	129.82	26.32	65.55	23.86	62.37	8.10	60.83	22.11	7.50	15.58	8.53	10.91	3.79	18.62	18.47	14.07	11.26	4.51
7/24/06	41.56	33.63	6.53	22.80	131.99	26.83	65.95	25.22	64.46	8.55	61.33	22.49	6.92	16.23	8.73	11.51	3.77	18.70	18.23	15.00	11.44	4.42
7/31/06	41.73	33.48	6.51	22.68	132.84	27.27	66.01	25.67	65.13	8.43	62.51	23.09	6.73	16.18	8.65	11.49	3.76	18.62	17.94	14.97	11.39	4.49
8/7/06	41.98	33.77	6.55	22.88	133.60	27.34	66.31	26.06	66.12	8.55	62.55	23.89	7.06	16.51	8.60	11.97	3.98	19.33	18.59	14.92	11.65	4.41
8/14/06	43.61	34.90	6.61	22.72	132.51	27.23	66.28	26.24	66.98	8.83	62.39	23.86	6.93	16.41	8.61	11.98	3.63	19.21	19.52	15.11	11.77	4.49
8/21/06	41.71	34.97	6.55	21.09	131.37	26.87	65.45	25.13	64.82	8.61	61.90	23.19	6.18	16.21	8.47	12.01	3.80	18.50	19.93	14.95	11.77	4.46
8/28/06	42.80	36.21	6.82	21.01	133.46	27.12	65.31	26.55	67.06	8.98	63.27	24.42	7.14	16.36	8.65	13.14	3.75	18.39	20.33	15.60	12.08	4.56
9/4/06	42.33	36.10	6.82	20.77	131.37	27.34	64.95	25.91	66.51	8.83	60.72	23.65	7.12	16.26	8.65	12.72	3.79	18.42	19.24	15.18	12.06	4.73
9/11/06	42.30	36.18	6.78	20.97	132.79	26.94	65.21	26.09	66.83	8.97	59.69	24.84	6.71	16.28	8.72	12.89	3.33	17.99	19.28	14.85	12.47	4.95
9/18/06	42.50	35.56	6.79	20.77	133.93	26.83	65.45	26.91	67.26	8.82	61.48	25.15	6.72	16.33	9.05	13.14	3.36	18.07	19.32	14.81	12.97	5.90
9/25/06	41.34	34.43	6.81	21.36	134.50	26.61	65.55	26.46	66.94	8.65	61.86	24.77	6.80	16.16	9.21	12.77	3.25	18.07	19.44	14.72	13.15	5.58
10/2/06	42.18	34.90	6.77	20.65	138.47	26.39	65.78	26.73	68.60	9.02	63.65	26.58	7.29	15.87	9.17	12.77	3.17	17.36	19.40	14.64	13.76	5.50
10/9/06	42.28	35.37	6.72	20.69	138.66	26.43	66.28	26.52	66.86	8.82	64.75	26.51	7.27	15.72	9.01	12.61	3.07	17.95	19.44	14.53	13.89	5.65
10/16/06	42.48	35.30	6.67	20.81	139.32	26.54	65.85	26.43	67.26	8.67	63.69	27.04	7.47	15.67	9.07	13.52	3.35	18.15	19.56	15.93	13.71	5.52
10/23/06	42.26	35.59	6.64	21.01	138.85	26.61	65.95	25.85	67.53	8.49	62.77	26.17	7.29	15.54	9.07	13.10	3.26	18.15	19.56	15.88	13.82	5.38
10/30/06	43.05	36.87	6.67	21.40	141.88	26.61	66.41	26.73	69.11	8.66	63.19	25.57	7.68	15.68	9.24	13.29	3.25	17.87	19.16	16.11	13.95	6.39
11/6/06	44.22	36.43	6.61	21.28	142.45	26.68	68.58	27.81	71.08	9.33	62.32	26.03	7.84	15.87	9.84	12.60	3.31	19.45	19.61	16.97	14.13	6.19
11/13/06	44.22	37.23	6.55	21.40	139.23	27.01	68.91	26.46	71.08	9.21	64.87	29.56	8.34	15.83	9.68	13.17	3.16	20.79	20.66	18.05	15.60	6.12
11/20/06	46.91	36.94	6.49	21.68	138.42	26.61	68.84	26.58	71.40	9.47	62.51	30.54	8.37	16.07	9.80	13.29	3.31	20.48	21.06	18.14	15.56	5.97
11/27/06	44.90	36.61	6.35	21.64	136.72	26.54	68.91	26.34	68.17	9.07	62.20	28.65	8.40	15.92	9.72	13.41	3.40	20.56	20.66	17.35	14.53	6.20
12/4/06	45.12	38.18	6.39	21.76	133.50	26.72	69.44	25.97	70.17	9.52	61.75	28.54	7.90	15.87	10.04	13.60	3.33	23.87	21.39	18.62	15.33	6.20
12/11/06	46.52	42.19	6.53	22.20	133.97	27.09	69.97	26.40	70.65	9.47	63.80	29.42	7.88	16.00	11.20	14.00	3.31	23.59	21.83	19.72	15.84	6.23
12/18/06	46.39	41.75	6.53	22.80	134.26	27.63	70.31	26.09	68.80	9.86	62.85	29.56	7.29	15.98	11.55	14.13	3.47	24.15	21.39	19.41	15.45	6.89
12/25/06	47.74	41.97	6.52	22.88	135.01	27.74	70.77	26.24	70.45	10.06	63.80	30.92	7.28	16.15	12.11	14.95	3.56	25.17	21.75	19.59	15.78	7.30
1/1/07	49.80	41.24	6.47	22.72	135.87	27.82	71.17	28.03	75.85	10.60	65.85	30.08	7.46	17.15	12.85	14.30	3.34	22.88	22.60	21.16	15.43	7.15
1/8/07	49.53	40.80	6.52	22.56	132.27	27.63	72.84	28.12	73.92	10.65	68.29	31.62	7.63	16.57	12.16	14.95	3.23	22.09	21.87	20.55	16.68	7.86
1/15/07	52.54	42.51	6.50	23.12	135.39	27.89	75.03	29.60	78.80	11.42	69.69	31.83	7.59	17.27	12.84	16.21	3.24	21.50	23.25	21.47	17.58	8.63
1/22/07	50.20	42.88	6.52	23.08	136.15	27.67	71.84	27.21	75.45	10.68	70.80	30.99	7.48	17.11	12.35	15.86	3.23	22.53	21.91	20.59	16.89	8.34
1/29/07	53.29	42.44	6.61	23.44	136.25	28.88	73.04	28.36	77.42	11.39	69.16	31.94	7.99	17.97	12.16	18.17	3.27	23.75	22.28	21.73	17.01	8.20
2/5/07	53.19	42.26	6.51	23.20	132.93	28.29	72.90	28.03	77.15	11.31	70.83	33.51	8.76	17.73	12.35	17.09	3.21	24.74	22.52	20.73	17.71	8.49
2/12/07	50.55	42.95	6.49	23.04	132.74	29.10	75.17	27.81	76.60	11.68	70.49	33.58	8.42	17.73	12.56	17.13	3.16	24.86	22.89	21.25	17.58	8.63
2/19/07	50.95	42.99	6.50	22.80	131.03	29.13	74.83	28.09	76.83	12.05	69.85	32.88	8.98	17.77	12.72	17.32	3.09	25.09	22.60	21.87	17.42	8.90
2/26/07	46.57	39.86	6.32	22.08	129.23	28.91	71.04	26.52	72.18	11.04	66.31	30.85	8.39	16.65	11.61	15.35	3.03	23.63	20.86	18.97	15.86	7.48
3/5/07	47.16	40.47	6.32	21.48	129.52	28.48	73.57	25.67	68.48	11.31	68.63	31.03	8.50	15.87	11.04	15.36	2.95	22.37	20.37	18.89	15.92	7.67
3/12/07	46.04	39.16	6.18	21.76	126.77	27.78	71.31	25.40	68.56	10.88	64.79	29.94	8.07	15.72	10.45	15.71	2.87	23.08	21.99	20.38	15.55	7.67
3/19/07	48.71	40.51	6.44	22.36	130.44	28.77	73.24	26.61	71.71	10.99	66.92	30.92	8.00	16.38	11.25	17.09	3.00	24.50	23.41	22.65	16.76	7.46
3/26/07	49.25	41.68	6.50	23.00	129.01	29.32	73.90	27.54	71.16	11.39	66.65	31.80	7.65	16.16	11.24	16.78	3.23	26.04	23.41	22.83	16.19	7.22
4/2/07	52.19	42.55	6.59	23.00	130.34	29.94	75.23	28.54	72.50	11.91	71.40	33.41	8.04	16.36	12.01	17.55	3.21	29.55	24.06	25.55	16.76	7.45
4/9/07	50.00	41.68	6.64	22.92	133.57	29.97	74.83	28.54	72.85	11.48	70.15	33.30	8.06	16.28	11.48	17.90	3.05	28.56	24.95	24.27	16.89	7.91

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
4/16/07	50.55	41.46	6.92	23.32	137.37	30.45	74.17	28.84	72.22	11.49	69.73	33.37	7.88	15.95	11.01	17.82	2.90	27.62	23.86	24.84	16.85	8.13
4/23/07	51.50	42.73	6.99	23.52	137.37	30.45	73.90	28.39	72.74	12.14	69.31	33.83	7.80	16.11	11.13	17.82	2.88	27.34	24.47	23.66	16.85	7.24
4/30/07	54.58	42.59	7.08	24.91	139.46	30.52	75.17	32.65	75.85	13.43	68.74	33.16	7.65	16.21	12.00	18.44	3.05	28.01	25.07	25.41	16.56	8.07
5/7/07	52.25	41.64	6.93	24.95	137.75	29.21	72.84	32.16	74.00	12.73	67.83	32.50	7.50	16.07	11.57	18.67	3.00	27.89	24.71	24.01	16.09	8.01
5/14/07	53.83	41.39	6.84	25.03	137.82	30.12	73.77	33.10	73.48	12.44	68.40	33.16	7.12	16.03	11.89	18.09	3.34	28.09	26.17	24.54	16.43	8.62
5/21/07	52.10	39.75	6.69	25.31	137.24	29.35	72.17	31.50	72.22	12.44	67.37	32.71	7.32	15.62	11.52	18.82	3.43	27.10	25.36	23.75	16.60	8.53
5/28/07	51.80	40.11	6.69	24.75	137.34	28.91	72.57	32.65	70.84	12.09	66.35	32.18	7.61	15.67	11.16	19.66	3.34	27.81	27.10	24.89	16.56	8.43
6/4/07	52.00	39.16	6.59	25.43	136.20	29.21	70.97	31.71	70.17	12.43	65.32	32.08	8.06	15.52	10.91	19.59	3.44	27.93	27.58	24.01	16.30	8.50
6/11/07	52.00	39.27	6.79	25.71	136.39	29.13	71.11	32.56	71.04	12.57	65.97	30.85	8.08	15.54	11.01	20.97	3.52	27.78	28.72	24.93	16.42	8.38
6/18/07	52.25	38.40	6.69	25.59	138.48	28.80	70.57	33.64	72.66	13.36	65.78	31.13	7.70	15.57	10.99	21.58	3.82	29.83	30.95	27.17	16.09	8.53
6/25/07	52.20	38.22	6.74	24.91	135.53	28.88	70.31	32.16	74.23	12.57	66.42	30.71	7.62	15.35	10.88	20.70	3.65	29.83	31.88	25.76	15.99	8.66
7/2/07	56.18	38.43	6.91	25.99	137.53	29.21	71.57	32.98	76.99	12.98	66.80	31.31	7.69	15.37	10.89	21.78	4.18	31.96	33.46	28.53	16.19	8.92
7/9/07	55.62	37.96	7.77	27.26	137.24	28.77	72.17	33.16	77.27	12.98	68.44	32.74	7.66	15.92	11.28	22.66	4.26	32.11	34.43	29.09	15.71	9.10
7/16/07	58.06	39.24	7.53	26.27	138.29	29.21	75.23	33.07	78.37	12.84	69.92	31.83	7.90	16.53	11.57	22.58	4.09	30.54	32.97	29.18	15.79	9.11
7/23/07	54.75	38.47	7.25	26.23	134.39	28.66	73.44	33.10	77.50	12.62	67.37	31.76	7.90	16.10	11.33	21.89	3.88	29.20	32.00	27.74	17.05	8.93
7/30/07	54.29	38.00	7.37	24.39	137.05	28.26	79.76	32.19	75.73	11.85	66.31	31.38	7.80	15.77	11.25	21.78	3.84	29.39	31.80	27.34	16.72	8.93
8/6/07	52.46	37.09	7.33	24.19	135.15	27.93	78.63	31.53	73.56	11.78	65.02	29.70	7.20	15.64	10.93	18.86	3.52	29.98	30.22	25.33	16.93	8.82
8/13/07	50.42	36.61	6.98	22.80	129.32	28.07	74.49	29.72	69.62	10.97	61.10	28.66	6.50	15.12	10.12	17.44	3.21	26.00	25.36	21.69	16.19	7.68
8/20/07	55.36	38.91	7.30	25.35	133.79	27.96	80.54	31.86	80.22	11.45	64.87	30.58	7.28	15.70	11.76	21.09	3.48	30.77	32.32	26.73	17.13	9.06
8/27/07	58.37	39.16	7.37	25.59	133.12	28.59	82.16	32.92	82.11	11.96	65.51	30.79	7.50	15.67	12.15	21.93	3.42	32.15	34.55	27.87	16.80	10.76
9/3/07	59.28	40.11	7.48	26.98	132.55	28.99	82.16	32.65	83.77	12.58	68.17	31.36	7.80	17.68	12.76	22.70	3.49	30.66	34.31	27.39	16.30	10.68
9/10/07	64.94	39.60	7.46	31.01	132.27	29.13	88.68	38.11	95.27	13.81	71.06	30.72	7.85	19.25	14.40	25.81	3.71	32.98	36.33	28.61	16.68	10.76
9/17/07	63.10	39.05	7.45	29.89	134.93	29.65	92.44	37.30	94.25	13.43	72.93	31.50	7.95	19.30	13.67	25.27	3.92	37.52	39.05	29.23	18.65	10.38
9/24/07	65.19	39.05	7.43	30.53	135.41	29.57	92.71	37.24	103.23	13.88	71.71	31.04	8.66	19.13	12.89	26.73	4.08	38.19	40.18	28.96	17.46	11.51
10/1/07	65.29	38.54	8.14	29.89	143.69	28.73	93.12	36.06	103.47	13.81	70.72	31.61	9.00	20.78	12.71	26.04	3.83	36.14	38.24	29.27	17.05	11.26
10/8/07	69.49	38.07	7.93	32.80	142.74	28.44	101.86	36.78	102.52	16.22	73.91	32.85	9.00	20.58	13.67	27.15	4.15	36.81	38.03	30.32	18.08	10.74
10/15/07	67.85	38.33	7.83	32.17	143.50	28.73	100.51	36.09	106.07	16.16	76.20	33.20	8.47	20.78	13.05	26.00	4.62	35.90	37.87	28.79	18.69	11.18
10/22/07	74.71	38.22	7.99	34.56	138.65	28.48	103.40	39.17	121.51	18.12	77.03	35.97	7.73	21.32	16.57	28.11	5.59	40.32	38.32	28.70	18.98	10.43
10/29/07	72.10	38.00	8.19	35.87	141.12	29.02	99.44	39.59	109.54	17.60	76.58	35.08	8.07	21.36	16.13	27.15	5.01	42.92	38.44	27.69	18.32	10.72
11/5/07	73.02	37.82	9.14	34.64	134.27	28.84	97.82	41.44	116.08	19.02	76.96	34.80	7.74	20.87	17.30	27.15	4.51	40.44	36.37	25.59	16.72	10.84
11/12/07	70.52	37.60	8.81	31.49	129.70	29.61	97.69	39.86	113.16	17.19	72.85	32.89	7.85	21.24	17.04	24.58	4.14	37.95	33.42	23.97	15.50	9.80
11/19/07	68.01	37.12	8.44	30.21	125.57	28.15	91.31	36.27	110.72	16.48	72.09	32.71	7.53	19.75	16.00	24.20	3.93	32.35	31.27	24.27	15.35	10.63
11/26/07	74.66	38.47	9.38	36.83	125.95	29.83	101.07	41.37	127.11	18.99	79.69	33.45	7.55	21.61	18.37	27.15	4.41	39.73	35.56	28.57	16.80	10.61
12/3/07	72.31	38.65	9.26	35.20	130.43	31.18	108.46	42.22	121.75	17.54	78.32	38.21	7.10	21.98	16.90	28.46	4.41	40.32	36.33	27.87	16.56	11.53
12/10/07	71.59	39.24	9.16	34.44	127.38	29.83	103.64	44.61	126.16	17.70	79.31	35.76	7.00	22.60	17.50	26.58	4.34	37.72	33.54	27.21	16.60	11.39
12/17/07	72.00	39.75	9.42	33.24	126.05	32.50	107.17	42.88	126.24	17.57	78.25	36.47	7.12	23.35	18.24	25.81	4.07	37.01	35.77	30.06	16.56	11.89
12/24/07	70.46	38.80	9.36	31.37	125.00	32.17	106.56	44.06	126.09	17.44	78.02	37.50	7.28	23.10	18.14	25.66	4.06	37.76	35.44	29.36	16.43	12.27
12/31/07	74.10	40.58	9.79	35.24	124.04	33.37	107.57	45.18	130.89	18.09	82.28	37.60	7.79	26.44	18.47	26.65	4.39	36.61	34.02	29.75	16.42	12.91
1/7/08	70.05	42.77	9.79	36.07	117.85	31.44	109.13	45.57	131.84	17.93	79.85	35.05	7.12	26.07	18.40	25.39	4.10	35.51	33.05	29.40	16.40	12.08
1/14/08	66.37	44.12	9.79	33.96	112.89	33.26	105.54	43.49	125.53	16.29	77.56	32.99	6.13	27.19	17.24	23.54	3.48	29.55	30.30	25.20	15.42	10.34
1/21/08	67.14	44.85	9.79	34.08	115.37	31.80	104.46	43.07	124.51	16.03	79.92	33.52	6.36	25.95	17.67	24.58	3.23	32.11	32.53	25.85	14.81	11.60
1/28/08	63.19	45.79	9.79	32.52	112.70	32.64	100.32	39.05	115.76	14.68	78.48	31.29	5.92	24.13	14.20	21.70	3.09	31.40	32.61	23.53	14.33	10.24
2/4/08	60.94	45.94	8.69	32.29	108.69	32.39	96.39	36.81	109.93	13.27	74.83	29.80	5.82	24.01	13.90	21.62	3.14	30.06	32.28	23.18	14.15	11.20
2/11/08	62.17	43.53	8.69	34.28	109.17	33.19	91.58	38.69	111.43	13.75	73.38	29.55	5.55	24.38	14.50	23.74	3.43	32.59	33.70	24.63	13.89	10.78
2/18/08	57.41	44.08	8.69	31.69	109.46	33.48	94.63	35.21	104.02	12.34	69.58	28.63	6.05	23.30	13.19	22.28	3.62	30.73	33.01	24.54	12.97	10.20
2/25/08	60.99	44.81	8.69	32.29	115.08	32.24	101.88	37.39	109.93	13.78	68.90	30.33	6.30	24.30	13.33	22.08	3.63	33.97	34.83	24.76	13.34	9.55
3/3/08	54.79	41.57	8.69	29.34	111.74	31.44	92.26	33.76	99.29	12.27	64.71	29.55	5.73	23.14	12.49	20.39	3.24	29.75	30.99	22.22	12.79	9.21
3/10/08	53.51	47.07	8.69	27.82	117.08	36.41	95.40	33.07	92.91	10.96	65.89	28.10	5.99	22.02	11.59	18.63	3.45	25.96	29.77	20.02	12.18	9.23
3/17/08	51.62	46.16	8.93	28.90	115.74	36.92	95.81	30.96	86.26	11.05	64.75	25.98	5.62	21.73	10.79	18.55	2.99	25.61	25.72	18.58	12.31	8.21
3/24/08	57.30	46.89	8.93	29.50	122.44	36.44	98.51	34.58	97.61	12.27	67.68	29.42	5.77	21.53	11.47	21.67	3.01	29.00	27.22	21.56	12.39	10.02
3/31/08	61.25	45.17	9.50	29.34	126.07	34.32	99.00	35.33	105.38	12.95	68.48	30.82	5.60	22.78	12.60	23.17	3.28	30.77	27.71	22.57	13.25	10.27
4/7/08	60.73	46.41	8.93	29.06	126.93	36.26	100.87	35.12	102.92	12.40	69.54	31.19	5.40	22.61	12.50	23.52	2.86	30.18	28.15	22.83	13.13	10.31
4/14/08	59.25	47.67	8.93	30.25	125.02	35.64	102.46	34.36	100.78	11.75	66.16	31.63	5.10	22.36	12.11	22.94	2.82	29.63	26.45	22.39	12.67	9.60
4/21/08	62.17	45.35	8.93	30.53	126.65	34.91	106.48	36.59	106.97	12.85	68.67	31.82	5.88	22.78	13.39	24.52	3.06	32.67	30.38	24.41	13.61	9.87
4/28/08	63.65	44.94	8.93	31.61	130.38	35.60	110.08	37.20	111.73	13.89	73.34	32.85	5.72	23.57	14.42	25.99	3.19	31.92	30.86	25.24	14.46	10.02
5/5/08	62.17	44.87	9.20	33.44	127.13	34.65	108.35	35.49	107.45	12.98	73.26	31.56	5.48	22.40	13.48	22.90	3.28	27.97	28.54	23.44	13.23	9.79
5/12/08	67.32	45.68	9.05	32.13	129.52	34.24	107.16	35.34	106.26	13.18	74.24	33.92	5.66	22.65	14.19	24.10	3.31	29.13	28.96	24.14	14.09	10.02
5/19/08	65.06	45.46	8.79	31.04	126.24	34.12	109.25	33.45	98.24	12.10	70.22	34.63	5.45	22.02	12.58	22.01	3.69	27.81	27.55	22.95	12.95	9.95
5/26/08	62.81	52.53	8.84	31.44	126.15	35.48	110.30	33.08	99.51	12.72	69.48	35.11	5.80	21.98	13.34	22.94	3.50	26.89	27.72	22.91	13.97	8.99
6/2/08	65.95	49.29	8.99	32.05	125.76	35.90	114.00	33.39	100.54	12.46	71.78	35.00	5.31	22.90	13.09	22.05	3.37	27.89	27.55	23.04	13.85	9.24
6/9/08	59.20	47.91	8.88	28.62	119.06	35.37	109.46	30.92	90.15	11.36	66.32	32.52	5.11	21.73	11.20	20.01	3.03	24.81	24.82	20.74	13.01	9.16
6/16/08	58.88	48.55	8.82	28.46	119.15	35.59	108.34	31.65	91.89	11.10	66.01	31.41	5.33	21.36	11.08	20.31	3.04	25.37	24.78	20.47	13.10	9.18
6/23/08	56.26	49.10	8.72	26.20	116.76	35.18	112.74	30.00	85.23	10.27	62.81	30.93	4.94	20.73	10.26	19.35	2.95	23.97	23.41	19.32	12.59	9.09
6/30/08	53.91	48.58	8.48	25.56	113.60	35.22	106.67	28.08	83.24	9.39	60.39	29.08	3.82	20.27	9.58	18.38	3.13	22.29	22.50	19.01	11.91	8.80
7/7/08	56.32	47.84	8.15	26.24	113.89	34.92	102.55	28.36	90.78	9.89	61.95	28.31	3.70	20.60	10.59	19.70	3.11	23.89	25.07	20.16	12.35	8.65

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
7/14/08	55.37	47.02	8.02	25.88	114.94	34.50	103.46	27.65	88.72	9.21	60.89	26.83	2.99	20.94	9.83	19.46	2.94	23.29	23.25	17.46	12.89	8.65
7/21/08	58.15	48.06	8.25	28.82	122.89	34.54	106.46	29.76	94.04	10.13	66.16	27.97	3.38	21.57	10.80	19.81	2.92	25.17	25.98	18.30	13.20	8.59
7/28/08	57.13	47.84	8.67	27.25	123.94	34.16	107.95	29.18	91.21	9.44	64.48	29.76	3.28	21.02	10.65	19.39	2.81	23.53	24.89	20.17	12.63	8.94
8/4/08	57.36	49.10	8.86	26.77	122.03	36.35	112.04	28.61	87.69	8.75	60.97	26.16	3.38	20.90	9.54	17.88	2.59	17.82	24.06	20.17	11.94	8.85
8/11/08	56.68	49.61	9.09	26.12	119.54	37.67	107.93	28.66	87.21	8.31	64.25	26.42	3.43	21.41	9.31	18.19	2.37	17.82	23.31	17.72	12.40	8.77
8/18/08	52.96	49.22	8.79	23.99	113.00	37.34	102.31	26.77	79.83	7.32	59.30	24.06	3.25	20.40	8.26	17.46	2.31	17.82	21.88	20.17	11.98	8.31
8/25/08	58.78	47.32	8.11	22.98	118.47	37.48	108.98	28.97	85.39	7.79	61.25	23.02	3.03	21.15	9.27	19.31	2.58	23.25	22.63	18.92	12.40	9.01
9/1/08	55.06	48.98	8.07	21.73	112.52	37.44	105.33	26.68	75.47	7.27	60.11	22.03	2.98	21.15	8.24	17.69	2.63	21.93	20.60	17.19	12.04	8.65
9/8/08	53.02	48.61	8.41	21.89	117.12	37.36	110.32	25.95	75.78	7.27	61.64	22.39	2.68	21.48	7.51	16.34	2.74	22.33	19.27	17.10	12.57	8.50
9/15/08	51.84	45.08	8.22	21.83	118.47	35.82	107.57	23.48	75.39	6.74	55.78	21.43	2.49	20.10	7.19	16.22	2.81	21.09	18.01	16.23	11.55	8.36
9/22/08	49.24	46.24	7.97	18.81	119.43	35.67	104.13	22.14	67.81	6.15	53.83	19.11	1.80	19.48	6.47	14.57	2.90	20.74	19.18	16.41	11.12	8.36
9/29/08	44.44	47.14	8.09	16.76	118.18	36.31	86.92	19.51	58.72	5.50	49.23	16.78	1.53	18.68	5.76	13.13	2.75	18.25	18.51	17.33	10.37	8.36
10/6/08	35.63	42.07	6.80	13.57	105.32	33.37	76.59	14.64	46.42	4.64	39.83	14.89	1.12	15.36	4.57	10.81	2.14	14.48	12.40	14.29	8.43	7.71
10/13/08	37.74	40.31	6.14	13.41	100.91	31.19	74.48	15.85	49.95	4.61	41.94	14.86	0.87	14.21	5.03	12.13	2.13	15.46	12.16	13.85	8.43	7.50
10/20/08	36.42	37.56	5.31	11.78	84.41	31.41	62.89	15.85	48.84	3.90	37.06	11.77	0.66	13.02	4.44	11.74	1.96	12.14	4.24	10.90	7.48	7.34
10/27/08	38.29	39.07	6.23	12.27	88.25	31.07	66.75	16.53	51.98	4.05	41.74	11.16	0.56	14.04	4.37	14.71	1.97	14.57	5.08	13.40	7.95	7.79
11/3/08	41.80	41.55	6.99	13.90	88.25	34.65	74.83	18.29	54.76	4.54	41.31	12.56	0.55	14.73	4.89	13.94	2.13	13.59	5.08	13.13	7.00	9.11
11/10/08	34.54	39.71	6.23	13.59	78.95	32.24	63.45	16.40	46.66	4.45	36.67	10.94	0.67	13.93	4.24	12.31	2.27	12.38	5.15	11.97	6.82	9.42
11/17/08	35.39	39.18	6.19	11.74	74.08	32.02	63.37	14.76	41.27	3.81	34.33	10.78	0.61	14.04	3.80	11.29	2.00	10.33	4.86	10.02	6.35	8.85
11/24/08	38.53	41.32	6.43	15.05	80.47	32.77	70.33	16.63	50.34	4.17	40.57	12.42	0.64	14.39	4.00	13.35	2.07	11.94	4.37	10.70	6.40	8.65
12/1/08	35.63	40.16	5.71	14.21	78.26	32.54	71.97	15.24	44.56	3.72	39.21	11.84	0.74	14.13	3.71	12.04	2.17	10.92	4.86	10.19	6.59	8.12
12/8/08	41.17	38.65	5.96	14.88	79.08	31.68	74.46	18.33	50.75	4.66	42.17	12.55	0.76	15.05	5.33	14.16	2.24	12.40	5.61	11.86	6.98	8.45
12/15/08	42.99	36.89	5.63	17.42	73.60	30.13	72.75	20.55	57.44	5.25	43.50	12.56	1.16	15.35	6.23	14.56	2.24	12.96	7.20	12.70	7.52	8.65
12/22/08	38.53	38.84	5.51	16.76	71.10	31.04	72.54	18.84	54.32	4.81	40.96	11.74	1.04	15.01	5.77	13.60	2.06	12.06	6.45	11.83	7.38	8.58
12/29/08	40.59	39.37	5.63	17.99	74.03	32.20	74.46	19.19	55.22	5.59	43.50	12.33	1.07	15.11	5.87	14.67	2.16	12.46	8.55	12.51	7.59	8.63
1/5/09	40.32	38.99	5.79	16.89	71.82	31.71	71.97	20.26	57.44	6.08	41.78	12.49	1.44	15.13	5.90	14.32	2.04	12.43	9.25	12.03	7.58	8.17
1/12/09	37.10	38.92	5.70	15.55	61.72	33.26	64.72	18.46	52.51	5.12	37.84	12.17	1.40	14.61	5.21	13.84	1.95	10.52	7.88	10.40	7.04	8.65
1/19/09	35.71	38.58	5.68	14.60	55.23	33.79	60.59	18.08	53.75	4.81	36.63	10.78	1.25	15.10	4.90	13.38	1.82	10.13	7.42	9.81	7.24	8.65
1/26/09	38.48	39.63	5.93	15.95	58.46	34.43	67.42	19.06	57.44	5.11	39.79	11.59	1.28	15.71	5.33	14.23	1.89	11.33	7.73	10.17	7.78	8.66
2/2/09	35.10	39.07	5.70	14.69	59.71	33.64	66.17	17.58	53.34	5.19	37.18	12.28	1.30	14.96	5.02	12.84	1.94	12.14	8.32	10.06	7.24	8.41
2/9/09	35.68	39.22	5.69	14.02	58.65	34.20	63.12	16.75	52.47	5.08	37.29	11.99	1.26	14.95	4.70	12.28	2.04	11.91	7.75	10.85	7.33	8.15
2/16/09	33.28	39.59	5.37	13.82	52.69	34.46	58.32	15.58	49.40	4.89	36.55	12.31	1.25	14.64	4.21	10.92	2.24	11.05	6.95	10.33	6.90	8.41
2/23/09	33.70	43.24	5.50	13.48	54.75	36.16	61.87	16.56	50.05	4.81	37.61	12.02	1.25	14.53	4.27	11.97	2.25	10.41	6.79	9.85	6.92	8.27
3/2/09	30.85	40.49	5.12	12.72	41.82	34.20	52.34	15.17	46.36	4.36	34.84	9.84	1.18	13.49	3.93	11.03	2.31	10.76	6.28	9.54	6.06	8.51
3/9/09	33.15	40.72	5.29	13.49	36.78	35.03	55.04	16.12	51.37	4.63	36.75	9.73	1.23	14.23	4.58	12.58	2.42	11.33	6.39	10.27	6.27	8.18
3/16/09	33.33	40.31	5.23	14.07	39.95	35.25	56.30	16.56	53.25	5.14	37.45	11.27	1.19	15.05	4.77	12.77	2.56	12.35	7.64	10.19	6.58	8.11
3/23/09	37.21	39.33	5.56	16.85	42.21	34.39	58.89	19.41	60.56	5.63	42.01	12.65	1.27	15.43	5.80	14.83	2.93	16.17	7.66	10.86	7.22	8.45
3/30/09	38.63	38.69	5.72	17.42	47.66	33.48	60.70	21.53	65.20	6.09	43.57	13.63	1.50	16.35	6.42	15.45	3.01	16.39	7.93	10.44	7.42	8.17
4/6/09	39.22	39.63	6.32	17.66	49.06	34.58	61.56	21.27	66.32	6.37	44.94	14.67	1.42	16.64	6.32	16.28	2.96	15.15	8.90	10.51	7.89	8.25
4/13/09	40.46	39.83	6.31	18.77	53.15	34.24	65.29	22.83	70.89	7.02	43.30	15.41	1.43	16.55	7.28	17.16	3.08	15.23	10.00	12.11	7.88	9.06
4/20/09	41.80	40.10	6.62	19.50	50.79	34.65	64.77	22.80	68.07	6.74	45.92	15.16	1.78	17.07	7.11	16.28	3.21	14.84	10.17	12.19	7.79	8.71
4/27/09	42.59	40.06	6.75	21.06	52.77	34.50	64.07	23.34	67.03	7.10	47.48	15.14	1.87	16.77	7.11	17.77	3.45	14.95	9.57	12.28	7.67	9.11
5/4/09	45.81	39.22	7.11	22.04	63.51	32.99	76.72	25.36	68.77	8.21	52.08	20.23	2.16	18.22	7.63	17.89	3.75	18.13	11.83	14.71	8.53	10.10
5/11/09	45.34	39.76	7.46	21.63	61.97	32.99	73.28	23.79	67.74	8.27	54.16	18.36	2.30	17.50	7.72	17.73	4.36	16.55	11.86	14.21	8.72	10.23
5/18/09	45.26	39.41	7.34	22.57	63.35	32.79	72.48	25.42	71.30	8.85	52.84	19.46	2.25	17.50	8.34	18.17	4.48	17.40	13.45	14.38	9.03	11.15
5/25/09	52.24	39.87	7.50	26.65	66.10	32.48	83.03	29.93	80.10	10.11	61.82	20.76	2.43	20.90	10.22	21.11	4.81	19.62	14.91	15.47	9.25	11.15
6/1/09	52.10	39.93	7.72	26.48	63.49	32.29	88.49	30.86	83.84	11.22	62.57	22.80	2.17	21.24	10.39	20.95	5.38	22.10	14.89	15.98	8.98	11.08
6/8/09	49.81	39.96	7.58	25.15	67.40	32.83	83.78	29.32	78.73	10.36	59.50	20.56	2.20	20.73	9.24	20.99	5.28	20.49	13.71	14.38	8.91	12.23
6/15/09	46.89	40.00	7.53	23.33	64.26	34.08	81.91	26.73	74.54	9.29	57.03	19.70	2.12	19.67	8.68	19.34	5.25	18.14	12.77	13.80	8.45	12.52
6/22/09	50.82	39.89	7.98	26.31	63.20	34.04	82.58	28.75	82.76	10.05	61.22	19.74	2.10	20.48	9.51	21.39	5.69	18.63	12.78	14.31	8.65	12.14
6/29/09	47.52	39.62	7.67	25.57	61.75	33.06	79.51	27.95	79.07	9.82	58.94	18.89	2.03	20.05	9.28	19.26	5.48	18.80	12.82	13.75	8.79	12.12
7/6/09	46.62	39.93	7.80	24.16	60.36	33.14	78.99	26.64	77.57	9.03	58.07	18.04	1.78	20.43	9.05	18.61	6.03	17.19	13.32	15.34	9.42	12.52
7/13/09	50.38	40.27	8.09	26.81	65.90	33.10	81.83	28.65	85.00	9.98	64.61	18.97	1.97	21.67	9.72	20.59	6.31	20.33	13.52	16.54	9.59	12.62
7/20/09	53.90	40.39	8.15	28.72	70.68	32.83	86.02	30.41	90.65	11.63	66.36	20.97	2.27	22.73	10.62	21.39	6.25	21.36	15.95	17.34	10.15	13.10
7/27/09	54.58	40.70	8.31	30.26	74.39	33.30	94.17	32.74	97.87	12.81	69.43	21.01	2.36	23.92	11.24	22.88	6.99	21.11	18.51	17.57	10.27	13.83
8/3/09	51.77	40.74	8.06	28.35	80.86	33.38	86.62	31.18	91.64	11.13	66.32	20.03	2.22	22.73	10.37	20.51	6.72	22.47	18.72	18.54	9.47	13.89
8/10/09	52.59	41.59	8.17	29.22	81.44	33.53	87.67	30.57	92.22	11.84	66.84	20.68	2.15	23.75	10.50	20.43	6.56	23.00	19.14	19.09	9.90	14.35
8/17/09	53.71	40.54	7.92	27.52	79.87	33.73	84.95	30.12	92.80	11.83	68.36	20.40	2.27	23.16	10.43	21.35	6.10	21.52	18.43	18.50	9.74	13.49
8/24/09	51.88	40.54	8.24	29.30	80.31	34.19	84.42	30.09	91.39	11.20	67.72	21.01	2.33	23.06	9.72	20.63	6.15	21.69	18.14	17.32	9.64	13.66
8/31/09	50.76	40.87	8.78	29.39	79.25	33.93	84.04	30.89	90.40	11.11	64.93	22.15	2.50	23.45	9.88	21.19	5.50	22.22	17.72	17.74	9.64	13.54
9/7/09	52.97	40.91	9.08	32.04	81.71	33.66	85.78	32.65	96.12	11.72	69.27	22.54	3.08	23.06	10.64	22.52	5.53	23.46	18.09	19.31	10.29	14.30
9/14/09	54.44	40.83	9.18	32.93	88.08	33.54	86.23	32.94	95.46	11.55	72.53	23.90	3.46	22.98	10.27	22.12	5.47	22.55	19.11	20.85	10.99	14.26
9/21/09	53.29	40.60	9.10	33.77	85.04	33.58	83.06	31.82	94.38	11.34	72.73	23.08	3.55	22.47	9.95	21.96	5.24	21.93	17.80	20.22	10.95	15.41
9/28/09	52.30	40.56	9.28	32.93	83.59	33.06	83.44	31.08	91.56	11.19	71.56	22.46	3.33	22.55	9.54	22.68	5.32	21.10	16.65	20.39	10.05	15.55
10/5/09	53.75	40.75	9.50	33.81	85.72	33.14	83.97	33.10	97.45	11.72	75.30	23.69	3.61	23.36	10.66	24.05	5.78	21.10	17.63	21.67	11.16	15.90

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
10/12/09	54.66	41.03	9.54	33.01	87.12	33.42	83.97	34.25	98.86	11.58	75.18	24.06	3.39	23.83	10.74	23.61	6.82	21.89	17.59	23.59	11.36	16.74
10/19/09	57.93	40.67	9.43	35.57	87.26	32.95	83.97	35.37	101.52	12.56	78.07	23.49	3.63	24.26	11.65	25.50	7.70	22.64	17.71	22.49	10.85	16.59
10/26/09	55.07	40.64	9.09	35.82	84.22	32.87	84.19	35.69	99.36	11.78	77.10	22.87	3.35	23.75	10.95	24.51	7.39	21.10	17.08	24.13	10.85	16.76
11/2/09	53.45	40.48	8.72	35.23	83.88	32.87	85.93	36.01	96.54	11.59	74.69	23.61	3.50	23.15	10.65	24.76	7.11	20.68	17.21	24.09	10.80	16.96
11/9/09	53.75	41.14	9.02	34.69	91.37	33.34	87.66	34.50	96.79	11.44	71.68	26.98	3.81	23.41	10.44	25.21	7.40	22.10	18.56	23.59	11.48	17.13
11/16/09	53.10	40.99	9.04	33.89	91.95	33.26	87.59	34.66	95.79	11.13	72.36	27.19	3.48	22.94	10.38	24.59	7.95	20.77	17.88	22.72	11.50	17.73
11/23/09	52.27	40.83	8.73	33.60	84.17	32.91	85.15	33.31	93.34	10.77	70.72	27.31	3.35	22.38	10.25	22.63	7.47	19.02	16.91	21.35	10.99	18.34
11/30/09	55.62	41.08	8.92	35.61	90.41	33.30	88.88	38.11	99.91	11.63	75.14	27.31	3.47	23.06	11.45	24.96	8.59	20.60	18.30	24.00	12.01	19.41
12/7/09	55.18	41.04	9.22	34.10	87.21	33.38	86.67	37.24	99.66	11.64	74.89	27.03	3.37	22.68	11.28	25.09	9.13	18.81	18.14	23.68	12.21	19.65
12/14/09	52.74	41.24	9.28	36.95	84.60	33.22	85.45	35.44	95.79	10.64	74.17	24.93	3.28	22.55	10.52	23.16	8.54	19.06	17.21	24.32	12.01	17.61
12/21/09	53.75	41.12	9.21	36.16	85.71	33.30	86.52	37.14	96.29	10.93	74.37	25.17	3.22	22.81	10.65	23.53	8.97	20.81	17.33	24.68	12.32	18.21
12/28/09	55.07	41.32	9.45	37.50	86.49	33.34	87.43	37.63	97.98	11.06	75.50	25.38	3.21	22.94	10.97	25.09	9.18	21.02	17.63	25.87	12.33	18.50
1/4/10	56.06	41.71	9.58	38.12	88.71	33.89	87.20	38.17	98.90	10.63	79.47	24.97	3.34	22.72	11.11	25.21	9.88	21.97	17.46	26.69	11.80	17.36
1/11/10	53.59	41.51	8.98	35.82	88.08	34.05	86.29	36.14	93.93	10.30	72.93	24.19	3.28	22.85	10.71	24.43	10.11	24.47	17.04	28.01	12.47	17.94
1/18/10	52.66	41.28	8.63	32.97	82.91	33.89	85.83	32.99	87.61	9.65	69.31	23.28	3.18	22.12	10.09	24.14	9.79	22.80	15.00	26.19	11.46	18.03
1/25/10	50.54	41.36	8.23	32.34	80.88	34.33	83.16	31.67	84.50	8.87	68.15	21.97	2.95	21.61	9.36	21.72	8.62	21.68	13.97	23.36	10.90	16.18
2/1/10	49.47	41.12	7.87	31.00	78.07	34.01	82.02	30.64	83.15	9.08	66.10	22.13	2.90	21.78	9.06	21.27	8.25	21.56	13.55	23.86	11.17	17.05
2/8/10	52.24	41.91	8.20	33.56	78.12	34.33	83.47	32.60	86.86	9.56	70.04	22.75	3.03	22.89	9.78	23.59	8.28	21.85	14.85	24.41	12.03	16.96
2/15/10	50.29	41.67	8.25	33.10	78.41	34.21	83.16	31.31	84.33	9.27	68.87	22.34	2.89	22.64	9.45	23.26	8.07	21.72	13.90	23.59	11.89	17.03
2/22/10	52.00	42.26	8.47	33.52	83.05	34.33	86.52	33.79	90.81	9.87	69.59	23.32	2.98	23.02	10.70	24.46	8.70	23.26	14.61	25.00	12.28	17.36
3/1/10	52.71	42.73	8.86	34.27	79.14	35.44	83.47	34.76	92.92	10.32	71.72	23.49	3.12	24.13	10.71	24.74	8.63	24.84	14.73	25.87	12.59	18.96
3/8/10	54.11	42.85	8.97	35.61	78.65	35.83	85.22	35.24	97.81	10.53	74.29	23.94	3.10	24.56	10.90	25.65	9.06	23.93	16.08	26.46	13.05	19.70
3/15/10	54.77	43.44	9.31	36.62	78.41	36.03	84.37	36.31	99.58	10.88	74.93	24.48	3.22	24.48	10.99	26.23	9.09	24.47	15.81	25.50	13.32	19.65
3/22/10	54.91	43.52	9.16	37.71	77.64	36.23	84.60	36.11	100.49	10.84	75.78	23.76	3.57	25.11	10.97	26.39	9.18	24.09	15.49	26.37	13.80	17.92
3/29/10	56.12	44.35	10.55	37.50	76.86	36.74	84.44	35.37	99.81	10.74	76.30	24.18	3.60	25.59	11.30	26.19	9.75	24.01	15.77	26.46	14.02	17.74
4/5/10	57.32	44.78	10.00	38.75	79.38	36.70	84.68	35.53	101.34	11.30	77.91	24.77	3.79	25.63	11.42	26.39	9.93	24.64	16.11	26.23	14.12	18.79
4/12/10	56.72	44.75	9.93	37.87	81.90	36.78	84.29	34.79	102.44	10.86	75.50	24.14	3.86	25.29	11.26	24.83	9.50	24.22	15.33	25.46	13.51	18.59
4/19/10	53.84	45.03	9.69	36.07	78.56	38.40	83.28	33.02	94.72	9.94	72.73	23.93	3.82	24.42	10.38	23.80	9.24	23.72	14.58	24.50	14.22	18.63
4/26/10	53.29	43.63	9.21	35.74	78.41	37.39	82.97	32.66	93.10	9.89	70.64	23.55	3.70	23.85	10.40	23.51	9.39	22.93	14.53	25.37	14.00	18.71
5/3/10	50.46	43.91	9.15	33.77	71.24	36.78	82.51	31.02	87.67	9.19	70.23	22.67	3.40	23.38	9.88	22.72	8.86	20.31	13.06	22.95	12.99	17.63
5/10/10	50.93	43.91	9.64	33.14	72.26	36.78	83.44	30.50	87.84	9.20	71.72	22.80	3.56	23.12	9.85	22.89	8.92	21.93	11.86	24.13	13.52	16.51
5/17/10	50.96	45.15	9.28	30.29	70.45	39.59	82.18	28.60	85.89	8.60	71.14	22.84	3.32	23.07	9.44	22.72	8.96	18.79	11.30	23.07	12.87	15.49
5/24/10	50.25	43.87	9.31	32.30	69.43	37.51	81.95	30.66	88.01	8.89	69.74	23.34	3.42	23.38	9.55	22.68	9.50	20.26	12.24	24.65	12.87	16.55
5/31/10	49.97	44.08	9.55	32.36	71.27	37.27	80.77	30.60	87.93	8.57	70.48	23.64	3.74	22.68	9.41	23.42	9.24	20.39	11.76	25.80	13.44	16.74
6/7/10	50.36	44.77	9.84	32.74	70.88	37.76	81.87	30.53	88.78	8.57	70.15	23.76	3.58	22.77	9.47	24.00	9.21	19.80	11.57	25.80	13.37	17.36
6/14/10	51.27	45.01	10.29	33.85	72.58	37.63	81.71	30.27	91.75	8.89	70.52	24.18	4.11	23.25	10.15	24.25	9.35	21.27	12.41	26.50	13.59	18.40
6/21/10	53.37	45.98	10.50	34.23	73.02	37.71	82.65	31.25	94.46	9.05	74.69	24.14	4.33	23.98	10.51	25.24	8.99	21.95	13.03	27.19	13.61	18.94
6/28/10	51.64	45.70	10.61	33.04	69.53	37.47	81.71	30.21	89.54	9.04	73.99	23.72	3.95	23.20	10.31	24.91	8.80	21.48	12.29	26.54	13.14	18.17
7/5/10	52.81	46.47	10.86	34.53	71.51	37.71	82.57	30.93	93.10	9.26	74.27	23.68	4.16	23.98	10.66	25.20	8.94	22.03	12.74	26.73	13.42	18.57
7/12/10	51.73	45.98	10.51	34.44	73.36	37.84	82.97	30.21	94.89	9.34	73.41	23.97	4.30	23.38	10.84	26.39	8.72	22.33	12.57	26.91	13.42	18.88
7/19/10	52.78	45.94	10.58	36.79	74.57	38.00	82.42	31.88	96.67	9.96	76.58	24.26	4.67	23.94	10.89	27.26	8.99	24.31	13.41	27.60	14.02	18.51
7/26/10	53.26	46.34	10.56	36.24	77.33	38.33	84.30	31.68	96.84	9.77	77.82	25.52	5.17	23.68	10.76	26.72	9.07	24.77	13.70	27.28	14.82	19.02
8/2/10	57.04	46.79	10.56	36.62	80.19	38.29	86.65	32.50	100.91	10.16	79.92	26.44	5.41	24.20	10.95	28.04	8.99	24.64	14.09	28.16	15.87	18.82
8/9/10	57.72	46.18	10.31	36.32	77.19	38.20	84.53	32.79	97.35	9.78	78.64	25.44	5.34	24.50	10.31	28.25	8.90	22.24	13.65	27.93	16.13	18.30
8/16/10	56.64	46.47	10.20	35.51	75.08	38.65	84.84	31.45	94.97	9.32	76.50	25.14	6.11	24.16	9.99	27.92	8.98	22.33	14.26	29.22	16.66	18.51
8/23/10	55.96	47.64	10.15	35.60	73.91	38.83	85.63	30.80	93.95	8.95	76.99	25.19	5.91	24.02	9.82	28.13	8.73	21.86	13.71	28.39	16.40	18.61
8/30/10	56.50	47.77	10.37	36.79	75.76	39.04	86.11	31.22	94.80	8.88	80.62	26.14	5.82	24.41	10.26	28.91	8.87	22.83	14.11	30.33	17.28	18.94
9/6/10	58.35	48.79	10.58	38.49	76.83	39.58	88.33	32.60	97.69	9.29	81.86	26.52	6.01	25.02	10.54	30.27	8.98	24.01	14.53	30.19	18.70	19.19
9/13/10	60.06	50.50	10.66	41.51	80.18	39.74	88.64	33.23	102.19	9.85	89.34	27.67	6.78	24.76	10.79	30.68	9.16	24.01	15.32	30.52	18.66	19.40
9/20/10	64.70	50.58	10.61	43.83	78.23	39.33	90.15	35.21	107.62	10.26	89.75	27.67	6.86	25.11	11.29	29.94	9.10	24.05	15.19	30.52	18.31	19.59
9/27/10	67.21	50.46	10.68	42.79	77.36	38.88	90.30	36.50	113.47	10.98	88.84	27.67	6.94	25.63	11.74	31.14	9.01	23.97	15.31	32.64	18.31	20.70
10/4/10	69.16	50.87	10.55	45.89	79.01	39.74	92.92	36.96	116.36	11.75	91.42	27.58	6.51	25.63	11.89	31.34	9.55	24.14	15.81	30.27	19.23	21.19
10/11/10	69.62	51.85	10.48	45.67	80.47	40.20	91.97	37.88	116.27	11.77	93.66	28.77	7.07	26.89	12.15	31.54	9.60	23.88	17.11	29.72	19.09	18.84
10/18/10	70.24	52.66	10.39	45.03	79.40	40.81	92.44	37.85	114.15	11.34	93.91	29.07	7.16	26.33	12.28	31.54	9.03	23.42	17.86	30.78	18.22	20.37
10/25/10	67.50	51.36	10.23	43.65	78.19	40.65	89.75	36.44	112.71	10.77	91.58	28.05	7.30	25.72	12.08	31.75	8.83	23.08	17.86	30.41	18.18	20.37
11/1/10	74.36	51.93	10.44	50.53	85.56	41.60	94.50	39.50	123.91	12.38	106.49	29.62	7.88	26.89	13.89	31.54	9.23	26.14	19.55	30.78	18.92	20.80
11/8/10	72.76	52.05	10.53	48.34	81.97	42.67	96.16	39.20	119.41	12.03	100.99	28.26	7.81	26.63	12.69	29.91	8.83	26.52	18.33	30.74	19.27	19.84
11/15/10	68.99	51.73	10.42	47.05	80.50	41.19	103.51	37.49	113.90	11.39	101.24	28.68	7.55	25.81	12.19	30.04	8.81	24.73	17.90	31.02	20.14	18.57
11/22/10	65.67	51.64	10.34	45.11	77.49	40.98	98.79	36.00	108.48	10.80	97.33	28.13	7.62	24.93	11.38	29.03	9.59	25.37	17.24	30.27	19.75	18.36
11/29/10	66.70	51.90	10.34	47.22	78.90	41.06	102.55	35.97	112.61	11.09	101.91	27.84	8.38	25.28	12.23	30.37	11.11	26.77	17.38	31.02	20.58	18.42
12/6/10	65.38	52.39	10.37	48.64	79.19	41.27	102.71	35.11	111.75	10.49	105.40	27.75	8.50	25.06	11.72	29.78	11.20	25.71	16.55	31.29	20.32	19.27
12/13/10	65.10	51.69	10.32	46.19	77.88	40.32	104.22	34.68	108.65	10.50	100.99	27.63	8.51	24.80	11.16	30.37	10.62	23.97	16.14	28.74	19.36	19.25
12/20/10	68.64	52.15	10.17	48.25	77.44	40.61	102.39	34.94	110.72	10.49	102.57	27.71	8.62	24.63	10.99	30.45	11.14	25.33	16.76	29.44	18.79	19.35
12/27/10	68.59	51.86	10.07	51.39	77.44	40.44	102.07	35.01	111.15	10.47	106.40	27.58	8.80	24.67	10.86	30.41	10.80	26.09	17.47	29.58	18.70	19.21
1/3/11	75.22	52.76	10.01	52.93	80.36	40.86	105.42	37.39	119.33	11.22	109.73	28.64	9.75	25.19	11.78	31.46	10.71	26.82	17.69	30.09	19.49	19.93

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
1/10/11	76.94	52.60	9.92	52.29	84.29	40.77	105.74	36.56	117.61	11.35	105.24	29.79	10.90	25.76	12.05	30.08	10.61	28.52	18.29	29.11	20.10	19.64
1/17/11	75.85	52.72	9.93	52.25	83.95	40.65	105.18	36.07	116.32	11.28	103.49	29.83	12.02	25.50	11.72	29.37	10.55	27.62	17.69	28.51	18.27	18.71
1/24/11	75.68	52.43	9.81	52.16	83.66	40.90	103.91	35.93	113.73	10.72	103.32	29.32	11.92	24.98	11.23	28.40	10.28	28.90	18.55	28.37	17.53	18.49
1/31/11	77.05	52.89	9.95	51.13	84.63	41.43	106.78	36.13	114.08	10.80	102.16	30.17	12.36	25.59	11.42	28.91	10.64	29.75	18.08	28.23	17.74	18.17
2/7/11	69.10	51.33	9.43	45.63	86.19	41.35	99.75	32.86	106.59	10.04	93.83	27.67	10.48	24.50	10.35	26.67	10.32	27.24	17.30	25.40	17.39	17.64
2/14/11	69.44	51.65	9.56	47.05	89.15	41.97	99.03	33.00	107.45	10.13	95.08	27.84	10.78	24.72	10.71	27.93	10.75	30.34	18.12	26.79	17.07	17.74
2/21/11	68.59	52.06	9.68	43.64	86.53	42.34	99.75	31.64	107.02	9.92	89.50	28.39	9.96	24.85	10.62	27.46	10.37	27.88	17.26	26.23	15.43	17.37
2/28/11	71.56	51.86	9.84	45.42	81.52	42.09	100.71	33.13	109.17	10.23	94.16	28.81	11.06	25.33	10.56	28.18	10.61	29.11	18.64	27.39	15.96	18.17
3/7/11	70.47	52.35	9.84	45.68	80.50	43.29	100.85	32.00	107.99	10.06	93.00	28.77	11.32	25.33	10.41	27.55	10.46	28.01	18.08	27.30	16.34	17.90
3/14/11	66.64	49.98	9.90	43.02	77.33	41.39	98.66	31.34	102.96	9.80	89.67	27.20	10.80	24.49	9.96	26.37	10.50	27.41	18.64	27.02	15.33	18.17
3/21/11	70.02	51.61	10.11	45.11	80.00	41.68	100.53	34.18	104.70	9.96	93.33	27.60	11.84	25.06	10.16	27.30	10.95	28.35	18.25	27.67	16.04	20.08
3/28/11	72.76	52.73	10.38	48.25	79.32	42.92	100.85	35.31	108.69	9.92	94.50	28.37	11.46	25.51	10.40	28.77	11.54	28.22	19.37	29.95	16.29	17.82
4/4/11	74.42	53.19	10.59	51.22	82.87	43.37	101.34	37.29	111.20	10.28	99.74	29.15	12.10	25.64	10.84	30.03	12.27	29.20	20.58	30.23	16.98	19.25
4/11/11	73.05	53.19	10.48	51.66	80.88	43.79	99.15	36.86	108.69	10.21	100.41	28.41	12.52	25.37	10.59	30.03	11.91	30.81	20.84	30.64	17.09	19.40
4/18/11	72.19	53.28	10.54	50.42	81.80	44.61	98.58	36.26	105.65	10.00	98.49	28.29	13.98	25.37	10.45	29.06	12.61	31.92	20.45	29.39	16.95	19.64
4/25/11	69.90	53.28	10.60	50.33	82.00	44.86	98.42	35.72	105.22	9.86	98.74	27.68	13.96	25.06	10.28	29.10	12.33	30.39	20.06	29.07	16.90	19.88
5/2/11	67.61	53.07	10.59	48.25	80.49	44.37	97.77	34.61	103.92	9.64	98.49	27.21	13.84	24.93	10.09	28.43	12.09	29.20	19.14	28.93	17.35	20.46
5/9/11	69.43	53.48	10.74	48.83	80.83	46.02	98.74	35.35	105.57	9.77	100.15	27.90	13.94	25.15	10.25	28.47	12.02	29.41	19.06	28.42	17.50	20.22
5/16/11	70.44	53.73	10.72	48.92	78.93	46.02	101.36	34.51	104.61	9.67	99.30	27.60	14.48	25.11	10.21	27.04	11.78	29.28	19.80	29.43	16.85	22.83
5/23/11	70.32	54.40	10.90	48.78	78.59	46.32	101.44	35.32	103.05	9.32	98.79	28.41	15.92	24.80	9.91	26.67	12.36	28.81	19.01	29.24	16.74	22.78
5/30/11	68.79	54.70	10.77	50.29	78.35	46.28	99.48	34.04	101.32	9.29	99.56	28.33	16.86	24.67	9.80	26.54	12.42	27.28	19.06	28.68	16.66	22.97
6/6/11	67.84	54.41	10.71	48.23	76.74	47.13	99.56	32.83	98.89	8.95	96.75	27.68	16.12	24.22	9.64	25.36	12.25	26.10	17.92	28.40	16.39	22.24
6/13/11	66.67	55.21	10.64	46.25	74.11	46.70	99.32	32.63	96.37	8.76	95.05	27.42	14.44	23.91	9.11	24.86	11.51	24.36	16.23	28.35	16.26	21.90
6/20/11	65.25	57.35	10.66	47.06	74.40	48.48	99.89	33.03	96.54	8.59	93.52	27.94	15.70	24.13	9.22	26.45	11.64	25.14	15.93	28.54	16.16	23.30
6/27/11	67.02	57.94	10.90	48.45	75.08	49.97	101.69	33.71	98.28	8.51	97.18	27.55	16.64	24.44	9.38	26.83	12.11	26.14	17.02	29.90	16.36	23.26
7/4/11	68.55	56.89	11.32	49.66	76.25	49.63	101.53	33.64	102.62	8.67	96.16	27.81	17.50	24.05	9.74	26.75	12.29	26.32	17.26	31.87	16.54	23.21
7/11/11	66.02	57.69	11.14	48.67	73.67	49.76	99.64	32.16	99.23	8.05	92.84	26.73	17.98	23.34	9.38	25.11	12.18	24.14	16.12	30.89	16.57	23.69
7/18/11	67.90	58.74	11.35	50.60	76.01	50.56	100.22	32.50	100.36	8.25	94.20	26.35	19.36	23.82	9.43	25.57	12.06	24.75	15.02	31.97	16.79	23.11
7/25/11	70.14	60.50	11.76	51.41	74.60	54.72	100.22	33.20	102.88	8.31	93.35	25.96	20.20	23.43	9.95	24.23	11.80	24.10	14.81	31.83	16.39	23.40
8/1/11	66.08	58.15	10.75	47.33	70.84	49.84	95.47	30.75	96.11	7.63	87.49	24.84	19.24	22.32	8.90	24.14	11.10	20.92	13.09	30.70	15.32	23.40
8/8/11	62.07	56.68	10.67	46.25	65.44	48.31	92.20	29.61	91.17	6.77	81.62	24.23	19.52	22.36	8.30	21.79	9.87	21.01	12.27	29.43	14.18	24.95
8/15/11	60.01	57.39	10.74	43.74	63.63	49.03	89.31	27.86	88.39	6.72	83.45	25.27	18.76	22.27	8.12	22.00	9.72	20.05	13.13	29.90	13.76	24.80
8/22/11	61.01	60.38	11.22	42.31	63.48	52.62	91.13	29.84	90.65	6.77	86.55	25.60	16.48	22.98	8.33	23.34	9.96	20.36	12.79	28.82	13.78	21.32
8/29/11	62.01	60.94	10.92	43.21	65.53	52.11	92.94	30.21	92.99	7.07	88.25	25.99	17.68	22.80	9.20	23.30	11.06	20.05	13.30	29.76	14.29	21.27
9/5/11	60.07	60.81	11.55	41.14	63.38	52.58	90.55	29.44	90.30	6.81	89.44	25.25	17.42	22.67	9.25	23.55	11.11	19.14	13.13	29.48	14.02	22.10
9/12/11	59.87	61.87	11.46	39.31	63.04	53.52	86.66	28.56	89.52	6.31	82.89	25.12	15.28	22.76	8.91	21.41	10.32	18.18	12.14	29.15	12.58	21.90
9/19/11	52.57	61.15	11.38	36.74	58.07	51.89	82.62	26.90	81.10	5.56	73.69	23.24	12.60	21.32	8.27	21.11	9.54	17.49	10.62	25.57	11.79	20.21
9/26/11	50.79	59.71	10.96	35.16	59.43	51.29	75.88	24.05	78.46	5.47	69.22	21.14	11.62	21.01	7.84	19.68	9.85	18.70	9.86	24.94	11.76	18.55
10/3/11	52.78	59.16	10.58	35.07	60.16	52.41	76.63	24.42	81.49	5.61	75.84	21.84	12.40	21.77	7.97	19.68	9.74	19.36	10.97	26.42	12.12	19.73
10/10/11	55.72	57.81	10.57	36.83	62.16	49.96	80.34	26.52	89.00	6.32	77.91	22.27	14.28	21.86	8.76	22.38	9.67	19.94	11.61	27.23	12.23	20.31
10/17/11	52.66	59.41	10.77	32.67	61.58	51.51	77.78	25.64	85.01	5.71	77.05	22.45	14.30	21.73	8.73	21.60	9.36	19.06	10.53	26.66	12.23	20.26
10/24/11	58.24	59.03	11.04	38.82	68.41	50.78	84.43	28.80	95.07	6.65	79.24	25.25	16.92	22.84	9.46	25.16	10.14	22.63	12.92	26.37	13.39	22.34
10/31/11	55.95	59.84	11.16	37.96	65.97	50.65	81.83	29.10	92.99	6.32	81.47	24.42	17.28	22.49	9.28	23.87	9.96	20.86	12.66	26.94	12.77	20.11
11/7/11	54.35	58.40	11.14	37.64	60.36	50.99	79.68	27.51	87.44	5.78	83.32	23.94	14.40	22.40	8.80	23.27	9.79	19.50	12.69	25.13	12.34	20.21
11/14/11	52.25	57.72	11.20	34.66	57.82	50.95	77.78	26.42	83.45	5.62	80.57	23.24	14.16	21.86	8.87	21.60	9.85	19.41	12.44	23.85	12.25	20.84
11/21/11	50.35	58.57	11.03	32.99	54.84	50.65	76.91	24.93	79.20	5.37	78.51	22.06	13.20	21.32	8.00	19.24	9.09	18.57	11.65	23.51	11.61	22.19
11/28/11	53.97	57.48	11.18	34.98	60.22	49.53	79.08	26.12	83.49	5.52	81.60	24.55	15.68	22.40	8.68	20.61	9.83	20.16	12.55	26.85	12.45	24.56
12/5/11	52.72	56.80	10.95	32.45	58.70	48.59	77.57	24.90	85.40	5.48	78.21	24.59	14.80	22.26	8.67	19.80	9.11	19.94	12.02	25.51	12.03	23.55
12/12/11	53.49	56.33	11.01	30.59	57.53	48.81	77.66	25.03	83.35	5.27	79.80	23.72	14.42	22.13	8.65	19.07	9.32	20.25	11.98	26.18	12.20	22.87
12/19/11	55.15	56.33	11.20	32.22	58.46	48.89	77.83	25.30	86.78	5.23	80.53	25.03	14.68	22.53	9.06	19.54	10.32	20.86	12.18	26.09	12.16	23.21
12/26/11	54.83	56.33	11.20	31.72	57.68	49.23	77.03	26.19	86.55	5.23	80.61	25.73	14.24	22.49	9.45	18.98	10.01	19.89	12.39	25.37	12.23	22.82
1/2/12	54.35	56.71	11.34	33.44	58.17	49.45	77.66	26.25	87.31	5.56	64.88	24.72	13.86	22.35	9.71	19.54	10.14	21.04	11.96	25.66	12.11	23.16
1/9/12	56.93	54.67	11.16	36.15	58.70	48.21	77.99	27.47	89.35	6.03	67.11	25.60	15.34	22.67	9.84	20.78	10.61	22.01	12.28	26.42	12.84	22.82
1/16/12	61.71	53.51	11.38	38.77	63.10	45.68	83.09	28.83	97.00	6.77	68.02	27.13	16.80	22.71	10.66	22.50	11.15	22.41	12.73	26.37	13.48	22.63
1/23/12	61.18	53.73	11.33	39.59	64.18	46.88	85.60	29.41	97.53	7.20	70.55	28.05	17.76	23.02	11.19	23.23	11.22	23.73	13.17	25.94	13.63	22.05
1/30/12	62.18	53.81	11.35	41.21	65.40	47.91	84.09	29.54	97.45	7.24	72.45	26.78	18.08	23.34	10.94	23.23	11.33	24.26	13.42	26.42	14.07	21.37
2/6/12	62.18	54.62	11.33	41.89	67.65	47.95	83.76	28.83	97.53	7.66	73.61	26.52	17.90	23.52	10.73	24.00	11.28	24.88	13.72	26.37	14.44	21.76
2/13/12	67.47	55.65	11.77	44.42	68.92	47.95	85.85	33.04	106.60	8.53	76.40	26.47	19.12	24.10	11.91	25.59	11.35	25.10	12.99	27.94	14.64	21.32
2/20/12	65.86	56.67	11.94	41.80	68.87	48.08	86.18	32.60	106.16	8.74	74.38	26.47	19.02	24.05	11.90	24.69	11.91	24.17	12.87	27.61	13.52	21.27
2/27/12	66.16	58.16	12.15	42.43	68.82	49.75	89.86	32.36	105.80	8.46	76.10	27.49	18.94	24.32	11.98	24.65	11.80	23.47	12.53	27.80	14.22	22.29
3/5/12	63.43	58.42	12.17	40.35	66.82	50.69	90.87	30.87	103.85	8.02	74.60	27.14	18.84	24.90	11.49	23.87	11.87	23.64	12.07	28.04	13.92	22.48
3/12/12	64.80	58.64	12.30	41.12	68.63	49.96	88.48	31.68	105.42	8.20	76.96	26.87	20.10	24.77	11.54	24.30	12.42	24.35	11.95	29.04	14.25	23.30
3/19/12	60.11	56.65	12.51	38.55	67.70	48.29	88.06	30.02	95.91	7.54	73.74	25.58	20.35	24.19	10.45	23.96	12.53	23.11	11.52	26.13	13.78	21.03
3/26/12	59.51	57.95	12.38	38.14	66.97	48.85	87.80	29.07	86.50	7.88	74.85	25.98	21.45	24.86	10.68	24.43	12.67	22.94	11.58	25.80	13.21	21.71
4/2/12	60.46	57.82	12.73	38.82	59.23	49.11	86.78	29.81	86.01	7.73	76.32	25.85	21.45	24.28	11.11	25.16	12.54	22.19	11.49	25.70	12.89	21.13

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
4/9/12	59.34	56.74	12.57	38.64	66.53	49.02	88.23	30.70	86.01	7.91	77.23	25.80	22.75	24.23	11.54	24.86	12.36	22.10	11.38	26.32	12.81	20.79
4/16/12	60.46	57.77	12.60	40.49	68.00	49.28	89.42	30.53	84.17	7.87	78.77	26.02	23.65	24.54	11.57	25.26	11.91	22.05	11.47	26.94	12.44	20.31
4/23/12	60.64	57.12	12.30	40.58	68.05	49.23	89.84	29.68	84.17	7.96	79.66	25.18	23.35	24.36	11.26	24.56	12.15	21.35	11.17	26.18	12.36	19.58
4/30/12	62.13	57.86	12.38	41.44	69.32	50.35	91.46	29.61	83.01	8.19	81.25	25.80	23.85	24.99	11.45	24.52	12.11	22.94	11.15	28.08	12.61	20.21
5/7/12	57.68	56.69	11.94	38.73	67.02	49.96	89.08	27.07	79.38	7.71	76.61	25.49	21.50	23.77	10.45	22.26	11.44	20.78	10.67	26.94	11.91	19.68
5/14/12	54.41	55.61	11.24	37.04	62.55	49.79	87.79	26.02	78.12	7.06	73.08	23.62	20.00	23.27	9.80	21.04	10.89	20.29	10.21	24.56	11.66	19.53
5/21/12	54.29	55.27	11.40	36.86	61.52	48.79	87.19	26.08	78.66	6.85	73.21	23.40	18.84	23.04	9.21	21.78	11.48	20.20	10.10	23.23	11.36	18.82
5/28/12	54.77	55.14	11.39	37.37	59.71	47.77	85.98	26.66	78.84	7.21	73.39	23.00	18.04	23.00	9.26	21.52	12.00	20.56	10.57	23.39	11.74	17.60
6/4/12	54.37	54.81	11.25	39.57	61.82	48.12	85.85	27.07	78.08	7.17	72.86	22.42	18.46	22.59	8.97	21.87	11.72	19.65	9.99	22.23	11.44	18.12
6/11/12	56.99	55.77	11.55	38.56	65.54	49.40	89.17	28.49	80.85	7.54	78.02	23.18	18.46	23.00	9.54	22.13	12.18	20.15	10.12	22.28	11.38	18.47
6/18/12	56.40	56.21	11.41	38.19	66.18	49.45	88.56	28.18	79.96	7.60	77.49	23.04	19.52	23.22	9.50	21.74	11.46	20.47	10.57	21.70	11.72	18.60
6/25/12	58.41	57.34	11.45	39.11	67.26	51.30	91.14	29.60	81.71	7.61	79.21	24.65	19.16	24.09	10.00	22.78	11.37	21.34	10.63	22.14	11.72	19.20
7/2/12	61.41	58.87	12.12	41.59	67.16	52.01	92.09	31.54	85.65	8.35	82.00	24.65	19.40	24.68	10.99	24.56	11.33	22.16	10.84	22.33	12.47	20.10
7/9/12	59.21	56.56	12.10	39.07	65.30	51.35	90.97	30.71	85.56	8.19	78.46	23.58	18.92	23.91	10.83	23.13	11.30	21.70	10.52	21.12	12.19	18.74
7/16/12	62.98	57.39	12.42	40.35	65.64	53.38	92.69	31.72	86.99	8.50	81.02	24.25	19.28	24.64	11.35	23.48	11.30	23.02	10.48	20.06	12.27	18.99
7/23/12	62.05	57.34	12.28	39.57	62.94	52.89	91.92	30.26	85.20	8.18	80.01	23.58	18.20	24.41	10.90	22.56	11.43	21.66	9.94	19.63	12.12	18.80
7/30/12	64.15	58.30	12.44	41.59	64.37	54.52	93.21	31.65	86.91	8.52	81.64	23.98	19.00	24.77	11.38	23.74	11.70	21.25	10.14	20.50	11.91	18.39
8/6/12	67.30	58.69	12.63	43.52	67.11	54.13	96.13	32.59	91.34	8.67	82.92	25.49	19.96	25.18	11.74	24.13	11.57	21.93	10.68	22.18	11.97	18.97
8/13/12	67.98	57.21	12.83	42.97	67.90	54.89	97.17	33.04	92.24	8.70	81.73	26.65	22.30	25.68	11.62	23.69	11.45	22.16	10.15	23.39	12.25	19.24
8/20/12	65.64	56.77	12.77	45.27	67.11	54.44	95.70	34.04	91.34	8.55	81.47	25.68	22.50	25.68	11.59	23.78	12.39	21.84	10.12	22.43	12.19	21.70
8/27/12	65.14	56.38	12.74	43.89	65.93	56.05	95.87	33.11	90.18	8.15	80.94	25.50	22.05	25.54	10.93	23.18	12.22	20.24	8.62	22.23	11.89	22.24
9/3/12	66.62	56.72	12.83	44.77	67.70	56.67	97.00	34.83	92.24	8.31	80.72	25.18	21.80	25.91	11.23	23.18	12.62	21.11	8.49	22.91	11.76	22.77
9/10/12	70.87	57.33	13.32	47.62	71.44	55.96	99.17	37.91	100.22	9.19	83.33	26.09	24.95	26.79	12.35	24.54	12.85	22.11	9.02	25.22	11.98	22.62
9/17/12	70.19	57.90	13.54	48.54	72.81	57.47	100.82	37.70	99.32	9.53	84.09	26.40	24.85	26.83	12.11	23.32	12.62	21.84	9.01	25.03	12.23	22.28
9/24/12	70.68	57.95	13.83	49.93	71.68	58.72	103.25	39.07	101.83	10.16	84.81	26.27	26.00	27.01	12.48	23.18	12.51	21.94	8.59	25.13	11.87	22.62
10/1/12	71.93	57.99	13.87	48.36	73.06	59.12	103.25	39.52	100.84	10.80	83.24	26.45	25.70	27.11	12.42	23.40	12.53	21.90	8.92	25.32	12.34	22.77
10/8/12	70.37	57.33	13.90	47.99	72.91	59.34	102.82	38.26	96.99	10.58	81.50	26.13	25.00	26.88	11.92	22.75	12.74	21.67	8.87	24.69	12.57	23.64
10/15/12	70.56	57.68	13.91	48.40	75.22	57.07	103.77	39.10	96.81	10.80	83.42	26.13	24.55	27.01	12.17	23.27	12.83	23.41	9.32	24.25	12.93	23.16
10/22/12	73.23	58.04	14.38	49.05	74.68	58.54	104.38	39.84	100.22	10.90	83.02	26.36	26.80	27.52	12.64	23.62	12.77	23.41	9.05	24.40	12.96	22.33
10/29/12	71.99	58.17	14.42	49.93	76.70	59.39	104.21	38.19	98.69	10.43	83.33	26.40	29.05	27.70	11.98	24.37	13.79	24.05	9.38	25.90	13.68	22.33
11/5/12	70.19	57.73	14.10	49.05	73.20	59.21	101.40	36.93	100.93	10.36	82.35	25.82	27.20	27.34	11.72	23.49	13.82	22.26	9.10	24.98	12.85	22.24
11/12/12	69.88	58.17	14.21	49.70	72.76	59.61	100.70	37.11	102.28	10.02	82.84	25.77	27.25	27.29	11.58	23.10	13.75	21.35	9.16	25.08	12.76	22.58
11/19/12	72.92	58.96	14.66	53.41	75.96	60.91	102.98	38.33	104.20	10.71	85.03	26.67	28.75	27.80	12.13	24.15	14.23	21.76	9.09	25.47	13.06	21.17
11/26/12	73.54	59.75	14.77	55.31	77.48	60.82	103.77	38.65	103.83	10.63	84.81	26.99	29.55	28.44	12.37	24.85	14.54	21.58	9.04	26.82	12.81	21.95
12/3/12	73.67	59.38	14.80	55.91	77.97	59.84	103.42	38.93	104.75	10.75	85.57	27.04	28.20	28.16	12.30	25.50	15.15	21.71	9.23	27.12	12.83	21.51
12/10/12	74.97	57.74	14.94	56.19	79.45	59.17	103.33	39.21	106.86	10.54	83.91	26.63	29.50	28.39	12.50	26.20	14.73	22.77	9.95	27.26	13.04	20.93
12/17/12	74.17	56.94	14.73	55.68	79.75	58.10	104.12	39.31	106.31	10.47	83.87	26.54	30.30	28.07	12.25	26.47	14.84	22.91	9.90	26.73	13.19	20.40
12/24/12	73.92	57.43	14.94	55.68	80.58	58.68	103.86	38.82	106.31	10.44	85.43	26.81	30.55	28.03	12.43	26.60	15.06	22.95	10.41	26.92	13.32	20.59
12/31/12	75.16	57.78	14.87	57.26	80.68	58.50	104.73	39.03	108.78	10.75	87.08	27.53	31.80	28.26	12.67	27.03	15.30	23.82	12.67	28.23	13.64	19.91
1/7/13	78.27	57.65	14.87	58.93	82.50	58.41	104.65	40.57	112.81	11.86	87.49	27.94	32.05	28.67	13.49	26.99	14.91	24.10	12.20	26.48	13.94	20.40
1/14/13	81.19	57.56	14.98	60.13	83.93	58.45	104.65	41.55	117.11	12.43	88.15	28.34	33.60	28.76	13.77	26.42	15.39	23.96	11.85	26.29	14.51	20.35
1/21/13	80.63	57.87	15.15	63.66	85.11	59.21	109.12	40.96	118.94	13.03	87.93	28.71	34.40	28.81	13.42	25.55	15.06	24.65	11.56	26.48	14.58	20.98
1/28/13	78.52	58.45	15.58	64.07	86.58	59.75	111.48	38.79	115.10	12.20	89.23	28.52	35.10	29.27	12.60	25.90	15.06	25.29	11.39	26.48	14.09	21.36
2/4/13	77.09	59.02	15.05	61.85	84.96	62.02	111.22	38.19	112.08	11.86	90.07	28.66	33.55	29.27	12.55	26.60	14.76	25.62	11.30	24.93	14.13	21.36
2/11/13	77.15	58.80	15.19	63.38	86.14	63.49	110.61	37.84	113.08	12.10	89.36	28.43	34.75	29.36	12.57	26.60	14.91	25.43	11.21	25.27	14.30	21.07
2/18/13	73.92	59.25	15.26	59.90	83.58	63.13	110.26	37.39	109.24	11.46	88.73	27.98	32.10	29.17	11.98	26.20	14.43	25.11	10.71	24.64	13.55	20.30
2/25/13	73.92	59.87	15.22	61.94	83.93	62.47	110.61	37.28	107.77	12.29	89.05	28.62	32.55	29.40	12.43	25.46	15.09	24.61	10.40	24.06	13.70	19.77
3/4/13	73.86	60.24	15.61	61.94	83.58	64.83	113.94	36.79	105.21	12.10	91.23	29.11	31.40	30.09	12.44	26.07	14.98	25.75	9.80	24.64	13.75	20.35
3/11/13	70.25	59.84	15.68	57.91	84.71	63.22	113.15	33.96	98.06	11.58	86.59	28.91	30.90	28.30	11.75	25.94	14.97	24.47	9.20	23.91	13.21	20.10
3/18/13	69.13	60.56	15.61	58.46	81.96	63.49	110.21	34.48	95.93	11.20	86.95	28.17	32.35	28.39	11.53	25.42	15.35	24.74	9.25	22.90	12.70	18.80
3/25/13	71.24	61.14	15.93	64.17	80.87	65.32	110.83	37.18	96.58	11.48	88.33	28.17	32.40	28.35	11.73	25.37	15.21	23.37	9.31	22.31	12.49	19.62
4/1/13	70.13	60.20	15.75	61.90	80.23	65.41	109.94	37.14	95.93	11.20	86.59	27.67	30.80	27.84	11.36	25.37	14.74	21.85	8.74	23.09	11.62	19.48
4/8/13	71.43	61.10	16.07	63.33	80.92	66.34	111.37	38.54	99.26	11.25	86.66	27.67	32.00	28.35	11.34	25.94	14.95	22.63	8.98	23.96	12.00	20.40
4/15/13	72.43	60.29	16.21	63.33	79.98	65.14	111.10	39.24	102.39	11.50	87.95	27.76	31.15	27.66	11.37	26.47	13.80	22.82	8.80	24.16	12.38	19.52
4/22/13	72.80	61.28	16.42	65.05	82.25	66.43	114.57	39.35	105.16	11.83	90.14	28.82	34.25	28.85	11.55	26.84	13.64	22.91	8.78	25.32	12.59	20.54
4/29/13	72.18	61.68	16.42	65.37	84.08	67.64	114.66	39.24	102.12	12.16	90.51	28.91	34.15	29.36	11.46	27.06	14.03	22.03	8.78	26.05	12.80	20.30
5/6/13	73.86	61.95	16.56	68.20	86.84	69.15	116.17	40.33	102.95	12.19	92.53	29.42	38.00	29.86	11.36	26.75	14.25	22.95	9.27	25.76	13.63	19.32
5/13/13	71.99	61.59	16.39	69.55	87.58	69.91	115.91	39.17	101.38	11.72	91.88	28.59	38.75	29.76	10.98	26.66	14.06	23.14	9.08	24.40	13.69	19.91
5/20/13	72.49	62.31	16.31	68.46	85.07	66.82	113.92	39.84	100.27	11.50	92.80	28.17	38.65	29.67	10.89	26.48	13.81	22.95	8.90	23.77	13.29	19.32
5/27/13	70.50	59.41	15.47	65.12	85.02	62.39	112.21	38.30	95.29	10.83	90.42	27.99	40.60	28.69	10.32	24.34	13.94	23.69	8.74	24.74	13.70	19.36
6/3/13	66.71	57.73	14.89	64.65	83.14	61.12	106.92	36.35	91.50	10.27	83.96	26.24	40.55	27.00	9.96	23.67	13.49	22.95	8.40	24.84	12.93	19.38
6/10/13	67.23	57.10	14.56	64.13	82.11	61.66	105.39	35.29	89.79	9.75	83.00	25.78	41.80	26.58	9.55	23.72	12.95	21.94	7.95	23.82	12.72	19.14
6/17/13	64.53	56.01	14.49	60.69	79.64	61.16	102.70	35.06	88.45	9.12	83.41	25.18	39.35	26.02	9.18	23.09	12.22	21.08	7.66	22.40	12.59	19.25
6/24/13	67.55	56.87	14.88	61.44	80.23	61.07	102.97	36.31	92.42	9.38	86.02	25.73	38.00	26.72	9.73	24.12	12.87	22.63	7.91	23.82	12.83	19.60
7/1/13	67.55	57.23	15.32	62.24	82.21	62.35	104.49	37.17	92.52	9.31	86.53	25.82	37.40	26.86	9.41	23.63	11.36	21.69	7.90	23.13	12.78	19.41

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
7/8/13	68.70	57.91	15.43	62.90	83.64	63.17	105.39	38.47	94.45	9.73	86.85	25.78	38.55	27.42	9.77	22.60	12.54	22.16	8.15	23.48	12.72	18.42
7/15/13	68.77	57.64	14.94	60.45	85.61	62.71	103.95	38.31	94.27	9.68	84.74	25.50	39.10	26.96	9.70	21.98	12.11	22.02	8.25	22.65	12.53	18.36
7/22/13	70.56	58.32	15.65	64.88	87.00	63.26	106.74	38.82	95.47	10.27	85.70	26.70	40.30	27.14	9.96	22.11	11.56	22.82	8.31	23.23	13.34	18.71
7/29/13	72.88	58.78	15.85	65.16	87.69	65.36	108.44	38.55	96.12	9.96	84.92	27.62	40.90	27.47	9.95	22.74	10.76	22.96	8.06	23.72	13.46	18.79
8/5/13	73.52	58.19	15.69	64.83	83.69	63.58	109.88	37.60	95.29	9.61	84.37	28.08	41.25	27.28	9.63	22.20	11.43	22.30	8.28	25.09	13.42	18.87
8/12/13	73.97	58.32	15.81	65.30	85.07	64.72	113.38	38.15	96.76	10.06	85.20	29.37	43.90	27.52	9.95	23.01	11.60	22.49	8.75	23.48	13.48	19.04
8/19/13	69.92	56.01	14.58	61.77	82.76	62.43	109.67	37.17	92.42	9.77	82.08	28.42	44.35	26.54	9.18	22.11	11.66	22.02	8.53	22.30	13.27	17.84
8/26/13	71.08	56.19	14.06	60.07	81.08	62.19	109.12	35.68	92.88	9.50	81.44	28.00	47.20	27.33	9.29	21.62	10.57	24.55	8.53	21.57	12.59	18.63
9/2/13	73.40	57.27	14.38	62.57	85.38	63.59	112.93	37.32	94.18	10.18	84.28	29.44	50.00	28.36	9.79	22.84	10.76	25.25	9.02	22.65	13.35	19.08
9/9/13	73.21	57.68	14.44	63.85	84.98	61.45	114.56	36.69	93.90	10.13	85.30	29.82	52.35	28.64	9.66	22.93	10.48	25.40	9.51	23.72	13.65	20.04
9/16/13	79.42	58.55	14.63	66.84	86.96	63.26	115.55	39.26	100.36	10.92	86.08	30.47	55.15	29.02	10.57	23.70	10.48	26.61	9.65	24.40	14.15	20.48
9/23/13	78.25	58.32	14.74	65.70	84.39	62.94	114.83	38.55	99.16	10.34	86.50	31.03	54.95	29.16	10.20	23.79	10.03	27.44	9.55	24.43	14.51	20.33
9/30/13	79.68	57.59	14.73	64.80	83.40	63.17	115.46	37.76	97.04	10.27	85.53	30.61	56.90	29.11	10.27	23.29	10.67	27.86	10.71	24.82	14.41	19.37
10/7/13	80.13	57.13	14.49	65.65	83.55	63.36	115.64	37.17	95.93	9.80	84.51	31.22	57.25	28.60	10.11	23.29	11.17	28.01	10.67	24.97	14.70	19.14
10/14/13	80.19	56.72	14.41	65.75	83.90	61.68	116.28	36.41	94.36	9.59	83.95	30.70	59.80	28.22	9.80	22.89	10.93	26.45	10.59	26.05	14.30	20.09
10/21/13	77.41	56.17	14.24	63.28	84.10	60.61	116.18	36.22	92.79	9.36	83.03	30.19	59.75	27.79	9.82	22.35	10.61	25.93	9.98	26.30	14.37	20.43
10/28/13	79.16	57.13	14.39	62.38	84.55	59.73	117.37	36.73	94.45	9.36	83.17	31.17	58.90	28.22	10.10	23.16	11.60	26.12	10.29	26.69	14.73	22.61
11/4/13	77.87	56.40	14.25	60.72	84.55	58.52	115.18	35.74	94.18	9.26	84.19	31.50	57.70	27.65	9.80	23.07	12.13	25.64	10.44	25.95	14.18	21.11
11/11/13	78.32	56.17	14.20	61.90	84.75	57.45	114.17	35.94	93.72	9.33	83.21	31.50	58.35	27.94	9.86	22.80	12.14	26.87	10.23	26.34	14.26	21.16
11/18/13	79.22	57.55	14.38	62.00	85.74	58.38	115.45	36.22	93.95	9.45	85.67	31.92	59.65	27.94	10.02	23.83	13.15	27.39	10.77	27.08	15.63	21.64
11/25/13	79.29	58.09	14.46	61.19	85.74	58.61	115.54	35.86	94.14	9.47	86.83	32.15	60.70	28.41	9.80	23.38	13.42	27.20	10.75	26.84	15.61	22.32
12/2/13	79.03	57.52	14.32	58.91	83.36	57.49	115.18	34.91	92.44	9.16	85.81	31.59	63.55	28.08	9.60	22.84	13.02	25.79	11.57	26.44	15.44	22.37
12/9/13	77.67	56.92	14.17	57.82	81.78	54.84	113.35	34.60	91.54	8.93	84.88	30.61	67.15	27.75	9.43	22.66	13.70	26.45	11.44	25.22	15.21	21.84
12/16/13	78.25	55.63	13.79	56.92	81.18	56.75	114.08	34.56	91.78	8.78	83.91	30.19	65.95	27.14	9.67	21.54	12.86	26.07	11.42	25.17	15.19	21.84
12/23/13	78.90	56.74	14.09	56.40	83.06	57.31	114.72	35.03	92.39	8.78	84.37	30.84	68.30	27.75	9.76	21.54	12.87	26.87	11.42	25.51	15.48	22.27
12/30/13	77.93	55.59	13.79	55.26	82.12	56.56	113.08	34.83	91.16	8.69	82.56	30.05	70.65	27.04	9.45	21.14	12.33	26.12	10.86	24.87	15.29	21.40
1/6/14	77.93	55.72	13.67	56.63	84.55	55.82	112.16	35.31	91.68	8.99	82.66	29.54	75.05	26.90	9.73	21.32	12.50	25.22	9.92	24.33	16.18	21.84
1/13/14	78.58	56.55	13.60	55.21	85.00	56.15	113.53	35.54	93.15	9.29	81.73	30.00	83.20	26.43	10.02	22.08	13.04	25.93	9.82	23.84	16.14	21.11
1/20/14	76.25	55.31	13.05	52.46	83.56	58.05	111.89	34.64	91.59	9.11	79.79	28.37	73.55	26.38	9.89	20.91	12.61	25.93	9.47	23.06	15.72	21.06
1/27/14	74.31	54.02	12.64	50.32	80.14	54.24	110.98	33.05	89.65	8.73	77.61	27.48	76.30	25.86	9.53	19.34	12.05	24.94	9.33	22.67	15.30	19.51
2/3/14	73.08	53.65	12.26	50.04	78.51	56.38	107.87	33.45	90.12	8.52	76.22	26.88	71.10	25.67	9.43	19.79	12.14	24.89	9.24	22.52	14.70	19.23
2/10/14	76.44	54.94	12.67	51.74	81.28	58.52	111.98	33.57	91.26	8.74	80.11	28.09	74.30	25.77	9.75	19.70	12.57	25.50	9.65	22.52	14.75	19.89
2/17/14	76.57	55.54	12.88	52.84	83.51	58.38	113.62	34.16	93.90	8.86	78.68	29.77	72.70	26.10	9.97	19.48	12.72	25.46	10.48	22.91	14.89	19.70
2/24/14	78.64	55.82	13.22	51.41	81.43	60.33	114.90	34.40	93.90	9.03	80.71	30.00	77.85	26.52	10.15	19.34	12.97	26.02	10.75	21.44	15.02	21.11
3/3/14	81.68	56.19	13.19	50.23	80.49	60.15	113.62	34.48	88.99	8.97	81.22	29.28	75.60	26.48	10.10	19.07	12.97	26.49	10.71	20.70	15.10	21.01
3/10/14	78.12	54.34	12.92	47.33	76.93	59.22	111.11	32.78	87.56	7.54	80.34	28.47	71.10	26.19	9.91	18.04	12.80	24.42	11.23	19.09	14.43	20.57
3/17/14	79.42	52.75	12.61	44.81	75.79	59.49	110.37	33.29	87.32	7.14	81.55	28.19	70.25	26.33	10.14	18.31	12.16	23.61	11.61	19.62	14.35	20.28
3/24/14	82.46	54.95	13.26	47.66	77.77	62.84	114.09	34.79	89.47	7.28	83.35	29.09	65.95	26.71	10.40	19.75	12.16	25.17	13.09	21.49	13.80	21.50
3/31/14	86.47	56.08	13.68	51.55	78.36	63.54	116.69	36.85	95.44	7.87	86.50	30.14	72.00	27.42	10.99	20.60	12.41	23.61	13.61	21.39	13.57	21.40
4/7/14	88.34	57.57	14.09	54.02	80.00	63.68	119.02	37.09	95.21	7.88	86.40	31.38	70.65	27.98	11.25	21.36	11.99	25.31	13.69	22.91	14.67	21.79
4/14/14	88.54	57.86	14.11	53.41	79.45	64.70	117.44	36.69	95.25	7.87	86.88	30.76	68.20	27.51	11.16	21.27	11.84	24.09	13.32	22.42	14.45	21.69
4/21/14	87.37	56.54	13.67	51.18	77.97	61.50	115.48	35.66	92.20	7.71	84.45	29.90	67.50	27.37	10.53	20.64	11.81	23.80	13.36	21.59	14.26	21.16
4/28/14	86.53	58.14	14.05	51.60	78.31	63.59	117.07	37.28	93.63	7.82	86.54	31.00	62.70	27.56	10.71	21.36	11.28	22.95	12.98	21.78	14.36	21.01
5/5/14	81.36	57.76	13.83	48.47	77.12	62.57	115.86	36.02	91.53	7.66	86.35	31.14	58.50	27.23	10.32	20.53	11.06	22.06	12.94	21.64	13.78	21.06
5/12/14	87.05	59.26	14.32	52.12	80.54	64.80	118.18	38.51	97.36	8.31	86.88	31.14	58.60	27.63	11.29	22.01	11.55	22.53	13.49	22.22	14.36	21.20
5/19/14	89.00	59.54	14.76	53.83	79.89	64.79	119.21	39.10	97.45	8.46	86.97	30.71	62.05	27.63	11.16	21.87	11.88	22.72	13.25	23.45	14.17	21.38
5/26/14	92.33	60.29	13.47	53.25	81.03	64.55	121.11	36.30	101.27	8.62	87.69	30.09	61.95	28.31	11.22	22.65	11.83	22.13	13.25	21.34	13.57	21.73
6/2/14	90.27	59.48	14.89	53.59	80.44	63.50	121.20	37.09	102.80	8.70	87.92	30.14	58.20	28.21	11.63	22.24	11.84	21.99	13.14	21.03	13.78	21.38
6/9/14	90.80	60.10	14.87	55.82	80.64	63.60	121.58	41.06	102.23	8.62	90.40	30.86	58.20	28.41	11.81	21.59	12.13	23.34	13.06	21.33	13.95	21.24
6/16/14	90.80	59.91	14.80	54.66	80.09	63.12	120.16	41.23	102.32	8.78	89.35	30.67	57.60	28.41	12.08	21.78	12.27	23.34	13.16	21.13	13.88	21.04
6/23/14	92.00	60.38	14.96	54.46	78.36	65.37	121.11	40.70	102.13	8.57	91.40	30.76	59.85	28.65	11.96	22.15	12.13	23.44	13.23	21.23	13.90	21.19
6/30/14	94.07	59.91	14.94	54.22	79.70	65.27	120.92	41.54	102.32	8.84	92.73	30.95	66.45	28.55	12.13	22.19	11.79	24.69	13.23	21.33	14.01	21.78
7/7/14	94.07	60.05	14.94	54.90	77.91	65.03	121.30	40.04	101.46	8.79	92.16	30.67	62.65	28.55	11.76	21.73	11.53	24.16	13.51	21.43	13.67	20.99
7/14/14	92.40	60.33	14.96	55.48	78.66	65.65	121.77	41.19	101.85	8.82	92.68	30.62	61.40	28.55	11.74	21.59	12.23	24.84	14.21	21.63	13.84	21.09
7/21/14	95.07	60.48	14.87	58.93	80.98	66.52	123.19	41.23	103.09	8.99	92.54	31.14	63.65	29.23	12.11	21.78	12.36	25.13	14.39	22.76	14.05	21.09
7/28/14	95.73	60.66	15.05	59.31	82.03	66.61	124.04	42.92	110.35	9.39	95.06	31.43	64.40	29.42	12.32	21.92	12.50	24.98	14.90	22.81	14.11	21.38
8/4/14	93.27	60.81	15.13	57.57	81.23	67.66	123.38	41.90	110.16	9.19	93.06	31.48	59.55	29.23	12.43	21.69	12.65	24.74	15.76	23.06	14.19	22.02
8/11/14	96.33	61.75	15.36	57.47	83.17	69.29	124.42	44.07	111.59	9.41	94.44	32.19	60.05	29.66	12.73	21.55	12.55	25.13	16.11	23.65	14.17	22.56
8/18/14	97.33	64.02	16.19	60.09	82.57	71.20	126.52	44.86	112.07	9.55	100.58	32.51	61.35	30.19	12.93	23.43	12.40	25.23	15.50	21.68	14.20	21.93
8/25/14	94.20	61.99	15.52	58.78	83.02	68.13	124.89	45.44	112.36	9.49	99.25	31.88	58.40	29.66	12.79	23.57	12.19	24.84	14.76	20.59	13.84	21.38
9/1/14	95.07	63.26	15.87	60.53	82.97	71.12	125.85	48.53	113.12	10.00	101.53	32.22	56.65	31.06	13.07	23.30	12.36	25.32	14.56	20.98	13.90	21.53
9/8/14	93.32	61.88	15.65	59.85	81.97	68.52	124.70	49.71	112.64	9.82	99.62	31.84	54.10	30.38	12.39	22.99	12.04	24.50	13.88	20.19	13.92	21.04
9/15/14	91.85	60.88	15.41	57.89	83.56	66.30	123.94	49.08	112.64	9.55	98.75	31.40	51.35	30.43	12.09	21.88	11.64	24.26	13.62	19.69	14.29	19.45
9/22/14	90.37	60.83	15.53	56.13	81.53	67.41	122.41	46.59	111.21	9.33	99.91	31.21	48.00	30.96	11.65	21.70	11.16	23.89	13.29	19.02	14.03	20.60
9/29/14	85.94	59.64	15.02	54.17	78.05	66.97	120.12	44.99	103.85	8.67	95.72	30.43	45.35	30.23	11.29	20.95	10.55	23.11	12.70	18.67	13.92	20.20

Date	CKH	CLP	HCG	WHA	HSBC	PA	HSB	HL	SHK	NWD	SPA	BEA	GE	MTR	SL	HLP	KE	CMH	CIT	CRB	CPA	TY
10/6/14	87.55	60.69	15.59	54.22	77.81	67.55	120.79	44.81	106.62	8.93	95.92	30.05	46.85	29.80	11.42	21.42	10.15	23.21	13.01	18.69	13.92	19.96
10/13/14	87.89	61.88	15.75	54.17	77.31	69.48	122.70	46.06	108.34	9.10	96.83	30.05	48.75	29.60	11.57	21.14	9.89	22.97	12.97	18.27	13.26	19.25
10/20/14	89.50	62.26	15.98	54.56	77.46	70.06	124.34	46.59	109.20	9.20	98.18	30.39	48.60	30.04	12.09	21.37	9.70	23.55	13.23	18.31	13.59	18.64
10/27/14	92.32	63.59	16.10	56.08	78.35	72.23	126.45	46.63	110.44	9.43	97.79	31.30	52.95	30.72	12.33	22.44	9.79	23.89	13.31	18.31	14.07	18.96
11/3/14	90.77	63.97	16.19	53.88	77.46	71.17	125.11	44.67	108.44	9.15	97.89	30.82	49.60	29.80	12.08	21.19	9.51	24.58	13.07	17.78	14.29	18.17
11/10/14	94.20	64.73	16.67	54.61	77.36	73.39	126.26	46.32	111.21	9.35	100.68	31.40	54.85	30.87	12.52	21.46	8.68	24.92	13.33	17.06	15.18	19.09
11/17/14	92.65	63.21	16.67	53.98	76.02	69.68	123.47	45.61	110.06	9.23	98.94	30.97	52.50	30.19	12.09	20.86	8.11	25.02	12.60	15.87	14.89	18.41
11/24/14	95.47	64.26	16.35	54.76	76.56	71.46	124.34	46.32	110.65	9.26	102.50	31.40	52.95	30.28	12.23	21.60	7.99	25.89	13.25	16.07	16.53	18.13
12/1/14	93.46	64.16	15.96	54.02	76.56	70.45	123.28	46.59	112.02	9.10	100.39	30.05	48.05	30.33	12.25	20.44	7.50	26.72	13.91	15.83	16.55	17.70
12/8/14	88.36	62.96	15.66	54.22	74.68	72.81	122.41	46.06	110.65	8.90	97.69	29.32	48.05	30.72	12.00	20.12	6.78	26.04	13.15	15.49	16.80	16.77
12/15/14	86.88	62.91	15.35	53.73	72.94	71.17	122.89	46.14	110.55	8.78	95.87	29.13	43.35	30.48	11.61	19.79	6.72	24.92	13.09	15.26	16.09	16.68
12/22/14	87.22	64.79	15.64	54.42	73.78	72.38	124.14	47.21	114.16	8.83	96.16	29.61	43.65	30.87	11.86	19.84	6.97	24.97	12.93	15.93	16.14	17.03
12/29/14	88.36	64.59	15.80	56.03	73.53	71.94	124.62	48.91	115.63	8.93	96.73	30.24	42.85	31.01	12.15	20.30	7.27	25.75	13.33	16.33	16.34	17.23
1/5/15	83.73	64.16	15.76	58.09	70.65	72.43	122.22	47.44	116.21	9.08	95.92	29.95	40.15	31.60	11.94	19.56	7.24	25.60	13.46	15.89	17.11	17.40
1/12/15	94.67	65.46	15.69	58.82	69.76	75.23	125.68	48.15	118.36	9.09	98.75	30.10	38.35	32.23	12.02	19.70	7.29	25.89	13.35	15.55	16.84	17.05
1/19/15	97.82	66.04	15.85	60.39	72.64	77.11	127.90	48.91	120.99	9.19	99.52	30.63	39.50	32.62	12.40	20.30	7.83	27.45	13.25	18.00	17.69	17.76
1/26/15	99.63	66.47	15.83	61.66	71.99	78.46	130.69	49.35	123.53	9.26	100.10	31.11	40.90	33.49	12.50	21.19	7.69	27.84	13.05	16.88	17.52	18.82
2/2/15	100.70	65.03	15.51	60.14	72.39	76.24	138.29	48.73	121.77	9.34	101.54	31.11	43.00	33.44	12.21	20.81	7.66	27.55	12.91	16.39	16.80	19.11
2/9/15	100.57	64.84	15.39	58.62	71.30	75.08	136.65	48.37	120.21	9.22	99.91	30.77	43.45	34.22	12.23	20.86	7.31	28.87	12.76	16.29	16.65	19.07
2/16/15	101.98	65.46	15.57	58.53	71.50	75.61	139.25	49.13	120.41	9.27	101.73	30.77	43.45	33.88	12.19	20.63	7.47	28.23	12.90	16.33	16.63	18.88
2/23/15	102.98	67.00	15.57	55.35	69.36	77.01	136.08	47.21	118.65	9.15	101.93	30.82	39.40	35.00	12.31	20.40	7.27	28.77	13.35	16.07	16.84	19.17
3/2/15	102.11	64.55	15.62	53.83	67.50	73.44	135.79	45.70	118.75	8.99	99.71	29.47	37.70	33.25	11.86	20.35	7.08	27.50	12.99	15.16	16.12	18.66
3/9/15	103.55	63.48	15.27	51.38	64.71	71.46	132.56	45.79	112.60	8.85	98.66	28.93	34.20	34.46	11.28	20.17	6.80	27.26	12.86	14.42	16.07	18.11
3/16/15	107.62	63.87	14.22	51.87	66.16	72.48	135.98	45.25	114.46	8.86	98.18	29.37	36.10	35.05	11.18	19.61	7.12	28.48	13.13	14.98	17.03	18.19
3/23/15	111.66	65.33	14.41	52.46	67.05	75.08	137.55	43.65	117.38	8.91	100.29	30.31	35.85	35.29	12.13	19.84	7.22	28.28	12.86	14.94	17.17	16.60
3/30/15	113.16	63.82	14.52	54.07	66.71	74.98	137.55	44.86	118.07	9.14	101.64	30.51	35.95	36.51	12.33	20.54	7.31	29.94	13.50	15.10	17.96	16.56
4/6/15	118.98	66.50	15.20	57.60	68.90	77.06	140.19	48.59	124.99	9.60	104.52	31.79	41.05	37.87	13.06	22.39	8.24	32.57	15.03	15.10	18.98	17.78
4/13/15	116.78	66.21	15.20	54.66	70.24	75.52	141.85	47.94	122.75	9.66	104.03	32.83	38.55	37.48	12.91	21.88	9.24	31.65	14.54	15.10	19.22	16.71
4/20/15	119.26	66.79	15.09	56.67	73.48	75.47	147.72	47.86	122.65	9.60	102.15	33.12	38.90	37.43	12.75	22.11	8.63	34.77	14.60	23.98	19.83	16.52
4/27/15	119.62	66.26	14.96	56.05	76.61	75.71	148.02	50.45	125.97	10.30	103.53	33.27	37.50	37.14	13.30	24.34	8.79	34.38	15.23	23.64	19.61	16.11
5/4/15	115.85	66.99	15.01	56.65	76.21	75.76	150.07	50.29	127.92	10.74	103.93	33.42	37.80	36.51	13.28	23.62	8.48	32.67	15.09	23.24	19.20	16.34
5/11/15	119.62	67.28	15.16	56.00	75.32	75.80	154.57	51.18	128.90	10.70	104.22	33.66	37.60	36.85	13.61	23.81	8.69	33.11	14.82	24.03	19.59	15.91
5/18/15	122.24	67.28	15.12	55.20	74.92	74.97	156.55	52.03	130.07	10.62	104.42	34.95	39.50	37.52	13.49	24.42	8.17	33.70	14.89	23.59	19.93	16.50
5/25/15	120.18	66.11	15.12	53.50	73.92	73.58	153.30	50.65	128.21	10.34	102.94	34.55	37.10	36.88	12.89	23.24	8.02	33.35	14.66	23.14	19.49	16.18
6/1/15	113.53	66.26	16.47	53.50	72.88	72.15	151.52	54.95	127.82	10.50	99.78	35.10	35.75	36.63	12.89	22.81	8.14	32.26	14.52	23.20	19.20	15.92
6/8/15	112.43	64.00	15.85	52.20	73.03	71.50	151.72	53.11	123.92	10.30	98.70	34.50	33.75	36.73	12.62	22.91	8.09	33.85	14.52	24.05	18.14	15.84
6/15/15	116.01	64.98	15.99	52.40	72.28	72.35	151.03	52.66	125.68	10.22	98.20	34.36	34.50	37.03	12.56	21.86	7.75	32.31	14.10	24.95	18.92	15.64
6/22/15	113.43	64.59	15.95	52.10	71.73	70.56	150.04	52.91	123.43	10.14	96.57	34.31	32.85	35.94	12.60	22.10	7.90	32.31	13.90	25.35	19.12	15.60
6/29/15	112.04	64.64	15.95	51.65	69.34	69.33	149.55	52.27	122.36	9.97	97.07	33.52	34.70	34.80	12.33	21.63	7.74	31.77	13.51	24.60	19.12	15.24
7/6/15	110.25	64.00	15.52	51.55	67.89	68.19	147.48	50.88	117.87	9.58	96.33	31.74	34.10	34.30	11.80	20.58	7.08	29.34	13.66	23.25	18.39	15.54
7/13/15	114.32	64.78	15.71	52.70	70.09	70.12	152.11	53.21	121.48	9.63	99.09	32.58	35.10	35.09	12.13	21.58	7.28	29.64	13.57	24.00	19.10	15.82
7/20/15	113.82	64.64	15.69	51.60	68.94	70.71	153.89	52.62	119.63	9.45	98.99	32.13	34.90	34.94	12.02	21.39	7.07	28.40	13.68	24.25	19.04	15.30
7/27/15	114.32	64.74	15.69	49.20	69.49	72.35	156.55	50.78	116.21	9.37	98.05	31.00	35.70	34.30	11.69	21.01	7.39	28.10	13.78	25.10	18.00	14.92
8/3/15	114.52	64.64	15.67	48.30	70.83	70.66	158.12	50.19	114.26	9.30	95.04	29.96	36.95	35.14	11.47	20.06	7.18	27.90	14.04	24.80	18.41	14.72
8/10/15	112.93	66.11	15.61	45.95	67.89	72.54	151.52	47.90	107.53	8.90	92.23	29.37	34.25	36.48	11.22	18.70	6.79	28.35	14.84	24.50	16.67	15.50
8/17/15	101.91	63.85	14.76	43.90	64.80	68.50	137.83	47.26	101.38	8.25	87.99	26.70	28.10	35.09	11.12	17.32	5.79	25.47	13.80	23.45	14.47	14.26
8/24/15	103.89	62.92	14.48	43.50	61.05	66.80	137.04	47.90	95.67	7.80	82.71	26.55	26.30	34.90	11.12	16.79	5.41	24.63	14.42	24.00	14.06	12.10
8/31/15	101.31	61.88	14.38	40.40	59.31	66.25	136.44	46.25	92.35	7.51	82.21	25.50	23.60	33.85	10.85	16.52	5.17	24.98	12.65	23.55	13.45	11.14
9/7/15	104.19	63.57	14.78	42.95	60.35	70.00	144.38	49.10	100.60	7.86	85.70	26.45	23.00	35.05	11.24	17.01	5.74	24.78	14.20	24.40	14.14	11.32
9/14/15	102.90	64.51	14.94	44.60	60.15	72.45	143.88	49.65	103.14	7.96	87.95	26.85	24.30	35.15	11.43	16.99	5.89	24.28	14.54	13.22	14.68	12.44
9/21/15	100.80	64.95	14.74	43.90	58.66	72.85	140.81	47.25	100.01	7.83	85.45	25.90	21.35	34.30	11.45	16.82	5.55	23.15	14.16	14.32	14.60	12.52
9/28/15	103.40	65.75	14.62	44.30	59.26	73.00	140.41	46.75	97.67	7.67	88.60	26.65	21.70	34.10	11.67	16.66	5.80	23.90	14.58	15.22	14.82	12.78
10/5/15	102.40	65.55	14.84	45.45	62.55	74.25	141.20	48.05	99.23	7.92	89.60	28.15	25.55	33.75	12.00	17.35	6.37	25.05	14.06	13.84	14.70	14.36
10/12/15	107.50	67.68	15.38	47.55	62.65	76.20	141.50	50.45	103.72	8.37	91.45	29.20	28.10	34.60	12.29	18.65	6.57	26.55	14.44	15.28	15.34	13.80
10/19/15	108.20	68.38	15.90	47.30	61.10	76.80	144.70	51.20	104.31	8.42	91.65	29.45	26.95	35.45	12.60	19.06	6.49	27.75	14.60	14.94	15.52	14.00
10/26/15	106.50	66.94	15.74	46.35	61.00	77.35	142.60	49.65	101.38	8.31	90.00	29.05	26.65	35.20	12.02	18.21	6.34	25.85	14.50	14.68	15.44	13.32
11/2/15	104.10	66.10	15.62	47.35	60.90	75.25	142.00	49.05	97.87	8.13	88.35	29.05	26.80	35.65	11.68	18.08	6.30	26.05	14.50	14.28	15.32	12.82
11/9/15	102.30	65.15	15.56	44.50	61.05	72.85	141.60	47.75	96.55	7.97	86.30	28.00	25.25	35.40	11.40	17.83	6.05	26.00	13.96	14.38	14.98	12.34
11/16/15	104.50	66.10	15.80	45.90	62.95	73.10	144.20	49.35	99.60	8.07	88.35	28.50	24.05	37.00	11.98	18.54	6.59	26.55	13.92	14.98	15.22	11.84
11/23/15	101.20	64.86	15.46	44.60	62.00	69.45	140.80	48.00	96.30	7.70	85.20	27.80	22.95	36.00	11.34	17.54	6.66	24.95	13.68	14.62	13.64	11.40
11/30/15	103.70	64.95	15.30	44.30	61.50	70.30	143.00	48.05	96.80	7.84	85.75	27.60	23.65	36.45	11.70	17.75	6.90	25.90	13.92	14.98	13.12	11.22
12/7/15	101.30	64.80	14.94	42.45	60.05	70.00	143.80	46.65	93.90	7.68	84.10	26.40	23.15	36.40	11.40	17.10	6.47	23.45	13.60	14.74	13.12	10.84
12/14/15	103.00	64.75	14.84	42.50	61.50	69.90	144.60	47.75	94.65	7.51	84.75	27.15	23.55	36.70	11.62	16.99	6.38	23.50	13.70	15.08	13.04	10.20
12/21/15	104.70	65.30	15.00	43.65	62.15	70.35	146.80	48.15	95.00	7.61	86.90	28.05	24.80	37.15	11.64	17.39	6.58	24.70	13.76	15.92	13.44	10.96
12/28/15	104.60	65.85	15.20	43.00	61.90	71.30	147.50	47.50	93.60	7.66	87.20	28.85	24.45	38.40	11.36	16.89	6.90	24.65	13.72	16.60	13.42	11.06

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
1/16/06	2.27	27.38	3.26	3.43	1.81	6.04	3.81	5.66	4.70	2.08	27.50	3.11	8.11	7.97	3.47	1.82	6.97	3.46	10.94	6.87	2.88
1/23/06	2.39	29.61	3.26	3.45	1.82	6.04	4.17	5.66	4.85	2.10	27.25	2.63	7.73	8.25	3.69	1.80	7.42	3.78	11.01	7.01	3.02
1/30/06	2.30	28.95	3.21	3.45	1.81	5.69	4.08	5.59	4.81	2.10	26.67	2.71	7.82	8.57	3.47	1.80	7.09	3.87	10.73	7.05	2.90
2/6/06	2.32	29.50	3.06	3.38	1.83	5.56	4.42	5.70	4.92	2.25	26.17	2.65	8.45	8.93	3.45	1.70	7.42	3.84	10.69	7.46	2.93
2/13/06	2.39	30.12	3.17	3.23	1.94	5.60	4.25	5.55	4.70	2.46	26.42	2.69	8.87	8.93	3.40	1.70	7.59	3.69	11.01	7.64	3.13
2/20/06	2.34	30.32	3.41	3.75	1.89	5.86	4.33	5.66	4.89	2.58	27.39	2.73	8.61	9.09	3.40	1.70	7.89	3.62	11.05	8.23	3.35
2/27/06	2.38	31.88	3.30	3.71	1.88	5.65	4.58	5.74	4.89	2.55	26.78	2.65	8.95	10.21	4.05	2.36	7.37	3.91	11.01	8.23	3.05
3/6/06	2.15	29.61	3.33	3.56	1.81	5.56	4.15	5.51	4.51	2.36	25.66	2.61	9.03	9.57	3.82	2.36	7.46	3.82	10.66	7.55	2.98
3/13/06	2.30	31.26	3.31	3.96	1.96	5.65	4.06	5.78	4.63	2.41	27.57	2.67	8.95	9.81	4.51	2.45	7.98	3.75	11.05	8.09	3.08
3/20/06	2.41	35.56	3.26	4.07	2.18	5.56	4.67	6.04	4.70	2.44	27.86	2.71	10.38	10.33	4.25	2.40	8.39	3.89	11.12	8.68	3.28
3/27/06	2.28	36.58	3.25	4.54	2.38	5.51	4.71	6.11	4.48	2.50	29.42	2.50	10.34	10.89	5.07	2.45	8.63	3.91	11.05	8.90	3.28
4/3/06	2.42	41.86	3.52	4.41	2.55	5.86	4.67	6.38	4.59	2.41	32.59	2.56	10.76	10.93	5.12	2.96	9.85	4.37	11.51	9.45	3.28
4/10/06	2.39	44.05	3.72	4.58	2.57	5.69	4.71	6.38	4.74	2.34	31.98	2.54	10.51	10.57	4.64	2.96	9.27	4.50	11.61	9.05	3.20
4/17/06	2.79	46.08	3.74	5.06	2.76	5.95	5.00	6.86	5.00	2.34	33.31	2.54	11.05	11.57	4.38	2.92	9.73	4.35	11.47	9.76	3.25
4/24/06	2.49	43.74	3.69	4.26	2.85	5.78	4.88	6.41	4.66	2.31	32.56	2.44	10.76	11.25	4.55	2.79	9.19	4.03	11.33	9.49	3.17
5/1/06	2.64	45.26	4.04	4.80	2.84	6.52	5.00	6.94	4.83	2.38	32.52	2.40	11.14	12.05	5.03	2.75	9.63	4.41	11.58	9.83	3.25
5/8/06	2.73	50.54	3.91	4.24	2.79	6.48	5.42	7.01	4.81	2.45	32.60	2.25	11.72	12.53	3.92	2.62	10.24	4.48	11.61	11.30	3.42
5/15/06	2.44	44.32	4.14	3.68	2.74	6.13	5.25	6.60	4.51	2.39	31.21	2.23	11.98	11.53	3.84	2.49	10.01	4.00	11.12	11.61	3.45
5/22/06	2.33	40.92	3.69	3.90	3.19	6.04	4.83	6.30	4.48	2.28	29.71	1.91	10.76	10.61	3.58	2.49	9.34	4.10	10.69	10.17	3.30
5/29/06	2.19	41.39	3.79	4.09	3.15	5.86	4.88	6.15	4.40	2.39	30.52	1.95	10.93	10.77	3.51	2.34	9.16	4.41	10.52	10.58	3.28
6/5/06	2.08	40.06	3.82	4.03	2.97	5.91	4.88	5.70	4.14	2.33	30.04	2.04	10.17	9.97	3.47	2.40	8.52	4.12	10.45	10.35	3.27
6/12/06	2.16	38.34	3.73	3.68	2.88	6.04	4.71	5.78	4.36	2.33	30.59	2.06	10.25	9.97	3.40	2.36	9.14	4.25	10.59	10.12	3.18
6/19/06	2.16	36.38	3.61	3.43	2.81	6.04	4.67	5.74	4.29	2.30	30.81	2.12	10.55	10.37	3.01	2.15	9.12	4.44	10.48	9.90	3.18
6/26/06	2.31	39.12	3.65	4.05	2.98	6.04	5.29	6.23	4.63	2.45	32.45	2.16	10.63	11.41	3.66	2.23	10.13	4.44	10.76	11.07	3.38
7/3/06	2.30	39.16	3.65	3.86	2.81	6.17	5.13	6.41	4.77	2.44	33.15	2.16	10.88	11.85	3.43	2.23	10.07	4.41	10.76	11.25	3.35
7/10/06	2.24	38.26	3.67	3.88	2.81	5.86	5.08	6.41	4.70	2.37	32.23	2.08	10.88	10.97	3.45	2.23	9.98	4.10	10.66	11.03	3.27
7/17/06	2.24	38.34	3.86	4.05	2.68	6.04	5.29	6.41	4.85	2.35	33.77	2.23	10.67	11.25	3.47	2.23	10.50	4.28	10.98	11.43	3.30
7/24/06	2.28	39.51	3.87	4.00	2.72	6.13	5.35	6.65	4.93	2.35	36.76	2.13	10.14	11.47	3.66	2.22	11.19	4.28	11.13	11.84	3.30
7/31/06	2.25	39.63	3.88	4.14	3.00	6.11	5.60	6.53	4.95	2.40	35.67	2.14	11.01	11.34	3.62	2.19	10.89	4.31	11.20	11.75	3.30
8/7/06	2.37	40.61	3.85	4.34	3.00	6.41	5.73	6.81	5.23	2.43	37.61	2.27	11.61	11.66	3.99	2.19	11.00	4.37	11.23	12.17	3.36
8/14/06	2.41	42.52	3.62	4.49	3.19	6.35	6.03	6.57	5.07	2.39	37.82	2.44	12.25	11.28	4.40	2.19	10.91	4.45	11.47	12.56	3.45
8/21/06	2.34	41.66	4.04	4.42	3.09	6.10	5.83	6.67	5.05	2.33	36.29	2.46	12.32	10.83	4.06	2.15	11.06	4.60	11.44	12.38	3.30
8/28/06	2.44	41.94	4.18	4.58	3.09	6.21	5.81	6.55	5.05	2.33	38.41	2.69	12.30	10.91	4.08	2.22	10.93	4.55	12.14	12.47	3.29
9/4/06	2.48	43.03	4.02	5.06	3.30	6.08	6.17	6.30	4.86	2.36	38.24	2.34	12.32	10.91	4.34	2.13	11.15	5.52	12.02	12.93	3.32
9/11/06	2.51	43.11	4.36	4.98	3.38	6.40	6.06	6.28	4.75	2.30	38.42	2.59	13.55	10.28	4.18	2.11	11.32	5.91	12.18	12.98	3.38
9/18/06	2.59	45.18	4.38	5.33	3.38	6.70	6.13	6.23	4.81	2.31	41.16	2.54	14.54	10.33	4.62	2.15	12.40	6.37	12.24	14.50	3.55
9/25/06	2.53	44.56	4.37	5.15	3.26	6.70	6.87	6.28	4.83	2.33	40.83	2.57	14.07	10.04	4.55	2.21	12.08	5.95	12.41	13.77	3.68
10/2/06	2.52	45.38	4.62	5.26	3.33	7.01	6.84	6.16	4.70	2.41	42.53	2.66	14.88	9.63	4.45	2.40	11.90	6.04	12.62	14.14	3.78
10/9/06	2.59	45.22	4.68	5.27	3.30	7.26	7.08	6.28	4.77	2.54	43.08	2.74	14.96	10.46	4.38	2.44	11.97	6.50	12.59	14.59	3.93
10/16/06	2.72	47.33	5.06	5.83	3.37	7.17	7.67	6.47	4.85	2.54	43.71	2.79	14.93	11.29	4.92	2.62	12.10	6.12	12.75	15.11	3.95
10/23/06	2.70	48.86	4.92	5.89	3.29	7.57	7.67	6.45	4.88	2.43	46.12	2.82	15.46	11.02	5.12	2.64	11.73	6.13	12.46	14.46	3.90
10/30/06	2.84	48.27	4.99	6.16	3.65	7.82	8.37	6.50	4.87	2.48	49.15	2.93	15.97	11.05	5.33	3.00	12.18	6.78	12.58	14.91	4.11
11/6/06	2.95	50.27	5.06	6.12	3.88	7.37	9.35	6.78	5.11	2.53	48.48	2.59	15.97	11.12	5.60	3.29	12.27	7.40	12.29	15.49	4.54
11/13/06	3.06	52.81	5.08	6.73	3.88	7.21	8.93	6.74	4.98	2.81	50.74	2.60	15.13	11.98	5.89	3.43	12.38	7.85	12.70	16.65	4.81
11/20/06	3.23	55.08	4.98	7.09	4.00	7.97	8.50	7.26	5.13	2.90	50.15	2.61	14.62	12.49	6.77	3.43	12.72	7.86	13.41	17.15	4.84
11/27/06	3.30	52.73	5.82	7.36	3.83	7.44	8.28	7.44	5.05	2.78	47.41	2.65	15.80	12.37	7.07	3.35	12.81	8.18	12.96	17.06	4.79
12/4/06	3.27	54.77	5.66	7.59	4.05	8.09	8.57	7.59	5.13	2.87	45.71	2.61	15.21	12.70	7.63	3.25	13.02	7.65	13.11	16.90	4.79
12/11/06	3.50	56.14	5.60	7.71	4.10	8.53	9.02	7.77	5.21	2.95	45.89	2.58	15.25	14.26	7.42	3.26	14.25	8.05	13.45	18.48	4.83
12/18/06	3.53	61.38	5.56	7.75	4.65	9.26	9.18	7.77	5.15	3.19	47.37	2.60	15.26	14.37	7.29	3.31	16.52	9.02	13.55	22.05	5.65
12/25/06	3.78	66.97	5.68	8.93	5.04	9.98	9.87	8.27	5.51	3.42	49.81	2.66	15.97	14.99	8.07	3.26	18.52	9.28	14.98	23.91	6.27
1/1/07	3.84	64.70	5.68	7.74	5.20	10.24	9.92	7.77	5.25	3.48	51.40	2.73	17.23	14.34	7.68	3.34	17.16	9.37	14.20	23.59	6.01
1/8/07	3.36	64.90	5.90	7.88	5.05	8.82	9.57	7.34	4.98	3.27	48.78	2.77	16.14	15.01	7.08	3.26	16.30	9.92	14.27	21.74	5.77
1/15/07	3.44	69.63	5.95	7.86	5.44	8.81	10.25	7.18	5.00	3.31	52.37	2.82	16.85	16.06	7.20	3.59	16.06	10.37	15.12	22.19	5.74
1/22/07	3.41	67.83	5.70	7.33	5.78	9.44	9.63	7.19	4.98	3.25	53.84	2.67	17.23	15.44	7.02	4.46	16.24	10.85	14.52	21.15	5.62
1/29/07	3.37	67.91	5.87	7.21	5.31	9.33	9.82	7.22	4.92	3.17	54.55	2.83	17.65	16.02	6.85	5.01	15.78	10.42	14.52	20.34	5.64
2/5/07	3.43	70.37	6.04	7.22	5.55	9.38	10.42	7.27	4.86	3.38	56.51	2.64	17.69	16.02	6.89	5.19	16.45	10.35	15.01	21.56	5.89
2/12/07	3.40	68.69	6.23	7.63	5.31	9.16	10.47	7.16	4.86	3.39	55.32	2.62	17.48	16.22	7.74	5.56	16.69	10.97	14.34	21.19	5.79
2/19/07	3.53	68.38	6.60	7.35	5.05	9.10	10.52	7.09	4.84	3.28	58.73	2.66	19.25	17.06	7.72	5.57	16.39	11.19	14.12	20.74	5.70
2/26/07	3.16	59.46	6.78	6.72	4.90	8.61	9.32	6.75	4.72	2.94	52.88	2.40	17.94	15.39	6.94	5.13	14.36	9.49	13.21	18.21	4.97
3/5/07	3.25	61.10	6.57	7.27	5.16	8.03	10.00	6.73	4.71	3.04	49.56	2.44	19.08	15.94	7.11	5.57	14.94	9.07	13.37	19.48	5.23
3/12/07	3.09	57.70	6.22	7.27	5.19	8.20	9.83	6.50	4.71	2.99	51.55	2.42	18.91	16.00	7.31	5.63	15.12	9.58	13.17	19.03	5.14
3/19/07	3.39	60.99	6.60	8.32	4.91	8.98	10.40	6.59	4.83	3.10	52.48	2.51	19.67	16.10	8.24	6.82	15.98	10.28	13.65	20.07	5.33
3/26/07	3.47	59.46	6.28	8.42	4.64	9.86	9.97	6.95	5.11	3.08	52.59	2.40	19.25	15.14	8.15	6.40	16.52	10.17	13.41	20.34	5.39
4/2/07	3.56	61.57	6.26	8.79	4.58	10.07	11.25	6.92	5.12	3.14	52.77	2.43	20.93	15.92	8.20	6.18	16.85	10.19	13.64	20.61	5.48
4/9/07	3.73	63.02	5.98	9.10	4.59	9.91	11.47	6.79	5.15	3.21	52.66	2.38	21.93	15.51	8.31	6.48	18.78	11.31	13.77	22.87	5.70

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
4/16/07	3.64	61.85	6.28	8.55	4.53	10.01	11.28	6.77	5.05	3.38	55.40	2.45	21.01	16.42	8.33	7.47	17.98	11.40	13.78	22.55	5.70
4/23/07	3.66	59.73	6.27	8.45	5.02	10.24	12.03	6.74	5.04	3.35	53.51	2.61	20.88	15.94	8.07	7.90	18.13	10.97	13.82	22.46	5.64
4/30/07	3.69	60.24	6.18	8.89	5.47	10.50	12.12	7.64	5.21	3.38	53.62	2.72	21.81	16.70	8.85	7.90	18.63	11.56	13.84	22.51	5.58
5/7/07	3.87	62.59	6.06	8.77	5.39	9.80	12.13	7.28	5.12	3.36	53.14	2.45	22.23	16.54	8.66	10.30	19.23	11.81	13.64	22.23	5.52
5/14/07	4.23	68.77	6.63	8.96	5.98	10.31	12.77	7.68	5.33	3.43	55.61	2.63	22.06	17.10	8.59	10.49	20.01	11.74	13.54	23.32	5.76
5/21/07	4.18	67.36	6.94	9.00	5.82	10.10	12.00	7.53	5.42	3.32	53.97	3.08	22.44	17.38	8.63	6.78	19.56	11.63	13.30	22.46	5.60
5/28/07	4.48	69.16	6.73	9.51	5.99	10.00	12.82	7.62	5.58	3.35	53.89	3.54	22.48	19.58	9.09	6.71	20.16	11.63	13.17	22.28	5.47
6/4/07	4.50	69.48	6.48	9.39	5.81	9.68	12.95	7.86	6.09	3.24	54.12	3.62	22.73	19.66	8.90	6.94	19.80	11.72	12.94	22.10	5.47
6/11/07	4.63	74.25	6.84	9.90	5.77	10.57	13.65	8.13	6.30	3.47	56.66	4.00	23.53	21.14	9.11	6.95	20.92	12.29	13.17	23.27	5.54
6/18/07	4.84	85.20	6.73	10.57	5.82	11.64	14.35	8.79	6.68	3.75	63.23	4.14	21.89	22.71	9.64	7.30	24.67	12.06	13.28	26.17	5.68
6/25/07	4.63	86.53	6.87	10.37	5.72	11.78	15.59	8.61	6.61	3.79	62.86	3.87	23.36	21.66	10.15	7.41	23.89	12.29	13.16	25.40	5.58
7/2/07	4.78	99.21	7.15	10.92	6.34	11.59	16.50	9.15	6.90	4.13	64.58	3.90	22.19	24.47	10.41	8.11	24.04	12.74	13.44	25.99	5.64
7/9/07	4.80	104.45	7.44	11.67	6.53	11.97	16.65	9.29	6.97	4.15	68.69	3.87	21.35	25.59	11.14	8.34	27.32	13.01	14.02	28.02	6.10
7/16/07	4.45	101.55	8.11	13.59	6.51	12.55	16.15	9.18	7.22	4.22	69.66	4.07	22.94	25.83	12.11	8.09	27.00	12.97	13.94	28.11	5.92
7/23/07	4.40	100.61	7.69	13.37	6.31	11.83	16.34	8.81	6.66	3.98	66.86	3.90	22.31	24.27	12.12	7.79	27.36	12.60	13.68	29.24	5.71
7/30/07	4.29	98.11	7.42	13.83	6.32	11.69	16.57	8.34	6.84	4.05	66.34	4.37	21.85	23.59	12.16	7.64	28.12	12.56	14.20	29.06	5.67
8/6/07	4.01	95.84	7.28	13.98	6.37	10.61	16.10	7.89	6.42	3.90	63.27	3.78	21.56	22.83	11.83	7.21	26.42	12.06	13.71	27.11	5.59
8/13/07	3.69	83.17	7.16	11.02	5.51	9.87	12.53	7.33	5.60	3.42	60.51	3.77	19.58	19.98	10.15	6.35	25.01	10.83	12.35	24.76	5.17
8/20/07	4.37	103.66	6.86	13.78	6.42	12.04	16.64	8.31	6.71	4.13	72.28	4.03	20.34	25.19	12.02	7.25	31.87	12.40	13.28	30.41	5.74
8/27/07	4.54	112.19	7.00	13.98	7.37	12.74	18.34	8.55	7.11	4.62	79.38	4.35	20.17	27.07	11.71	7.68	34.98	13.35	13.26	34.12	5.86
9/3/07	4.55	123.85	7.48	14.34	7.46	12.46	19.17	8.45	7.30	4.89	75.94	4.49	23.15	28.07	11.90	7.83	35.06	14.33	12.65	33.67	6.10
9/10/07	4.47	146.38	7.61	14.58	7.50	12.13	17.96	8.67	7.70	4.92	81.82	4.37	24.75	32.36	12.61	7.85	36.96	14.70	12.65	34.26	6.00
9/17/07	4.80	172.12	7.97	15.42	8.13	11.90	17.46	9.74	8.92	5.27	84.00	4.45	24.96	34.92	14.01	7.97	41.75	15.24	13.10	35.34	6.02
9/24/07	5.21	186.21	8.17	15.25	9.14	14.07	20.04	11.06	9.76	5.06	95.83	5.03	24.67	37.48	14.03	8.79	46.27	15.31	13.96	40.31	6.29
10/1/07	5.27	191.06	8.98	15.35	8.31	14.09	23.42	11.04	9.35	5.05	97.86	5.48	24.75	36.04	14.60	9.31	47.35	15.52	14.20	43.65	6.77
10/8/07	6.13	195.44	9.03	15.23	9.65	13.64	23.63	12.45	10.09	5.26	100.65	6.26	25.97	43.21	14.57	9.22	47.40	15.74	15.37	45.01	7.73
10/15/07	6.66	198.72	9.14	14.21	10.51	14.11	24.13	14.19	10.67	5.19	111.12	6.03	26.85	41.01	13.96	9.17	46.19	16.09	15.51	46.37	7.89
10/22/07	6.25	198.25	9.14	14.57	11.54	14.93	23.04	14.27	11.34	5.51	116.17	6.74	25.30	39.04	14.83	10.08	45.80	15.61	15.22	46.50	8.67
10/29/07	6.62	207.64	8.85	16.04	11.67	15.37	22.59	14.75	11.88	5.85	114.51	7.36	27.06	38.48	17.39	10.76	45.11	14.58	15.65	45.64	8.89
11/5/07	5.89	189.80	9.82	16.16	9.78	13.81	21.84	12.14	10.43	5.56	102.84	6.04	25.59	37.04	16.74	10.13	40.39	14.54	14.69	40.18	8.63
11/12/07	5.73	183.55	10.20	14.82	10.03	13.34	20.84	10.97	9.25	5.29	100.28	5.98	26.89	34.44	16.53	9.01	38.84	12.15	13.87	39.18	8.08
11/19/07	5.57	167.12	8.64	13.35	8.78	12.48	19.96	10.71	9.94	5.04	97.56	5.25	26.47	32.44	13.96	7.19	34.24	11.63	12.80	35.88	7.47
11/26/07	6.29	184.33	7.99	15.05	10.65	15.75	22.25	11.28	10.67	5.34	105.85	5.81	28.49	37.00	16.08	8.79	37.15	12.72	14.30	38.46	8.23
12/3/07	6.65	184.64	7.88	15.58	10.43	14.13	23.29	11.91	10.29	5.31	107.66	6.09	27.31	39.40	17.34	8.93	38.92	12.44	15.26	39.50	8.18
12/10/07	6.02	175.57	8.44	12.77	10.26	13.44	21.21	10.73	9.40	4.84	103.59	5.72	30.09	36.56	13.22	10.06	35.41	12.90	15.26	36.79	7.43
12/17/07	6.22	172.75	8.64	13.30	9.99	14.70	21.04	10.38	9.41	4.75	104.34	5.84	28.91	36.76	14.43	9.97	35.36	12.26	15.26	36.65	7.33
12/24/07	6.31	172.44	8.68	13.62	10.19	15.67	22.00	10.23	9.56	4.67	101.63	5.91	28.91	37.12	14.92	9.80	35.92	12.83	15.26	36.06	7.24
12/31/07	6.30	168.99	8.92	12.99	11.28	14.44	21.09	10.64	10.34	4.42	102.01	6.03	28.83	36.96	13.23	10.22	34.80	13.54	15.12	35.79	6.93
1/7/08	5.66	159.92	8.68	13.33	10.69	16.35	19.84	10.25	10.55	4.59	100.50	4.68	28.45	38.68	13.44	9.60	33.47	12.29	16.32	34.75	6.96
1/14/08	5.00	144.27	8.39	11.93	8.84	15.70	18.75	9.21	8.86	4.35	92.67	3.98	26.47	34.64	12.19	8.51	31.31	10.69	14.84	32.90	6.54
1/21/08	5.02	147.16	6.90	12.39	8.92	15.82	18.13	8.91	8.76	4.40	92.67	3.99	24.92	33.48	12.77	8.46	29.41	10.17	14.59	30.23	6.61
1/28/08	4.71	134.26	7.00	12.80	8.63	16.59	16.15	8.58	8.82	4.17	88.45	4.64	23.41	32.84	12.94	8.07	23.98	9.28	13.81	26.57	6.27
2/4/08	4.73	130.19	7.64	12.94	8.46	16.19	17.21	8.39	8.73	4.05	88.00	4.26	24.71	32.44	12.68	8.46	24.37	9.51	13.45	26.62	6.13
2/11/08	4.97	128.78	8.18	13.64	9.08	17.01	16.92	8.90	9.19	4.20	90.56	4.53	26.85	33.52	13.84	8.02	25.34	9.65	13.77	27.79	6.37
2/18/08	4.54	115.09	7.35	12.51	8.59	15.93	15.75	8.66	9.44	3.98	87.39	4.39	24.88	32.36	13.11	7.90	24.39	9.74	13.28	26.75	5.97
2/25/08	4.75	118.53	7.68	13.37	9.04	15.04	16.50	8.85	10.04	4.30	90.48	4.54	26.05	32.68	12.70	8.19	26.18	9.74	13.82	28.47	6.40
3/3/08	4.07	107.34	7.37	11.33	8.50	15.32	13.73	7.89	9.09	3.96	83.02	3.97	24.33	29.43	11.19	7.91	24.95	8.54	12.79	25.62	5.73
3/10/08	3.59	104.45	7.93	9.89	8.52	14.97	10.75	7.53	9.21	3.81	80.61	4.09	21.43	28.91	9.83	6.79	24.88	7.81	12.58	25.08	5.68
3/17/08	3.34	93.10	7.37	9.90	7.14	13.74	10.95	6.90	7.62	3.65	78.35	3.66	19.54	23.71	9.21	5.51	21.52	7.89	12.11	22.69	5.49
3/24/08	3.69	107.73	7.61	12.51	8.30	14.76	11.87	7.47	8.79	4.25	89.13	4.19	23.70	26.15	11.53	6.90	24.58	9.90	13.17	25.26	6.29
3/31/08	4.01	116.18	7.78	13.25	8.74	14.44	14.43	7.83	9.12	4.62	93.27	4.41	21.22	26.35	13.11	6.92	27.19	10.10	13.78	26.84	6.73
4/7/08	3.86	117.67	7.82	12.95	8.46	14.27	14.40	7.79	9.55	4.78	98.54	4.61	21.05	28.95	13.01	7.39	28.57	9.62	13.67	27.48	7.05
4/14/08	3.96	112.20	8.17	12.58	9.03	14.41	13.33	7.38	10.06	4.42	99.07	5.04	21.35	27.59	11.95	6.88	26.25	9.78	13.81	25.99	6.73
4/21/08	4.46	129.75	7.73	14.45	9.92	14.35	15.59	8.76	9.91	4.79	102.01	4.86	23.57	30.54	13.58	7.13	31.40	10.81	13.88	30.55	7.45
4/28/08	4.68	132.00	7.80	14.45	10.19	14.86	17.50	9.08	9.98	5.12	102.32	5.22	24.61	29.21	14.21	7.41	33.30	11.38	14.52	31.68	7.69
5/5/08	4.10	121.01	8.58	13.49	10.63	15.04	15.92	8.22	10.50	4.83	97.27	5.24	23.54	26.66	12.58	7.57	30.58	11.24	14.29	29.56	7.12
5/12/08	4.13	120.20	9.11	12.73	12.35	14.88	16.67	8.63	11.11	5.02	100.89	5.33	23.93	27.39	11.99	7.59	30.89	11.88	14.69	29.87	7.24
5/19/08	3.91	114.53	8.54	11.48	12.39	16.37	16.58	8.33	11.12	4.82	94.26	5.05	23.93	28.89	11.15	7.35	28.66	11.18	14.08	28.52	6.85
5/26/08	4.24	107.39	8.58	12.13	12.13	16.37	18.22	8.53	10.26	4.94	86.42	4.82	24.05	28.12	11.53	8.43	28.50	11.24	14.46	28.34	6.85
6/2/08	4.54	107.93	8.41	12.47	12.62	13.44	18.52	8.36	10.09	4.90	86.57	4.97	24.56	27.39	11.88	7.75	28.13	11.54	15.19	28.17	6.82
6/9/08	4.00	98.57	8.38	11.23	11.46	12.91	17.38	7.58	9.72	4.52	79.12	4.42	22.10	25.57	10.62	6.78	25.20	10.07	14.65	25.47	6.22
6/16/08	4.45	100.19	7.97	11.49	11.61	12.79	18.18	7.95	9.52	4.54	80.25	4.53	22.95	25.13	11.06	6.31	25.79	10.49	14.43	25.93	6.28
6/23/08	4.05	91.44	7.69	10.42	11.07	12.36	15.89	7.63	9.88	4.47	78.66	4.62	19.80	24.20	9.51	6.06	25.48	9.93	14.90	24.92	6.15
6/30/08	3.87	85.83	7.56	9.99	11.07	13.23	15.29	7.35	10.00	4.26	78.21	4.57	18.10	22.87	8.90	6.07	22.24	10.14	14.65	23.41	5.91
7/7/08	4.07	88.16	6.68	12.26	12.11	13.67	14.98	7.60	9.91	4.67	79.27	4.67	19.68	25.21	10.62	6.72	22.85	10.95	14.26	26.16	6.53

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
7/14/08	4.12	88.56	6.54	11.71	11.63	14.19	14.65	7.63	8.96	4.66	78.51	4.69	19.42	24.97	9.25	6.54	22.46	11.45	13.66	25.70	6.47
7/21/08	4.39	96.57	6.65	12.33	12.31	13.57	15.69	7.74	8.48	4.92	80.85	4.59	21.04	23.51	9.59	6.66	23.97	10.81	14.17	27.25	6.76
7/28/08	4.56	90.38	6.79	12.23	13.24	14.60	14.46	8.00	8.78	5.02	79.72	4.77	20.02	22.92	8.97	6.85	23.19	10.85	14.46	27.62	6.85
8/4/08	4.58	85.75	7.52	10.44	12.29	13.73	14.39	7.71	7.97	4.86	75.42	4.66	20.99	20.52	7.32	6.29	22.52	10.35	14.14	26.25	6.57
8/11/08	4.32	80.22	7.50	10.11	11.76	12.56	15.49	7.60	8.05	4.38	70.57	4.88	21.97	20.02	6.86	6.22	21.40	10.12	13.81	25.04	6.10
8/18/08	4.18	78.51	7.10	10.56	11.89	11.97	15.98	7.33	8.07	4.29	68.57	4.69	21.80	19.62	6.89	6.25	22.52	10.14	12.98	24.74	5.97
8/25/08	4.14	83.80	6.78	11.28	12.37	10.93	16.33	7.63	9.10	4.60	67.51	4.56	22.27	21.82	8.06	6.81	25.28	10.92	12.69	27.35	6.19
9/1/08	3.91	78.04	6.61	9.73	11.01	10.98	15.67	7.09	7.87	4.31	61.79	4.05	22.31	19.88	7.40	6.51	23.35	10.33	12.34	25.93	5.78
9/8/08	3.70	76.07	6.83	7.86	11.14	9.94	16.21	6.63	7.21	4.03	58.51	3.76	21.38	17.65	6.35	4.91	22.98	9.27	12.19	25.10	5.34
9/15/08	3.82	80.74	6.58	8.37	11.26	10.75	15.85	6.36	7.19	3.91	64.41	4.15	18.36	18.42	7.50	4.78	22.95	9.20	10.99	25.65	5.28
9/22/08	3.52	79.24	6.94	8.24	10.45	10.10	14.87	6.54	7.28	3.76	59.66	3.07	18.53	16.48	6.98	4.65	21.01	3.81	10.63	26.89	5.07
9/29/08	3.37	77.93	6.75	8.85	9.41	9.85	13.25	5.94	6.41	3.45	59.12	2.95	20.10	14.79	7.75	5.11	22.11	3.98	9.68	26.16	4.65
10/6/08	2.67	68.56	5.99	6.72	8.32	8.51	11.87	4.63	4.54	2.70	50.92	2.59	18.70	10.99	5.96	3.68	17.73	3.68	8.18	20.52	3.75
10/13/08	2.89	67.37	5.39	7.01	9.18	8.68	13.29	4.56	4.41	2.52	50.69	2.28	18.96	11.72	6.74	3.25	15.70	3.68	8.18	20.66	3.69
10/20/08	2.49	59.15	4.99	7.44	8.11	8.59	10.97	3.85	3.75	2.09	44.09	2.27	17.75	8.89	7.01	2.56	12.43	3.17	7.01	17.77	2.79
10/27/08	2.79	62.23	4.34	7.36	10.15	9.74	12.14	4.39	4.84	2.66	51.99	1.96	18.35	11.31	6.66	3.12	14.15	3.38	6.38	18.64	3.07
11/3/08	2.52	59.98	3.84	8.15	9.60	8.31	10.81	4.41	4.58	2.98	52.22	1.91	19.78	11.52	7.21	2.88	15.15	3.13	6.92	18.92	3.15
11/10/08	2.54	53.81	4.43	8.03	9.26	8.50	10.60	4.49	4.61	3.06	52.18	1.58	19.82	10.63	7.36	2.73	14.75	3.08	6.34	20.02	3.14
11/17/08	2.43	43.54	4.52	7.63	7.38	7.97	10.57	4.29	3.89	2.81	51.76	1.52	19.73	9.29	7.01	2.43	13.18	2.88	6.16	17.99	3.05
11/24/08	2.85	50.12	4.15	8.71	7.84	8.47	13.08	4.93	4.81	3.02	54.52	1.57	19.95	11.72	7.82	2.95	12.94	3.50	6.63	18.27	3.52
12/1/08	2.60	50.53	3.89	9.39	8.12	8.04	11.92	4.82	4.48	3.26	57.89	1.53	20.77	11.97	8.32	3.12	14.73	4.03	6.47	19.79	3.38
12/8/08	2.77	60.14	4.14	8.97	8.63	8.24	11.70	5.17	5.54	3.39	60.19	1.79	20.42	13.49	7.75	3.07	15.90	4.34	6.77	21.12	3.80
12/15/08	2.94	64.74	4.26	10.03	9.41	9.23	12.71	5.40	5.54	3.55	62.50	2.09	21.15	13.74	8.86	3.13	17.89	4.72	6.59	22.45	4.09
12/22/08	2.57	59.73	4.33	9.14	9.20	8.72	12.32	4.90	5.11	3.18	57.13	1.91	20.46	12.30	8.10	2.94	15.96	4.65	6.48	20.84	3.81
12/29/08	2.75	62.93	4.37	9.73	9.60	8.96	12.76	5.55	5.84	3.34	62.27	1.92	20.90	14.06	8.67	3.03	17.51	4.73	6.74	22.67	4.10
1/5/09	2.62	64.29	4.11	9.42	7.94	7.93	11.87	5.41	5.73	2.90	57.74	1.52	21.50	13.82	8.22	3.09	16.85	4.58	6.62	21.62	3.92
1/12/09	2.37	57.14	4.09	9.66	7.91	7.13	11.31	4.72	5.11	2.89	53.06	1.36	21.54	12.46	8.76	2.86	15.57	4.89	6.36	20.34	3.56
1/19/09	2.32	52.33	3.97	8.33	8.17	6.06	10.97	4.30	5.00	2.73	52.49	1.18	22.32	12.10	7.65	2.58	13.42	4.65	5.83	18.23	3.27
1/26/09	2.36	55.87	3.86	9.00	8.93	6.48	12.24	4.49	5.23	2.84	54.06	1.29	22.40	13.74	8.01	2.73	15.17	4.78	5.97	19.06	3.59
2/2/09	2.53	55.83	4.61	9.19	8.46	6.51	12.97	4.87	5.54	3.02	58.20	1.42	24.26	14.77	7.94	2.76	16.43	5.14	6.07	21.57	3.78
2/9/09	2.44	55.54	4.58	9.25	8.99	6.59	12.44	4.91	5.65	2.97	57.28	1.43	23.78	14.41	7.71	2.93	16.43	4.67	5.97	21.48	3.67
2/16/09	2.34	52.50	4.28	9.12	8.43	6.25	11.99	4.43	5.18	2.79	52.30	1.31	24.51	13.28	7.53	2.95	15.54	4.51	5.84	20.20	3.33
2/23/09	2.24	51.39	4.74	8.97	8.30	6.23	12.32	4.26	5.23	2.92	52.14	1.26	24.30	12.44	7.40	2.87	16.50	4.46	5.82	19.97	3.27
3/2/09	2.09	46.01	4.69	9.47	8.58	6.48	12.17	3.95	4.68	3.01	49.84	1.30	23.78	11.28	8.06	3.07	16.45	4.55	4.91	19.51	3.12
3/9/09	2.25	52.17	5.02	10.67	9.52	6.93	12.38	4.43	5.48	3.01	51.91	1.33	23.22	12.57	9.11	3.22	19.46	4.53	5.20	21.71	3.36
3/16/09	2.29	53.40	5.17	10.76	9.75	7.04	13.13	4.61	5.79	3.07	48.39	1.54	24.90	13.70	9.07	3.22	19.46	4.59	5.55	22.35	3.39
3/23/09	2.76	64.49	5.31	10.74	10.58	7.64	13.30	5.13	6.41	3.47	53.41	1.71	25.81	14.88	9.63	4.16	21.67	5.15	6.26	23.96	3.98
3/30/09	3.04	68.89	5.79	11.40	10.97	6.61	14.50	5.03	6.41	3.35	52.53	1.81	25.81	15.79	11.79	4.13	22.91	5.05	6.94	24.55	4.02
4/6/09	3.08	68.36	5.32	11.43	11.41	7.00	14.20	5.05	6.27	3.50	52.49	1.72	25.85	16.20	11.61	4.10	23.17	5.28	7.06	25.56	4.21
4/13/09	3.33	74.88	6.01	11.36	12.14	7.56	13.20	5.19	7.07	3.47	56.74	2.04	26.15	16.77	11.35	4.51	22.55	5.99	7.81	25.61	4.31
4/20/09	3.31	74.92	5.74	11.26	12.17	7.29	14.62	5.25	6.73	3.27	52.99	2.01	26.45	16.81	11.68	4.44	22.62	6.43	8.18	25.41	4.34
4/27/09	3.37	75.76	5.95	11.87	12.74	7.86	14.77	5.29	6.68	3.34	51.61	1.87	27.96	17.57	12.30	5.17	21.45	6.39	8.22	25.27	4.38
5/4/09	3.51	99.14	5.83	12.58	13.80	8.18	13.86	6.41	7.64	3.88	58.47	2.57	30.16	20.64	12.42	5.17	22.55	7.37	8.85	26.80	4.85
5/11/09	3.38	86.91	6.42	12.75	14.94	7.93	13.44	6.24	7.67	3.54	55.36	2.52	30.55	19.15	12.89	5.13	21.82	7.01	8.18	25.46	4.70
5/18/09	3.49	94.20	6.54	12.48	14.63	8.56	13.93	6.59	7.68	3.55	56.21	2.45	29.98	20.18	12.40	4.74	22.22	6.94	8.15	25.00	4.78
5/25/09	3.45	100.15	6.43	14.24	16.22	8.60	14.01	6.98	8.00	3.72	59.18	2.71	30.77	21.26	15.86	5.27	23.77	7.53	9.18	26.11	5.04
6/1/09	3.30	106.77	6.19	14.03	17.08	10.70	15.78	7.37	8.77	3.83	61.96	2.65	30.20	22.58	13.99	5.59	26.11	8.23	10.53	27.72	5.45
6/8/09	3.33	108.53	6.30	15.69	16.86	10.76	15.10	7.30	8.51	4.15	63.72	2.70	31.42	22.45	14.96	6.09	26.11	8.86	10.20	27.86	5.57
6/15/09	3.21	101.66	7.57	13.90	16.99	9.63	15.25	6.66	7.56	4.31	59.53	2.49	30.94	20.76	13.96	5.79	23.00	8.32	9.85	26.01	5.25
6/22/09	3.23	106.18	7.02	16.11	17.46	9.97	15.37	6.82	7.78	4.54	61.53	2.58	32.42	23.07	15.42	5.96	24.01	8.33	9.82	26.85	5.94
6/29/09	3.38	100.99	6.40	15.59	16.66	9.23	14.22	6.70	7.36	4.46	59.77	2.46	32.25	23.94	15.40	6.28	25.05	8.78	10.59	26.89	6.16
7/6/09	3.49	98.14	6.67	14.12	16.95	9.93	14.00	6.23	7.11	4.20	57.74	2.29	34.04	21.54	14.01	5.87	24.74	8.36	10.32	28.37	5.75
7/13/09	3.59	104.34	6.31	15.05	18.49	10.37	15.08	6.63	7.67	4.40	59.88	2.75	35.82	23.40	14.59	6.01	26.27	8.78	10.89	28.46	6.23
7/20/09	3.97	118.17	6.08	16.02	19.43	10.33	15.22	7.22	8.21	4.58	60.28	3.11	36.52	25.38	15.51	6.68	30.07	8.55	12.03	32.21	6.90
7/27/09	3.94	122.53	6.69	16.67	19.64	10.30	17.01	7.23	8.18	4.69	63.64	3.22	39.31	26.13	16.69	6.84	30.43	8.54	12.28	31.74	6.73
8/3/09	3.81	119.34	7.29	15.64	20.03	10.74	15.93	7.07	8.36	4.31	69.23	3.40	38.18	26.46	15.31	6.45	28.50	8.32	11.08	30.96	6.20
8/10/09	3.85	125.54	6.92	15.53	22.29	10.30	15.78	7.03	8.43	4.58	69.38	3.24	38.13	26.95	15.38	6.87	28.75	8.74	11.51	31.05	6.64
8/17/09	3.92	120.60	7.05	14.54	21.63	9.89	15.93	6.75	8.10	4.38	62.54	3.08	34.82	25.26	15.17	6.45	26.84	8.57	11.08	30.08	6.47
8/24/09	3.78	119.25	8.41	14.00	21.65	9.84	16.25	6.92	8.13	4.39	60.71	2.95	36.61	25.63	14.62	6.28	26.35	8.61	11.90	30.73	6.45
8/31/09	3.86	120.27	8.20	14.80	22.96	9.89	16.22	6.91	8.18	4.53	60.63	3.21	38.57	26.50	15.40	6.25	27.11	8.48	12.05	31.24	6.69
9/7/09	3.88	123.75	7.99	15.83	23.66	10.57	15.78	7.30	8.81	4.73	62.54	3.03	38.66	27.94	15.47	6.58	28.46	9.24	12.75	32.21	7.03
9/14/09	3.94	125.44	8.41	15.19	23.71	10.48	15.27	7.41	8.65	4.86	61.98	3.06	41.01	29.26	15.21	6.54	29.33	9.41	13.04	33.36	7.28
9/21/09	3.84	121.46	9.05	14.79	23.88	10.37	15.20	7.18	8.30	4.68	62.26	3.01	40.63	28.44	15.01	6.87	27.67	9.20	12.94	31.97	6.80
9/28/09	3.66	113.82	8.57	14.60	23.07	10.02	14.84	6.88	8.19	4.57	58.84	2.97	40.85	26.95	15.17	7.01	26.71	9.10	12.62	30.36	6.48
10/5/09	3.94	118.40	9.27	15.51	24.16	10.28	15.08	7.43	9.00	4.90	61.43	3.49	42.26	28.85	15.82	7.01	28.98	9.41	13.18	32.76	7.01

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
10/12/09	4.05	118.91	9.24	14.86	25.76	10.08	15.00	7.94	9.53	5.06	62.62	3.92	43.32	28.64	15.82	7.43	29.78	9.34	13.12	33.04	7.35
10/19/09	3.96	123.41	10.12	15.84	27.92	9.76	15.05	8.34	10.31	5.29	61.07	4.09	45.08	30.09	17.43	7.41	32.04	9.70	13.78	34.89	7.55
10/26/09	3.88	118.65	10.35	14.95	25.74	9.36	13.89	7.64	9.61	5.11	58.84	3.86	44.29	29.47	16.89	6.99	30.93	10.12	13.80	33.78	6.78
11/2/09	3.92	118.82	10.52	14.84	26.02	9.91	13.80	7.83	9.80	5.08	58.76	3.89	44.29	30.62	16.05	6.96	31.62	10.62	13.96	34.61	6.86
11/9/09	3.92	117.72	10.20	14.93	27.88	9.86	13.63	7.92	10.03	5.35	58.64	3.93	46.49	31.95	16.75	7.34	32.22	11.36	14.72	35.76	6.94
11/16/09	3.84	120.27	10.15	14.70	27.15	9.67	13.53	7.93	10.04	5.33	60.95	3.77	48.03	31.57	15.50	7.89	31.20	10.92	14.22	35.53	6.85
11/23/09	3.65	113.48	10.60	14.16	26.10	9.49	13.58	7.47	9.42	4.92	57.05	3.75	48.16	30.34	15.20	7.96	31.11	10.60	13.36	34.75	6.29
11/30/09	3.80	118.82	10.07	15.91	28.07	9.30	12.94	7.90	9.71	5.39	58.92	3.77	49.93	32.11	17.55	8.41	32.89	12.14	14.33	37.89	6.68
12/7/09	3.71	117.81	9.41	15.77	29.53	9.34	12.37	7.66	9.66	5.13	55.94	4.04	49.53	31.41	16.93	8.33	31.09	12.79	13.40	36.60	6.53
12/14/09	3.83	114.50	10.31	14.28	28.61	9.08	12.49	7.32	9.47	4.77	56.70	3.80	48.52	30.67	15.39	7.80	29.55	12.62	12.80	34.93	6.23
12/21/09	3.91	116.70	10.40	14.35	30.34	8.88	12.51	7.40	9.64	4.97	55.34	4.13	50.32	31.08	14.95	7.93	29.82	12.51	13.28	34.79	6.40
12/28/09	3.98	118.32	9.82	14.35	31.64	9.47	13.14	7.42	9.75	5.00	57.93	4.27	50.76	31.37	15.59	7.94	30.22	12.76	13.31	35.44	6.43
1/4/10	3.84	127.99	10.03	14.56	31.52	9.28	13.57	8.02	10.42	4.90	59.20	4.77	47.59	32.73	15.25	8.22	31.06	12.35	12.97	35.44	6.64
1/11/10	3.79	126.21	10.00	13.44	33.14	9.27	13.17	7.58	9.95	4.61	62.74	5.27	47.85	31.78	13.86	8.54	30.20	13.18	12.63	34.42	6.47
1/18/10	3.65	117.04	10.49	13.08	28.26	8.56	12.03	7.30	9.24	4.65	59.24	4.96	45.61	28.85	13.25	8.16	27.87	11.64	12.42	33.04	5.99
1/25/10	3.52	112.29	10.38	12.18	27.26	8.10	12.83	7.01	8.83	4.49	58.64	4.71	45.83	27.57	12.44	7.74	27.02	11.04	12.33	32.02	5.63
2/1/10	3.37	109.66	9.38	12.41	25.99	7.65	13.11	6.69	9.27	4.36	58.72	4.48	44.37	25.88	12.92	7.60	26.40	10.69	12.97	30.54	5.37
2/8/10	3.41	110.51	11.03	13.13	27.83	8.20	13.40	6.85	9.74	4.47	60.19	4.53	44.99	27.32	13.45	8.12	27.24	10.95	12.77	31.65	5.66
2/15/10	3.32	108.05	10.54	12.76	26.79	7.86	13.31	6.77	9.42	4.33	59.24	4.64	45.52	26.58	13.22	7.91	26.47	10.72	13.12	31.24	5.49
2/22/10	3.50	110.25	10.97	13.78	28.58	8.58	13.12	6.90	9.79	4.40	60.91	4.43	47.02	27.57	14.28	7.58	26.31	10.65	13.24	31.84	6.10
3/1/10	3.54	110.08	10.88	14.49	29.72	8.94	13.63	7.11	9.87	4.58	58.01	4.53	48.38	28.27	14.39	8.01	26.64	11.04	13.45	31.74	6.04
3/8/10	3.56	113.39	11.19	14.74	30.27	8.69	13.67	7.36	10.30	4.64	60.00	4.77	50.90	28.64	15.00	8.15	28.71	11.64	13.43	33.68	6.17
3/15/10	3.67	112.20	12.16	14.84	29.29	8.63	14.43	7.34	10.12	4.70	60.87	4.80	50.15	27.03	14.76	8.82	29.13	11.22	14.01	34.15	6.31
3/22/10	3.67	111.19	12.26	14.51	29.68	8.11	14.79	6.97	10.07	4.57	59.60	4.68	50.41	26.95	13.86	8.64	28.69	11.11	14.10	33.41	6.16
3/29/10	3.78	111.95	12.91	15.70	28.93	8.14	14.14	7.35	10.46	4.88	60.11	4.84	51.34	28.44	15.20	8.99	30.38	10.85	14.12	35.12	6.82
4/5/10	3.79	119.16	11.51	15.14	30.30	8.59	14.11	7.60	11.16	5.15	63.06	4.99	51.91	30.34	15.15	9.27	30.82	12.23	14.22	35.21	6.95
4/12/10	3.79	116.32	11.87	13.57	29.76	8.58	14.04	7.49	11.19	4.94	62.74	5.00	49.62	29.80	13.48	9.27	30.38	11.80	14.42	34.79	6.63
4/19/10	3.68	113.39	12.34	12.86	30.40	8.46	13.75	7.22	10.86	4.74	62.46	5.34	50.41	28.44	12.53	9.57	30.13	11.70	14.46	33.59	6.50
4/26/10	3.62	111.41	11.87	13.46	30.68	9.04	13.55	7.24	11.06	4.82	61.43	5.14	53.05	28.07	12.80	9.50	30.15	10.88	14.30	33.70	6.53
5/3/10	3.37	106.33	11.84	12.51	28.89	8.71	12.87	6.90	10.17	4.71	60.28	4.55	48.74	25.59	12.09	8.43	27.15	10.07	13.56	31.96	5.94
5/10/10	3.46	107.45	11.79	12.67	30.67	8.76	13.14	6.97	10.46	4.74	60.36	5.03	49.75	25.92	11.91	8.71	27.67	10.46	13.44	32.34	5.93
5/17/10	3.39	102.97	11.46	12.85	28.36	8.32	13.38	6.57	9.92	4.61	60.53	4.27	46.95	25.15	12.44	7.83	26.67	9.52	12.98	31.68	5.71
5/24/10	3.58	104.26	11.25	13.51	28.55	8.89	13.45	6.87	10.02	4.70	59.27	4.16	50.42	26.24	13.09	9.28	28.70	10.30	13.66	32.29	5.97
5/31/10	3.54	102.54	11.00	13.02	28.68	8.64	13.29	6.90	10.02	4.68	59.88	4.16	50.33	25.90	13.07	8.89	28.61	10.85	13.55	32.29	5.92
6/7/10	3.61	103.83	11.08	13.26	25.26	8.83	13.90	7.02	10.47	4.64	62.59	3.58	52.29	25.02	13.27	9.12	27.89	10.94	13.73	32.24	6.26
6/14/10	3.70	105.38	11.29	13.93	24.65	9.00	13.97	7.14	10.96	4.80	63.00	3.70	54.79	25.78	13.98	10.05	28.16	11.64	13.87	33.00	6.37
6/21/10	3.85	108.48	11.46	13.58	24.65	9.61	14.84	7.35	10.96	5.03	64.05	3.98	56.75	25.82	13.55	9.66	29.80	11.73	14.26	33.47	6.67
6/28/10	3.67	104.61	12.26	13.03	24.63	9.89	15.10	6.93	10.50	4.80	63.08	3.69	54.48	23.13	13.18	9.35	28.90	11.64	13.76	32.29	6.18
7/5/10	3.69	105.64	12.45	13.60	26.42	9.56	14.85	7.09	10.57	4.90	64.01	3.99	56.84	24.10	13.89	9.81	28.90	11.64	13.92	33.23	6.41
7/12/10	3.58	105.30	11.16	14.08	26.30	9.39	14.33	6.94	9.95	4.90	62.47	4.11	57.15	23.76	13.98	10.42	28.90	11.48	14.59	31.49	6.33
7/19/10	3.67	109.26	12.10	14.61	26.23	10.08	14.33	7.21	10.54	5.10	63.61	4.30	60.04	25.86	14.88	10.56	28.90	11.64	15.30	32.52	6.63
7/26/10	3.70	110.03	11.69	14.66	28.45	9.84	14.73	7.12	10.63	5.10	63.69	4.42	59.69	25.11	14.75	10.54	28.90	11.25	15.58	32.48	6.57
8/2/10	3.75	115.12	11.59	14.58	29.04	10.02	15.04	7.36	10.98	5.32	66.69	4.46	61.69	25.65	14.25	10.97	28.90	11.36	16.01	32.67	6.86
8/9/10	3.63	107.62	11.40	14.43	27.52	9.71	15.08	6.98	10.41	5.08	66.93	4.20	62.72	23.64	13.95	11.41	28.90	10.76	16.37	31.58	6.42
8/16/10	3.76	107.71	11.49	14.12	28.24	9.72	14.87	7.00	10.75	5.07	67.13	4.07	60.27	24.90	13.61	11.58	28.90	10.64	16.01	31.39	6.52
8/23/10	3.63	106.21	12.17	14.38	26.80	9.80	14.75	6.84	10.68	4.97	66.16	3.93	61.11	23.68	13.29	11.72	28.90	10.38	16.17	28.38	6.35
8/30/10	3.75	109.01	12.21	14.82	27.60	10.64	14.84	6.93	10.98	5.03	65.71	4.07	63.30	25.02	14.04	12.23	31.30	10.76	16.87	28.56	6.46
9/6/10	3.81	117.67	12.55	14.85	28.47	10.81	14.66	7.02	11.66	5.12	63.16	4.08	63.34	24.94	14.13	12.62	31.93	11.36	17.77	28.09	6.48
9/13/10	3.93	122.40	12.94	15.45	29.51	11.07	15.26	7.10	12.14	5.31	65.06	4.25	66.10	25.82	15.33	13.41	33.17	11.18	18.09	29.13	6.55
9/20/10	4.00	129.40	14.17	15.24	30.52	10.90	14.94	7.27	12.01	5.26	66.13	4.20	69.42	25.86	15.33	13.18	34.03	11.32	18.65	29.65	6.49
9/27/10	4.15	133.69	14.44	14.58	32.23	10.62	14.59	7.45	12.40	5.27	65.64	4.24	70.27	26.95	14.21	13.77	35.72	11.18	19.52	28.89	6.48
10/4/10	4.09	142.52	14.22	14.92	32.76	10.57	14.51	7.78	13.26	5.33	67.70	4.52	66.18	28.76	14.55	12.94	34.57	11.25	19.92	31.58	6.82
10/11/10	4.52	157.48	14.39	15.45	34.97	10.66	14.26	8.33	13.52	5.76	68.82	4.85	63.98	29.68	15.16	12.62	37.66	10.92	19.92	33.23	7.28
10/18/10	4.35	151.71	13.57	14.53	35.14	10.49	13.39	8.05	13.15	5.75	66.38	4.66	64.25	29.35	14.15	12.35	39.64	10.92	20.20	33.56	7.17
10/25/10	4.41	149.26	13.78	14.48	33.73	10.32	12.97	7.74	13.24	5.72	65.18	4.45	65.55	28.97	13.76	12.37	37.64	10.36	19.12	32.02	6.54
11/1/10	4.72	167.89	13.62	14.55	34.74	10.40	13.23	8.44	14.58	6.43	67.95	4.80	65.96	31.11	14.44	12.78	40.09	10.62	21.27	33.37	6.93
11/8/10	4.66	164.83	13.44	14.62	33.32	10.19	12.88	8.46	14.40	5.93	65.51	4.98	61.02	30.06	13.85	12.81	41.15	10.10	21.95	33.28	6.63
11/15/10	4.39	160.46	14.27	13.94	33.49	9.89	12.40	8.00	14.51	5.77	64.40	4.89	61.51	27.83	13.24	12.72	42.57	9.99	21.59	32.19	6.48
11/22/10	4.41	152.76	14.45	13.52	31.57	9.91	11.40	7.74	13.92	5.56	64.56	4.58	62.64	27.79	12.64	12.88	40.18	10.64	20.67	31.44	6.28
11/29/10	4.38	161.33	14.14	13.38	32.61	9.95	12.45	8.19	14.63	5.67	64.36	4.97	63.58	25.73	12.71	12.79	41.02	10.66	21.99	31.39	6.32
12/6/10	4.33	159.32	14.96	13.34	34.61	10.27	11.61	8.10	14.91	5.57	64.27	4.83	62.86	25.44	12.39	12.21	40.05	10.03	20.44	31.06	6.19
12/13/10	4.27	154.16	14.96	12.95	32.97	10.72	11.59	7.95	14.53	5.57	62.79	4.50	60.21	26.11	12.19	11.75	37.43	9.78	20.79	29.79	5.95
12/20/10	4.43	154.25	14.72	12.90	33.01	10.45	12.08	8.20	14.99	5.41	63.12	4.52	59.36	27.37	12.73	11.73	37.46	9.80	20.63	29.74	5.98
12/27/10	4.49	154.25	14.37	12.77	32.10	10.42	12.27	8.38	15.21	5.57	63.74	4.43	60.21	27.37	12.79	11.61	39.19	9.59	21.03	29.93	6.05
1/3/11	4.66	161.68	14.93	13.57	34.21	10.42	12.19	8.46	15.54	5.65	63.94	4.49	62.41	28.38	13.67	12.32	38.22	9.78	22.19	30.21	6.19

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
1/10/11	4.75	163.87	14.80	13.54	38.20	10.83	11.63	8.82	15.70	5.85	64.27	4.41	55.41	28.80	13.22	12.33	37.93	9.19	22.30	30.45	6.18
1/17/11	4.78	159.41	15.68	13.54	36.13	11.56	11.73	8.72	15.37	5.61	63.94	4.17	50.92	26.78	12.97	12.44	36.24	9.50	21.47	29.65	6.01
1/24/11	5.04	156.00	15.52	13.06	38.66	12.18	11.82	8.66	14.28	5.49	63.78	4.10	52.31	26.78	12.52	11.65	35.31	10.08	20.04	28.85	5.82
1/31/11	5.28	158.09	16.36	13.18	39.68	12.14	12.00	9.20	14.68	5.51	63.94	4.09	52.80	26.66	12.82	11.86	35.16	10.71	20.24	28.66	5.81
2/7/11	4.90	147.77	16.72	11.80	37.50	12.63	11.44	8.51	13.56	5.27	60.31	4.00	51.32	24.85	11.47	10.89	34.46	10.06	18.73	27.43	5.71
2/14/11	5.15	149.43	16.09	11.58	39.57	12.61	11.00	8.77	14.25	5.50	61.01	4.34	53.07	27.29	11.51	11.96	37.12	10.15	19.24	28.66	5.99
2/21/11	4.69	144.45	15.09	11.49	37.93	11.99	11.32	8.56	14.55	5.35	60.19	4.21	50.83	26.87	11.27	11.47	34.93	9.76	18.77	27.29	5.75
2/28/11	4.69	148.38	15.80	11.95	42.00	12.40	11.40	8.95	14.70	5.57	61.59	4.17	55.09	27.67	11.49	12.53	37.32	10.08	19.80	28.42	6.09
3/7/11	4.69	146.11	15.55	11.94	41.16	12.31	11.49	8.89	14.56	5.63	61.55	3.92	54.55	28.09	11.33	12.40	36.85	9.87	19.76	28.28	6.10
3/14/11	4.50	139.81	14.95	12.52	36.45	11.56	12.10	8.51	14.22	5.55	57.67	3.52	49.66	28.46	11.58	11.95	33.19	9.36	18.69	26.77	6.09
3/21/11	4.73	145.93	14.55	13.57	37.38	12.37	13.06	9.30	15.65	5.85	58.21	3.96	54.55	29.22	11.96	12.32	34.66	9.92	19.40	26.30	6.38
3/28/11	4.72	150.31	13.93	14.57	36.66	12.52	13.04	9.91	16.91	5.92	60.06	3.97	51.05	30.98	13.42	13.11	37.25	9.36	19.92	27.81	6.56
4/4/11	4.94	159.23	12.81	14.74	39.11	13.51	12.48	9.89	17.11	5.99	60.85	4.02	55.63	30.77	14.08	13.34	38.65	11.18	20.16	28.56	6.61
4/11/11	4.82	161.11	13.11	14.64	38.16	14.05	12.29	9.73	16.15	5.91	60.06	3.98	57.83	30.73	13.15	13.68	38.99	11.36	19.76	27.81	6.46
4/18/11	4.83	161.11	13.29	14.28	41.73	15.10	12.26	9.79	16.39	5.97	59.40	4.03	57.34	31.59	12.91	13.66	39.01	11.57	19.36	27.95	6.52
4/25/11	4.72	157.03	13.04	13.27	42.00	14.80	12.47	9.20	15.80	5.86	58.95	4.02	54.42	31.08	12.07	13.39	38.09	11.11	19.40	26.39	6.36
5/2/11	4.54	154.29	12.93	12.67	40.72	14.58	13.79	8.64	14.83	5.74	59.11	3.85	55.99	29.62	11.60	13.25	37.21	11.43	19.04	25.67	6.14
5/9/11	4.61	153.40	13.03	12.99	42.15	14.65	13.86	8.82	15.19	5.76	59.82	3.86	58.68	29.88	11.94	13.27	37.46	11.39	19.52	25.62	6.20
5/16/11	4.57	153.58	12.41	14.25	42.38	15.67	13.41	8.79	15.17	5.77	58.47	3.76	59.68	31.38	12.82	13.66	37.42	11.55	19.54	25.67	6.18
5/23/11	4.61	150.48	12.41	14.06	41.41	15.84	13.48	9.21	15.94	5.76	59.14	4.06	59.99	31.89	12.57	13.86	37.10	11.57	19.09	25.48	6.12
5/30/11	4.63	150.48	11.89	13.90	42.53	15.74	13.13	9.15	15.71	5.64	59.18	3.84	63.22	30.69	12.26	14.18	36.82	11.84	19.17	25.19	6.01
6/6/11	4.66	148.79	10.88	14.04	39.41	15.05	12.71	9.11	15.56	5.46	58.97	3.82	62.40	30.43	12.15	14.03	35.39	11.79	18.56	25.62	5.72
6/13/11	4.46	141.88	9.63	13.47	36.33	13.95	12.76	9.16	14.94	5.47	58.34	3.71	60.77	29.32	11.47	12.83	33.86	11.67	18.52	23.52	5.58
6/20/11	4.68	144.89	10.91	14.94	40.37	14.24	12.56	9.36	14.94	5.35	61.80	3.87	61.76	30.86	12.31	13.96	35.96	11.84	18.40	24.57	5.71
6/27/11	4.85	144.54	10.53	14.98	40.64	14.78	13.47	9.58	15.19	5.31	60.79	3.96	63.35	31.81	12.88	14.55	36.60	12.36	18.40	25.43	5.75
7/4/11	4.91	148.44	10.07	15.68	40.91	15.01	13.65	9.92	15.47	5.19	62.31	4.27	65.94	33.39	14.07	15.12	37.48	12.71	18.85	26.29	5.91
7/11/11	4.73	142.68	9.36	14.44	40.84	14.56	12.78	9.67	14.99	4.91	60.66	4.33	63.26	32.45	13.43	14.28	36.07	13.13	18.40	25.00	5.70
7/18/11	4.83	144.10	9.65	14.92	39.68	14.22	13.66	9.84	14.49	5.13	65.52	4.63	60.90	34.29	14.07	14.81	35.57	13.46	19.01	25.67	5.85
7/25/11	4.76	142.59	8.80	15.72	39.03	14.63	13.47	9.30	14.57	5.17	65.47	4.45	61.49	33.56	13.98	15.13	34.55	12.73	18.97	24.86	5.79
8/1/11	4.40	132.58	8.18	14.87	38.01	13.93	13.20	8.72	13.00	4.79	62.56	4.41	57.63	30.48	12.71	14.07	31.79	12.47	17.75	23.09	5.32
8/8/11	4.05	121.50	8.72	14.78	35.33	13.03	12.62	7.88	11.89	4.35	62.43	4.25	61.08	28.59	12.11	14.44	28.28	12.54	14.95	21.23	4.74
8/15/11	4.02	126.19	8.64	14.19	33.10	13.24	12.15	7.70	11.86	4.34	64.00	4.10	59.13	26.79	11.69	13.70	28.67	12.14	15.89	20.65	4.63
8/22/11	4.35	127.44	8.97	13.72	33.75	14.31	11.46	7.72	12.04	4.36	65.69	4.50	56.14	29.02	10.88	13.68	27.55	11.77	16.85	18.34	4.78
8/29/11	4.63	128.16	9.57	14.46	36.04	15.54	11.60	8.14	12.91	4.73	66.28	4.75	61.76	29.79	11.41	14.39	28.56	12.99	17.30	17.82	4.76
9/5/11	4.75	126.81	10.26	13.88	35.51	16.08	11.46	8.29	11.90	4.73	68.41	4.51	62.13	30.09	10.68	12.95	28.33	13.25	17.20	18.30	4.63
9/12/11	4.77	125.73	9.83	12.20	34.31	15.89	10.93	8.43	11.78	4.68	68.24	4.66	59.99	29.32	9.62	12.70	27.28	12.38	17.16	18.26	4.55
9/19/11	4.58	111.52	8.66	10.18	30.60	15.01	10.61	7.78	10.07	4.13	64.97	4.26	58.58	27.22	8.07	11.71	22.54	11.32	15.61	17.19	4.00
9/26/11	4.86	103.16	9.14	10.27	31.60	15.31	10.57	8.28	11.05	3.95	66.39	4.76	57.66	26.62	7.77	12.13	20.23	11.32	14.01	17.98	4.00
10/3/11	4.74	98.93	8.99	11.51	32.89	14.35	10.70	7.98	10.92	3.99	63.46	4.51	57.80	26.40	8.12	12.47	20.78	11.34	14.06	17.75	3.83
10/10/11	4.57	106.30	9.93	12.34	33.22	13.88	10.84	7.99	11.29	4.23	64.93	4.72	57.30	27.90	9.18	12.68	24.39	12.40	15.47	19.46	4.05
10/17/11	4.52	102.89	8.77	10.89	31.43	14.03	11.70	8.05	10.92	4.22	64.19	4.57	59.27	27.90	8.52	12.08	22.10	12.36	14.90	16.66	3.96
10/24/11	4.74	123.03	10.76	14.10	35.99	14.91	12.30	8.86	13.04	4.82	64.28	4.91	63.07	31.46	11.16	14.02	27.02	11.93	16.08	19.10	4.67
10/31/11	5.01	122.04	10.52	13.61	35.02	15.61	11.84	8.60	12.97	4.79	64.80	5.23	62.52	31.38	11.55	13.79	28.58	12.26	15.44	21.70	4.70
11/7/11	5.24	115.12	10.08	12.07	30.35	15.35	13.32	8.93	13.09	4.51	65.23	4.95	63.71	30.13	10.42	13.31	27.39	12.31	14.87	20.37	4.81
11/14/11	5.04	109.90	10.40	11.23	28.91	15.65	12.82	8.53	12.60	4.45	65.31	4.69	64.95	29.92	9.87	12.79	24.94	12.31	13.98	19.31	4.44
11/21/11	5.05	106.30	9.57	11.07	29.06	14.84	13.32	8.04	11.48	4.27	63.72	4.56	64.58	27.78	9.52	11.92	23.80	12.59	13.96	18.47	4.08
11/28/11	5.20	119.25	11.34	13.34	29.25	15.63	12.91	8.55	12.96	4.65	65.40	4.97	66.50	29.36	11.56	12.68	27.62	12.54	15.10	20.08	4.57
12/5/11	5.05	114.49	10.84	12.47	28.64	15.37	12.41	8.11	12.57	4.56	64.41	4.84	63.43	29.53	11.71	12.51	25.58	12.59	15.00	19.36	4.52
12/12/11	5.06	112.33	10.18	13.00	29.39	14.99	12.66	7.76	11.73	4.49	63.38	5.03	66.55	28.16	11.99	12.54	24.94	12.24	15.42	18.34	4.61
12/19/11	5.26	113.41	9.90	12.90	30.60	15.57	13.09	8.12	11.66	4.55	63.98	4.95	67.78	29.66	12.17	12.36	23.78	12.40	15.59	18.43	4.71
12/26/11	5.17	111.61	9.94	11.78	30.04	15.40	13.35	8.28	11.54	4.46	65.36	4.69	66.55	28.89	11.51	12.08	23.43	8.56	15.44	18.36	4.63
1/2/12	5.57	109.72	10.68	11.25	29.73	15.48	13.09	9.10	12.82	4.47	65.10	5.05	66.27	28.51	11.14	11.13	22.29	9.31	15.40	17.98	4.55
1/9/12	5.63	110.89	11.04	12.47	32.73	14.29	14.03	9.41	12.82	4.73	65.57	5.44	64.90	29.28	12.26	10.58	24.10	9.22	16.61	19.17	4.97
1/16/12	5.71	118.44	11.89	13.76	34.97	13.82	13.09	9.70	13.18	5.01	66.05	5.34	64.30	29.88	12.84	11.17	27.07	9.90	17.33	21.18	5.13
1/23/12	5.84	120.78	12.72	13.59	34.89	14.12	13.28	9.80	13.47	5.13	68.03	5.34	62.56	29.88	13.00	10.97	28.19	9.86	17.41	21.90	5.40
1/30/12	6.08	123.21	12.00	13.58	35.78	13.48	13.12	9.83	14.25	5.26	68.03	5.58	64.67	29.75	13.00	12.06	29.82	10.42	17.28	22.18	5.47
2/6/12	5.82	127.26	12.35	13.90	35.79	13.37	13.60	9.90	14.69	5.12	67.81	6.09	64.30	29.66	13.68	11.31	29.20	10.33	18.12	21.23	5.10
2/13/12	5.92	131.04	12.29	14.32	38.10	13.59	14.10	9.99	15.39	5.33	70.39	6.33	64.85	30.91	13.65	11.15	30.23	10.40	18.33	22.56	5.47
2/20/12	5.50	129.96	12.45	14.99	38.47	13.33	13.39	9.90	14.69	5.35	70.14	6.24	62.84	30.56	13.89	11.31	30.75	10.05	18.25	23.14	5.27
2/27/12	5.64	128.70	12.36	14.39	38.49	13.10	13.26	10.07	14.83	5.40	70.35	6.12	64.85	30.52	13.26	11.56	30.30	10.00	18.42	23.00	5.42
3/5/12	5.69	123.39	12.28	14.16	38.26	13.37	13.55	9.89	14.44	5.18	72.50	6.08	68.29	29.53	12.74	12.76	28.70	9.97	17.79	20.03	5.26
3/12/12	5.69	126.36	13.21	13.29	41.76	12.95	13.57	9.75	14.23	5.16	72.12	6.18	69.02	30.52	11.82	12.76	28.47	10.38	18.00	20.08	5.38
3/19/12	5.46	118.35	13.73	13.29	42.72	12.48	12.62	9.46	13.93	4.93	71.64	6.06	66.73	29.02	11.88	13.09	27.28	9.79	17.87	19.27	4.96
3/26/12	5.35	117.37	12.32	13.39	41.68	12.41	12.82	9.41	13.57	4.94	73.58	6.33	71.91	28.08	12.38	12.43	26.86	10.73	18.00	19.27	5.00
4/2/12	5.30	116.92	11.91	14.48	42.88	12.54	12.16	9.42	13.50	4.94	72.03	6.83	73.60	28.46	13.19	12.49	27.55	10.85	18.12	19.60	4.89

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
4/9/12	5.26	118.17	11.70	14.72	43.53	12.26	12.23	9.47	13.45	5.12	72.98	6.69	71.54	28.38	13.83	13.13	28.40	11.13	18.96	19.60	5.05
4/16/12	5.25	115.84	11.75	14.74	45.03	12.46	12.55	9.77	13.81	5.01	75.30	6.70	75.62	29.45	13.28	13.27	29.29	10.82	19.21	20.37	5.07
4/23/12	5.19	112.28	11.45	15.08	45.03	12.99	12.36	9.97	13.84	4.87	72.20	6.60	73.74	28.89	13.72	13.38	29.20	11.32	20.09	19.84	4.93
4/30/12	5.17	113.47	11.89	15.48	46.69	12.99	12.30	9.71	14.06	4.89	76.51	6.94	73.28	29.11	13.52	13.72	30.18	11.25	20.30	20.56	5.03
5/7/12	4.83	105.42	10.79	14.61	43.03	12.09	12.19	8.94	12.67	4.60	74.83	6.53	73.56	26.36	12.73	12.52	27.55	10.92	19.51	18.91	4.67
5/14/12	4.75	100.21	10.14	13.43	43.84	10.97	12.48	8.65	12.19	4.27	71.56	5.91	70.85	24.26	11.91	12.08	26.50	10.30	18.42	17.46	4.37
5/21/12	4.69	100.85	10.65	14.30	42.47	10.50	12.12	8.72	12.28	4.24	69.97	5.97	71.54	23.58	12.62	11.42	25.83	9.97	18.16	17.49	4.34
5/28/12	4.54	97.47	10.27	14.48	41.88	10.14	12.59	8.55	11.91	4.46	68.52	6.11	68.31	24.30	13.46	11.11	25.86	10.00	18.54	17.37	4.38
6/4/12	4.67	97.10	10.21	15.11	43.17	9.90	13.05	8.84	12.24	4.35	68.39	6.20	68.91	22.31	13.74	11.65	26.11	9.74	18.63	17.06	4.24
6/11/12	4.67	102.77	10.81	16.28	45.05	10.45	13.10	9.19	13.17	4.55	70.37	6.58	72.70	24.30	14.50	11.01	27.92	9.34	20.05	18.67	4.50
6/18/12	4.57	99.39	10.30	15.40	43.60	9.26	13.32	8.90	12.46	4.50	71.42	6.05	68.45	23.11	13.96	10.85	27.25	10.04	20.09	18.36	4.39
6/25/12	4.55	100.57	10.54	16.52	44.23	9.31	14.41	8.69	13.35	4.56	74.55	5.92	69.32	23.95	14.73	11.78	28.24	9.78	20.30	19.33	4.51
7/2/12	4.41	99.66	10.74	17.57	46.11	10.05	14.35	8.63	13.43	4.44	75.34	5.25	72.33	26.12	15.27	12.44	29.20	10.38	20.26	20.97	4.44
7/9/12	4.48	93.63	9.77	16.80	43.76	9.24	14.46	8.09	13.02	4.12	75.16	5.41	69.88	25.41	14.40	12.23	27.84	10.91	19.70	20.05	4.18
7/16/12	4.67	94.36	10.00	15.71	45.40	10.24	14.88	8.56	13.81	4.26	77.62	5.46	70.25	25.23	14.08	12.32	29.27	10.48	20.48	21.35	4.38
7/23/12	4.50	93.08	10.50	16.50	44.82	10.96	14.61	8.30	13.21	4.26	78.20	5.12	67.29	25.14	14.49	11.99	27.70	10.89	20.26	20.48	4.33
7/30/12	4.63	96.28	10.47	16.54	45.09	10.95	15.26	8.24	13.29	4.54	77.40	5.41	68.03	25.90	13.89	12.48	28.35	10.81	20.43	20.63	4.50
8/6/12	4.87	97.74	9.17	16.61	45.56	11.84	14.41	8.58	13.73	4.59	79.78	5.66	66.46	26.91	14.55	13.27	28.60	10.89	20.95	21.16	4.58
8/13/12	4.98	99.57	9.06	16.61	48.57	11.31	14.84	8.63	13.50	4.64	73.58	6.39	67.15	26.78	13.91	13.31	27.91	10.96	21.03	20.77	4.60
8/20/12	4.74	99.42	9.16	16.80	47.95	12.49	15.13	8.43	12.83	4.53	73.05	5.89	67.98	26.12	14.23	12.93	27.27	11.01	21.16	20.63	4.49
8/27/12	4.83	95.79	8.98	16.24	46.38	11.71	15.02	8.17	12.72	4.39	72.83	5.80	72.15	25.01	13.97	12.57	25.84	11.22	21.12	20.10	4.40
9/3/12	4.73	99.23	8.66	17.02	47.60	11.92	15.82	8.32	12.59	4.46	73.85	5.97	73.53	25.41	15.05	12.93	26.50	11.53	20.85	21.11	4.50
9/10/12	4.95	109.74	9.18	18.26	50.02	12.85	15.37	8.80	13.72	4.45	74.66	5.85	70.94	27.80	16.41	13.02	27.80	11.15	21.12	22.23	4.53
9/17/12	4.86	110.95	8.69	17.92	49.71	12.11	15.46	9.04	13.79	4.57	76.81	5.76	71.46	26.60	15.35	12.73	27.12	11.15	21.38	21.94	4.59
9/24/12	4.90	109.00	8.56	18.28	51.71	12.13	15.44	9.03	13.93	4.63	77.13	5.91	68.47	26.65	15.93	12.68	27.36	11.15	21.69	21.69	4.57
10/1/12	4.90	109.09	8.58	18.35	51.67	12.32	15.35	8.99	13.65	4.71	77.08	6.03	69.64	26.69	15.98	13.09	28.08	11.10	21.91	22.13	4.66
10/8/12	5.29	109.28	8.51	17.94	50.65	12.64	14.48	9.22	13.91	4.96	75.69	5.67	68.94	27.71	15.38	12.73	28.48	10.84	21.21	22.52	4.95
10/15/12	5.60	112.81	9.23	18.77	51.24	12.87	14.71	9.84	14.22	5.00	75.87	5.79	70.48	29.57	15.81	13.09	29.22	11.10	21.07	22.08	5.06
10/22/12	5.43	117.09	8.96	18.44	52.21	12.13	15.13	9.36	14.08	4.94	76.95	5.73	67.12	28.51	15.85	12.71	28.50	11.25	21.03	21.84	4.99
10/29/12	5.74	122.30	9.39	19.97	54.45	11.86	15.33	9.47	14.31	5.12	78.79	5.92	66.14	29.83	17.41	13.45	29.18	11.22	21.29	23.10	4.91
11/5/12	5.45	117.74	8.82	19.23	52.25	11.42	14.51	9.11	13.98	4.94	77.31	6.41	67.45	28.15	16.86	12.69	28.57	10.79	20.81	22.37	4.74
11/12/12	5.31	114.39	8.59	19.23	48.57	10.95	15.33	9.01	14.00	4.90	76.14	6.44	65.49	27.22	17.46	13.16	27.82	10.57	20.59	21.45	4.64
11/19/12	5.67	119.04	8.83	20.71	50.18	11.78	15.57	9.13	14.49	5.12	78.92	6.63	65.07	28.60	18.81	14.18	27.73	10.38	21.21	22.13	4.90
11/26/12	5.56	115.13	9.09	21.27	49.55	11.52	15.80	9.22	14.52	5.12	79.50	6.77	65.39	28.11	19.37	14.70	27.38	10.43	20.94	22.13	4.93
12/3/12	5.76	118.48	9.23	21.92	49.12	11.65	15.91	9.49	14.54	5.23	79.10	6.76	66.47	28.51	19.79	14.59	28.01	9.73	21.12	22.71	4.99
12/10/12	5.89	122.95	9.48	21.96	49.24	11.75	16.86	9.68	14.78	5.41	79.77	6.88	63.01	28.91	19.23	14.32	29.39	9.80	21.43	23.29	5.08
12/17/12	5.92	120.90	9.60	21.55	48.50	11.59	17.22	9.83	14.70	5.29	80.89	6.61	64.79	29.83	19.65	14.77	29.53	10.36	21.12	23.44	4.93
12/24/12	5.92	122.67	9.63	21.27	48.93	11.96	17.73	9.79	14.75	5.38	80.98	6.66	65.25	30.06	19.75	15.24	29.74	10.65	21.21	23.78	5.03
12/31/12	6.18	132.62	10.33	22.89	50.73	12.18	18.23	9.95	15.19	5.60	81.34	6.95	68.33	30.81	21.99	15.78	32.52	10.53	21.87	26.15	5.30
1/7/13	6.23	133.92	9.89	22.80	49.94	12.41	18.08	9.67	14.21	5.57	80.63	7.16	69.41	29.44	21.20	15.28	31.26	11.41	21.95	25.18	5.30
1/14/13	6.22	138.76	8.51	23.17	52.92	12.57	18.19	9.90	14.35	5.71	78.65	7.10	69.13	28.91	21.66	15.84	32.59	11.41	22.83	25.86	5.50
1/21/13	6.39	136.71	8.21	22.43	52.29	11.67	18.55	9.81	13.86	5.75	75.38	7.62	71.32	28.64	21.34	15.62	32.05	11.08	23.27	24.84	5.55
1/28/13	6.34	137.55	7.64	21.78	52.57	11.99	20.23	9.86	14.03	5.76	76.27	7.64	73.57	29.52	21.52	15.66	33.08	11.17	23.63	25.08	5.75
2/4/13	5.83	135.78	7.31	20.44	52.96	11.16	20.78	9.40	13.65	5.53	76.68	8.08	75.57	27.22	19.89	16.05	31.47	10.77	23.63	23.73	5.35
2/11/13	5.90	137.55	7.27	21.27	53.70	10.98	20.28	9.45	13.98	5.64	76.95	8.18	75.01	27.27	20.96	16.14	31.77	10.79	23.71	24.07	5.46
2/18/13	5.93	131.78	7.57	20.67	51.74	10.66	19.05	9.51	13.45	5.42	76.95	7.89	73.24	25.50	20.73	13.06	30.09	10.65	22.75	22.37	5.21
2/25/13	6.10	130.29	7.47	21.41	52.57	10.53	20.28	9.33	13.03	5.46	75.87	8.34	73.01	25.67	21.15	13.18	30.00	10.45	23.14	22.42	5.25
3/4/13	6.06	129.92	7.82	20.76	55.66	10.77	19.87	9.59	13.14	5.55	75.56	8.08	76.37	26.16	19.75	13.71	30.58	10.93	23.23	22.56	5.26
3/11/13	5.89	126.76	7.60	19.97	53.66	10.16	18.37	9.40	12.84	5.40	74.07	7.16	70.44	25.85	18.16	12.71	28.62	10.40	23.27	21.26	5.15
3/18/13	5.92	125.09	7.65	19.65	48.03	10.24	21.37	9.10	12.54	5.32	73.13	7.53	72.73	25.10	19.56	12.24	28.20	10.24	23.10	20.58	5.12
3/25/13	6.18	122.95	7.62	19.83	48.30	9.92	21.14	9.04	13.07	5.46	73.76	7.15	70.95	24.97	20.31	11.65	28.10	10.72	22.79	19.47	5.05
4/1/13	5.92	118.85	7.22	19.28	46.42	9.49	21.10	8.75	12.58	5.23	73.58	6.81	70.58	24.21	19.65	10.92	27.03	10.36	22.35	18.75	4.94
4/8/13	6.00	121.37	7.50	20.25	48.93	9.52	22.01	8.79	12.42	5.34	74.43	6.17	72.35	24.17	20.35	12.10	27.64	10.96	22.70	19.80	5.06
4/15/13	5.75	119.41	7.17	22.01	49.51	9.78	21.28	8.41	12.09	5.38	73.72	6.54	72.31	23.11	21.85	11.47	28.06	10.57	22.57	20.05	5.11
4/22/13	5.73	122.25	7.24	21.73	50.69	10.56	22.69	8.78	12.61	5.50	75.47	6.53	73.10	23.95	21.76	11.72	28.08	10.40	23.23	20.24	5.28
4/29/13	5.66	123.47	7.12	22.10	53.04	10.60	23.10	8.47	12.42	5.57	76.09	6.33	75.11	23.64	21.99	11.54	28.71	10.79	23.63	20.39	5.26
5/6/13	5.88	124.50	7.21	22.43	54.17	10.93	20.78	9.11	12.93	5.72	77.35	6.35	79.40	24.83	22.37	11.92	29.69	11.58	24.59	21.50	5.44
5/13/13	5.77	122.91	8.06	21.18	57.19	10.91	20.73	8.71	12.47	5.56	76.90	6.42	81.69	23.42	21.34	11.70	28.31	11.77	24.20	20.68	5.35
5/20/13	5.55	123.09	7.96	21.41	59.61	10.65	18.37	8.40	12.19	5.43	74.39	7.10	81.04	23.02	21.71	10.80	27.72	12.71	23.89	20.14	5.23
5/27/13	5.43	123.00	7.86	21.46	61.29	10.27	18.60	8.17	12.30	5.43	73.98	7.41	81.32	22.53	22.32	10.89	27.32	13.00	23.38	19.42	5.17
6/3/13	5.21	118.86	8.05	20.61	59.69	9.92	16.95	8.04	12.03	5.25	72.13	7.16	75.28	22.18	21.78	10.82	26.85	13.31	22.53	18.92	5.03
6/10/13	4.99	116.51	8.14	19.43	59.89	9.98	17.60	7.48	11.69	4.93	69.56	6.91	75.66	20.67	19.98	10.38	26.00	13.05	22.03	18.55	4.80
6/17/13	4.84	112.09	7.72	17.78	56.91	9.65	16.58	7.33	11.40	4.68	70.71	6.60	71.07	20.05	17.94	9.91	25.05	13.37	21.62	18.06	4.53
6/24/13	4.97	110.12	7.73	19.06	60.57	9.92	17.21	7.46	11.80	4.95	74.29	6.52	79.81	18.33	20.08	9.69	24.67	13.49	21.53	17.95	4.56
7/1/13	4.84	110.02	8.02	18.78	61.41	10.11	17.85	8.11	11.73	4.83	73.97	6.32	76.88	18.98	19.51	9.83	23.61	13.81	21.53	17.52	4.46

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
7/8/13	5.01	113.78	8.09	20.18	61.69	10.23	18.46	8.36	12.28	4.90	74.79	6.66	75.47	19.16	20.64	10.16	24.18	13.90	21.94	18.06	4.56
7/15/13	5.08	113.31	7.79	19.43	66.46	10.40	15.70	8.35	12.42	4.95	74.93	6.63	76.13	21.34	18.67	9.78	23.52	15.00	21.76	17.91	4.50
7/22/13	5.32	114.35	7.69	20.70	69.17	10.92	17.44	8.35	12.80	5.21	76.53	6.74	79.29	21.06	19.79	10.16	23.80	15.19	22.07	18.22	4.67
7/29/13	5.27	115.29	7.63	21.92	71.72	10.96	16.43	8.31	12.75	5.22	76.26	6.79	82.17	20.87	21.16	10.53	23.94	15.77	22.62	18.14	4.64
8/5/13	5.12	112.28	7.47	22.20	71.16	11.37	16.39	8.02	12.55	5.08	75.71	7.14	83.26	21.62	20.93	10.42	23.42	15.73	22.53	18.06	4.61
8/12/13	5.34	118.67	8.61	23.13	73.00	11.66	17.42	8.17	13.25	5.36	76.76	7.45	82.60	23.00	21.83	10.74	25.95	15.41	22.53	19.49	4.97
8/19/13	5.21	115.10	8.57	21.68	70.84	11.35	16.58	7.68	14.00	5.22	76.26	6.99	80.28	22.63	21.12	9.47	25.15	15.04	22.07	18.79	4.76
8/26/13	5.09	113.58	8.40	21.81	72.40	11.33	16.58	7.63	13.80	5.12	76.44	7.09	80.24	22.31	20.08	9.74	25.69	15.94	22.07	18.57	4.66
9/2/13	5.56	120.16	8.34	21.85	77.06	11.73	16.15	8.05	14.52	5.36	80.47	7.14	82.13	24.02	20.45	9.76	27.13	15.77	23.07	20.04	5.00
9/9/13	5.59	121.97	8.53	22.33	81.80	12.16	17.32	8.03	14.64	5.44	81.97	7.51	83.45	23.28	21.26	10.00	28.34	16.31	22.92	20.68	5.30
9/16/13	5.77	124.46	8.81	22.70	81.68	12.37	16.84	8.27	14.64	5.60	82.29	7.67	85.52	23.79	22.21	10.25	29.03	16.50	23.25	20.68	5.45
9/23/13	5.71	119.87	8.40	21.76	83.19	11.68	17.16	8.06	14.55	5.46	82.48	7.81	88.19	22.26	20.98	10.71	28.01	17.23	23.20	20.04	5.31
9/30/13	5.73	120.35	8.34	21.90	83.47	12.77	17.40	7.97	14.59	5.47	78.60	7.76	87.37	21.85	20.83	10.49	28.10	17.72	22.92	20.09	5.29
10/7/13	5.72	121.88	8.06	22.99	83.43	12.08	18.30	8.25	14.43	5.44	79.63	7.87	87.57	21.75	22.11	10.45	27.77	17.26	23.20	20.19	5.25
10/14/13	5.71	120.16	7.94	22.94	85.58	12.21	18.24	8.41	14.63	5.45	79.16	7.63	88.23	22.49	21.54	10.45	27.91	17.65	23.34	19.99	5.22
10/21/13	5.54	118.16	7.84	21.90	84.86	11.62	18.50	8.07	13.73	5.15	74.95	7.63	86.09	21.85	19.86	9.59	27.19	17.30	22.83	19.14	4.97
10/28/13	5.87	119.68	8.05	22.47	84.15	11.68	18.94	8.16	14.37	5.45	75.79	7.98	90.57	21.80	21.57	9.81	29.32	16.38	23.20	20.43	5.17
11/4/13	5.79	118.35	7.84	21.71	79.92	11.27	18.19	7.97	13.92	5.32	75.32	8.06	85.52	22.08	20.00	9.17	29.10	15.19	22.74	19.99	4.97
11/11/13	6.00	119.40	8.03	22.18	83.55	11.44	17.59	8.17	13.92	5.38	75.79	8.50	88.09	22.68	20.33	8.87	30.27	16.28	23.43	20.73	5.01
11/18/13	6.47	131.04	8.08	22.61	84.54	11.66	17.19	8.72	14.30	5.65	75.28	8.59	91.14	24.67	20.00	8.61	34.87	16.84	24.17	24.38	5.22
11/25/13	6.15	129.90	7.78	22.75	89.28	11.89	17.55	8.49	14.46	5.66	78.13	8.74	93.14	24.35	20.28	8.73	34.46	17.23	24.17	24.38	5.28
12/2/13	6.09	130.56	7.55	21.76	91.59	11.62	17.49	8.46	14.19	5.65	79.21	8.85	90.47	23.56	19.57	8.43	35.44	17.48	23.57	24.73	5.11
12/9/13	5.97	127.80	7.03	21.33	92.83	11.21	16.95	8.07	13.73	5.42	76.07	8.82	86.99	22.22	18.47	8.25	34.70	16.94	22.83	24.33	5.03
12/16/13	5.71	122.64	7.29	20.91	92.31	11.04	16.67	7.81	12.88	5.26	74.76	8.68	87.85	21.94	18.28	8.08	31.99	17.30	22.60	22.87	4.87
12/23/13	5.84	124.65	7.41	20.58	96.21	11.27	16.86	7.87	13.04	5.33	75.79	8.92	86.95	22.63	18.26	8.17	33.34	17.62	22.97	23.75	4.98
12/30/13	5.61	121.69	7.29	20.25	98.36	10.89	16.52	7.59	12.59	5.12	73.54	8.84	85.09	21.15	18.16	7.82	32.13	17.48	22.51	22.48	4.79
1/6/14	5.36	121.21	7.84	21.05	99.04	10.62	17.68	7.41	12.53	5.00	72.80	8.74	84.56	20.55	18.92	8.70	32.01	17.57	22.42	21.51	4.72
1/13/14	5.57	122.36	8.14	20.44	105.33	10.02	18.09	7.50	12.62	4.95	72.84	9.55	86.76	20.41	18.43	8.47	32.77	18.13	22.51	22.09	4.74
1/20/14	5.80	119.40	8.09	20.44	99.76	9.94	18.09	7.29	11.53	4.87	71.25	9.93	78.37	19.67	17.97	8.24	31.44	17.77	22.23	21.90	4.64
1/27/14	5.70	116.34	7.96	19.78	108.22	9.85	17.23	6.95	11.11	4.86	69.29	9.57	79.94	18.56	17.37	7.67	29.98	17.38	21.77	20.68	4.60
2/3/14	5.39	114.82	7.75	19.21	104.44	10.08	17.27	6.99	11.04	4.74	68.40	8.01	81.46	19.49	17.02	7.63	28.98	17.89	21.31	20.04	4.51
2/10/14	5.56	117.87	7.72	20.39	109.21	10.10	17.81	7.24	11.60	4.86	69.10	8.29	79.13	19.44	17.77	7.66	30.56	18.69	21.96	21.07	4.66
2/17/14	6.03	116.44	7.47	19.82	115.59	9.75	17.70	7.52	11.29	4.79	69.19	7.51	78.46	19.44	17.54	8.05	30.63	19.03	22.37	22.29	4.59
2/24/14	6.36	114.91	7.49	19.68	123.95	9.96	17.53	7.57	11.58	4.80	69.01	7.88	80.32	19.53	16.68	8.76	30.05	19.35	21.72	22.14	4.54
3/3/14	6.51	114.05	7.38	19.40	125.54	9.71	17.03	7.50	11.33	4.72	68.68	7.87	79.89	19.02	16.44	8.53	29.79	19.83	21.72	21.36	4.41
3/10/14	6.08	110.24	7.37	17.86	112.30	8.86	16.52	7.10	10.58	4.53	65.03	7.82	77.22	18.29	14.99	7.39	28.82	18.57	21.17	19.75	4.26
3/17/14	6.12	109.28	9.20	18.35	113.99	9.01	18.60	7.28	10.86	4.51	60.35	7.97	77.17	19.25	15.30	6.78	28.79	18.13	21.12	19.85	4.31
3/24/14	6.38	113.29	8.61	18.71	106.53	9.85	18.39	7.86	11.22	4.83	65.40	8.10	76.27	20.46	16.06	7.07	30.63	19.10	20.02	21.12	4.60
3/31/14	6.40	124.55	8.74	19.40	104.53	9.94	18.69	8.04	10.95	4.87	66.53	8.48	77.22	21.01	16.49	7.24	31.18	19.69	21.03	21.31	4.62
4/7/14	6.67	139.34	8.78	19.82	104.53	10.31	20.39	8.19	11.66	4.93	69.80	9.02	80.13	20.60	16.89	7.65	29.27	20.51	21.49	21.02	4.63
4/14/14	6.46	137.72	8.84	18.93	104.63	10.10	19.64	8.13	11.73	4.91	67.32	8.83	79.22	20.46	15.92	7.75	28.62	19.91	20.89	20.63	4.56
4/21/14	6.39	134.36	8.67	18.05	104.24	10.06	18.60	8.15	11.42	4.79	64.61	8.37	76.94	19.49	15.07	7.66	27.86	20.03	20.57	19.95	4.37
4/28/14	6.31	135.71	8.36	17.84	98.64	11.47	18.22	8.28	11.60	4.80	68.40	8.46	77.84	19.76	15.07	7.43	27.50	19.88	20.99	19.56	4.41
5/5/14	6.27	134.75	8.03	17.03	95.34	12.16	17.89	8.28	11.69	4.78	69.71	7.94	74.46	19.49	13.59	7.23	26.81	18.91	20.48	19.47	4.38
5/12/14	6.49	136.39	8.08	18.16	108.56	11.79	18.13	8.54	12.11	4.97	71.53	8.55	78.79	19.86	14.54	7.82	27.31	18.62	20.76	19.56	4.55
5/19/14	6.72	135.62	8.71	18.88	110.85	11.35	19.18	8.75	12.40	5.07	72.28	9.02	78.94	19.44	14.57	7.50	27.74	19.01	20.80	19.95	4.68
5/26/14	6.66	139.38	8.62	19.07	109.06	11.39	19.04	8.75	12.11	5.13	72.49	9.13	79.37	19.67	14.92	7.04	28.58	18.50	21.54	20.77	4.73
6/2/14	6.77	139.96	8.42	18.28	107.96	11.14	19.55	8.86	12.27	5.13	72.20	9.03	77.63	20.04	14.57	6.97	28.67	18.20	21.36	21.07	4.76
6/9/14	7.05	141.32	8.53	19.04	115.84	11.75	20.07	8.97	12.93	5.29	72.44	9.42	77.73	20.50	14.42	7.31	29.41	17.44	21.74	21.17	4.90
6/16/14	7.10	139.58	8.53	18.65	115.54	11.73	20.28	9.18	13.11	5.27	72.49	9.72	77.06	20.78	13.70	7.68	29.34	17.29	21.65	20.77	4.86
6/23/14	7.04	139.00	8.68	17.87	118.14	11.67	21.34	9.22	12.93	5.26	72.25	9.85	78.46	20.69	13.53	7.92	29.02	17.86	21.27	20.18	4.87
6/30/14	6.95	144.41	9.76	19.46	124.82	11.79	21.20	9.28	12.76	5.36	72.73	10.03	79.81	21.06	14.76	8.03	29.46	17.27	21.98	20.68	5.01
7/7/14	6.82	147.30	9.50	19.31	121.33	12.06	21.24	9.37	12.48	5.28	73.20	10.45	79.95	20.87	14.83	8.06	28.59	17.59	22.07	20.58	4.96
7/14/14	6.94	148.75	9.57	19.84	122.63	12.57	21.48	9.63	12.57	5.30	77.98	10.65	80.34	20.09	14.93	8.05	28.47	18.65	22.21	20.28	4.99
7/21/14	7.23	157.83	9.69	21.37	124.62	12.73	21.73	10.23	13.08	5.53	80.32	10.47	80.34	21.54	16.58	8.67	31.26	18.52	22.68	21.86	5.23
7/28/14	7.15	165.17	9.74	22.28	127.91	13.10	21.05	9.59	12.85	5.62	81.52	10.32	80.72	22.46	17.56	8.92	31.84	18.72	22.96	22.75	5.62
8/4/14	7.14	170.68	9.72	21.57	129.51	12.36	21.82	9.68	13.21	5.49	81.71	10.68	80.43	22.12	16.39	8.78	31.23	18.47	23.06	22.26	5.49
8/11/14	7.22	176.86	9.44	21.90	130.01	12.69	21.68	10.16	13.71	5.61	89.26	11.19	82.36	22.60	16.64	9.09	32.13	18.96	23.48	22.70	5.56
8/18/14	7.31	179.22	9.33	22.14	130.41	13.06	22.98	10.29	14.10	5.60	90.79	11.42	81.25	22.41	18.32	9.14	31.94	18.55	24.42	22.56	5.51
8/25/14	7.45	173.76	8.98	21.08	126.22	13.57	22.64	10.40	14.53	5.47	92.13	11.46	79.76	21.54	17.27	9.18	30.65	17.66	24.52	22.01	5.41
9/1/14	7.71	177.27	9.12	21.85	128.01	13.67	23.61	10.86	14.42	5.65	97.23	11.92	79.18	22.60	18.20	9.38	32.13	18.20	24.80	23.30	5.56
9/8/14	7.48	174.83	8.97	21.18	122.63	13.63	23.42	10.16	13.56	5.49	96.36	11.85	78.65	21.78	17.50	8.71	31.34	17.91	24.65	22.85	5.44
9/15/14	6.78	174.15	8.77	20.40	124.92	12.41	22.19	10.14	13.37	5.42	93.54	11.69	77.53	21.59	16.84	8.56	30.41	17.25	24.70	22.36	5.56
9/22/14	6.73	171.02	8.55	20.02	116.24	11.94	22.04	9.95	13.16	5.35	89.95	11.46	75.34	20.96	16.27	8.13	29.23	16.36	24.70	21.76	5.43
9/29/14	6.43	165.76	8.39	20.50	115.74	11.35	20.64	9.64	12.46	5.19	90.10	11.32	75.19	21.06	16.44	8.08	28.91	15.70	23.74	21.42	5.22

Date	SC	HKEX	LF	CO	TC	CU	CRP	PC	CNO	CCB	CM	LEN	HGI	CS	CRL	BI	PA	MND	BOC	CL	BC
10/6/14	6.41	165.76	8.48	20.36	115.44	11.27	19.62	9.33	12.25	5.22	89.61	10.92	75.10	20.82	17.04	8.27	28.86	16.29	23.59	21.32	5.19
10/13/14	6.30	169.46	8.60	20.36	112.45	11.22	20.10	9.04	11.82	5.23	89.23	10.47	77.53	20.05	17.36	7.95	28.86	15.92	24.12	21.17	5.25
10/20/14	6.37	170.15	8.85	20.65	119.23	10.86	20.20	9.23	11.80	5.31	87.33	10.86	77.14	20.24	17.30	7.93	29.18	15.72	24.17	21.62	5.37
10/27/14	6.46	167.71	8.94	21.76	123.32	11.45	21.85	9.36	11.55	5.49	93.64	11.05	79.73	21.06	18.04	9.15	31.07	16.83	24.79	22.95	5.56
11/3/14	6.18	171.32	8.48	21.13	122.83	11.18	20.25	8.85	11.17	5.37	93.64	9.93	77.78	20.43	17.63	9.03	30.16	15.45	24.41	22.51	5.50
11/10/14	6.12	181.85	8.82	20.74	131.61	11.10	20.93	8.37	11.00	5.49	93.79	10.49	80.65	20.19	16.93	9.12	29.82	15.03	26.38	22.85	5.70
11/17/14	6.07	163.02	8.26	19.73	123.92	11.18	19.76	8.39	11.27	5.32	92.04	10.26	80.56	19.61	17.00	8.76	28.81	15.33	25.75	22.75	5.44
11/24/14	6.11	164.78	8.15	22.53	123.72	11.59	21.90	8.11	10.76	5.59	92.72	10.59	81.97	21.25	19.18	8.33	31.90	15.45	26.33	26.66	6.15
12/1/14	6.34	173.66	7.85	22.92	118.63	10.96	20.44	8.33	10.22	5.86	92.23	10.34	79.78	22.60	19.43	8.27	35.80	14.86	26.33	27.65	6.67
12/8/14	5.80	170.83	7.46	22.24	113.45	10.43	19.72	7.80	9.54	5.70	87.96	10.32	77.24	21.73	19.47	7.78	36.29	14.86	24.98	26.46	6.39
12/15/14	5.86	166.54	6.90	20.74	115.44	10.31	19.52	8.08	9.60	5.81	87.58	9.89	77.53	21.44	18.47	8.04	36.49	14.20	23.98	27.50	6.50
12/22/14	6.00	167.12	6.81	20.74	112.45	10.25	19.24	8.32	10.02	5.86	88.74	9.87	77.78	22.21	19.10	8.15	36.17	15.38	24.79	27.75	6.66
12/29/14	6.04	168.78	6.76	24.17	112.55	10.43	19.30	8.38	10.07	6.18	88.69	9.95	78.70	22.31	21.43	8.46	40.76	15.75	25.03	31.06	7.02
1/5/15	5.97	172.68	6.93	23.69	126.92	11.00	19.26	8.49	10.07	6.13	92.23	10.47	78.02	22.02	21.57	8.47	40.78	16.36	25.18	30.12	6.48
1/12/15	5.95	173.07	6.83	23.74	121.63	11.33	19.72	8.41	9.88	6.06	94.95	10.08	78.80	21.11	20.25	8.61	43.31	16.97	25.42	31.41	6.61
1/19/15	6.09	174.93	7.02	23.74	132.40	11.82	20.44	8.60	10.13	6.17	101.40	10.26	83.24	20.82	20.79	8.67	42.74	17.00	25.71	32.10	6.60
1/26/15	5.90	174.24	7.27	21.71	131.71	11.51	21.22	8.09	9.66	5.92	99.46	9.77	89.97	20.48	19.45	8.32	40.51	17.37	26.19	30.27	6.23
2/2/15	5.90	173.37	7.05	22.19	133.90	12.55	19.11	8.26	10.41	5.99	102.76	11.19	88.65	19.81	19.91	8.18	40.17	17.86	26.14	30.42	6.15
2/9/15	5.91	172.00	6.92	22.77	129.91	12.87	19.30	8.28	10.38	6.09	104.02	11.80	87.43	20.24	19.91	8.20	41.93	18.01	26.23	31.66	6.24
2/16/15	6.27	172.78	7.37	22.72	129.61	12.91	19.47	8.66	10.79	6.12	103.73	11.56	87.72	19.47	19.76	8.13	42.13	17.83	26.14	32.05	6.31
2/23/15	6.25	174.63	7.50	22.87	135.60	12.83	19.91	8.68	10.57	6.13	102.28	11.64	86.75	19.56	20.15	7.94	42.30	17.20	26.28	32.89	6.40
3/2/15	5.96	171.80	7.48	22.05	131.41	11.94	19.05	8.11	10.38	5.88	98.30	11.91	85.24	18.48	19.12	7.69	40.41	17.74	25.37	30.67	5.99
3/9/15	5.91	170.83	7.51	21.08	133.30	11.45	17.65	7.94	9.81	6.01	96.94	10.65	82.21	18.70	18.90	8.06	41.03	17.61	25.37	30.91	6.23
3/16/15	5.96	172.58	7.02	21.47	142.28	11.57	18.54	8.07	10.00	6.16	95.44	10.57	84.46	19.32	19.91	8.31	45.17	17.81	25.90	32.55	6.39
3/23/15	5.80	174.44	7.02	24.13	141.58	11.31	18.80	8.04	9.96	5.99	96.99	10.78	88.11	18.14	21.43	8.29	45.75	18.92	27.10	31.95	6.10
3/30/15	5.99	191.22	7.18	25.29	149.47	12.67	19.47	8.43	10.60	6.23	99.75	10.90	92.41	19.61	22.06	8.65	46.78	19.70	27.00	34.58	6.46
4/6/15	6.43	242.93	7.40	28.33	161.44	13.42	20.44	9.59	11.48	6.75	107.32	12.54	97.62	20.91	24.26	10.44	49.89	21.30	27.82	39.57	7.07
4/13/15	6.74	276.68	7.59	28.96	158.45	13.44	19.86	10.24	12.63	7.23	104.51	12.87	94.60	20.05	24.12	10.16	53.62	20.19	28.68	38.24	7.49
4/20/15	6.85	288.78	7.46	29.74	161.24	14.54	22.57	9.61	12.44	7.23	111.69	12.73	93.53	19.42	25.19	10.03	54.56	21.08	29.98	37.25	7.51
4/27/15	6.98	289.36	7.48	31.38	160.54	14.30	22.72	9.60	12.46	7.17	107.42	13.04	93.43	19.42	27.64	9.43	55.33	19.28	28.97	37.35	7.62
5/4/15	6.79	278.90	7.13	28.43	153.66	14.02	21.80	9.23	12.03	7.01	104.99	12.95	95.92	18.64	26.07	8.90	54.50	20.22	28.64	37.20	7.28
5/11/15	6.66	284.60	6.94	28.57	162.30	14.12	21.65	9.21	11.93	7.07	105.77	13.12	94.41	18.54	24.46	9.59	54.96	20.36	29.40	36.60	7.32
5/18/15	6.74	288.53	6.92	28.48	158.80	13.64	21.70	9.19	12.03	7.33	102.66	12.56	93.33	18.89	24.75	10.56	56.54	20.93	31.86	38.14	7.52
5/25/15	6.57	293.25	6.54	27.17	155.70	13.08	20.88	8.86	11.49	7.40	99.07	11.97	87.95	18.37	24.56	9.37	59.30	21.74	30.65	36.85	7.38
6/1/15	6.30	286.96	6.04	27.46	154.70	13.18	21.46	8.68	11.41	7.40	100.60	11.68	89.28	19.10	24.56	10.08	56.82	21.13	30.99	35.60	7.80
6/8/15	6.36	291.48	6.37	27.66	157.20	12.92	21.60	8.70	11.41	7.37	100.01	11.12	90.57	19.14	25.22	9.63	56.16	20.65	31.04	36.30	8.26
6/15/15	6.45	278.31	6.39	26.88	154.20	12.02	20.45	8.42	10.73	7.16	97.89	11.02	90.81	17.90	24.58	8.67	54.94	20.85	31.45	33.40	7.73
6/22/15	6.54	279.29	6.07	27.28	159.90	12.06	21.30	8.52	10.83	7.09	98.14	10.65	92.79	17.66	24.78	8.66	54.88	19.58	31.65	33.20	7.91
6/29/15	6.47	255.31	6.00	26.44	155.10	11.96	20.95	8.57	10.73	7.05	98.28	9.99	88.00	17.18	23.73	8.51	50.98	18.53	31.35	32.25	7.87
7/6/15	6.11	235.07	5.75	25.37	148.90	11.22	19.94	7.98	9.87	6.52	94.25	9.69	84.74	15.70	21.99	7.90	45.92	18.68	29.94	31.45	7.33
7/13/15	6.05	230.55	5.96	26.20	153.60	11.10	20.60	7.91	9.89	6.54	95.92	9.51	88.00	15.72	22.79	8.28	47.91	19.10	31.31	31.50	7.24
7/20/15	5.92	216.20	6.00	25.90	151.50	11.22	20.55	7.75	9.54	6.46	98.53	9.11	87.06	15.22	23.04	7.98	48.53	19.03	31.21	30.75	7.12
7/27/15	5.78	206.57	5.84	23.95	144.70	10.94	19.94	7.60	9.36	6.33	99.81	8.35	85.53	14.76	21.64	7.86	44.33	17.53	30.57	28.55	6.82
8/3/15	5.73	208.53	5.35	23.70	142.10	10.68	20.15	7.21	9.37	6.41	99.22	8.19	83.36	14.96	21.10	7.72	43.78	16.70	30.87	28.65	6.97
8/10/15	5.70	204.21	5.53	23.02	143.40	10.42	19.26	7.19	9.60	6.22	97.79	7.20	82.08	15.30	20.30	7.61	42.99	16.73	28.76	28.75	6.66
8/17/15	5.20	188.59	5.47	22.09	131.40	10.88	18.96	6.55	8.59	5.80	98.43	6.73	79.61	13.88	18.37	6.82	38.56	15.53	26.41	25.65	6.17
8/24/15	5.09	183.90	5.02	22.67	130.70	10.34	18.90	6.41	9.00	5.37	90.27	6.68	75.07	13.58	19.32	6.84	37.37	14.35	25.88	27.05	5.64
8/31/15	4.73	175.90	4.82	21.69	127.40	9.86	17.84	5.74	8.57	5.14	89.98	6.28	73.19	12.46	18.19	7.04	35.43	12.88	23.48	25.20	5.23
9/7/15	5.06	186.30	4.96	22.23	127.40	10.34	19.56	5.75	8.57	5.41	91.55	6.54	74.03	12.68	19.01	7.25	38.10	6.65	23.77	26.20	5.54
9/14/15	5.25	187.50	5.10	23.57	135.30	10.20	18.98	5.86	8.68	5.58	92.15	7.15	74.10	12.76	18.87	6.53	40.40	6.95	24.15	28.85	5.69
9/21/15	4.83	181.60	5.66	23.27	131.00	9.83	17.90	5.55	8.06	5.24	94.40	6.51	74.65	12.12	18.47	6.76	39.00	6.83	22.95	27.10	5.39
9/28/15	4.86	184.40	5.82	24.70	135.50	10.02	18.66	5.54	8.18	5.27	94.30	6.64	77.90	12.20	19.74	6.62	40.20	7.25	23.35	27.70	5.47
10/5/15	5.45	193.80	6.14	24.66	141.90	9.82	19.10	6.30	9.27	5.66	91.60	6.97	78.70	13.90	20.80	6.99	42.30	7.50	25.55	29.35	5.78
10/12/15	5.72	206.40	6.06	25.90	146.60	10.56	19.20	6.50	9.21	5.75	94.20	7.40	81.85	14.40	21.50	6.94	43.25	14.56	26.00	29.95	5.93
10/19/15	5.77	205.40	6.18	25.85	149.20	9.84	19.46	6.32	8.93	5.85	93.35	7.01	81.60	13.76	21.35	6.92	43.80	15.22	26.05	30.65	6.03
10/26/15	5.55	203.80	6.30	25.20	146.60	9.57	17.62	6.06	8.69	5.63	92.80	7.19	83.95	13.12	20.25	7.35	43.65	15.06	24.90	28.05	5.74
11/2/15	5.53	212.40	6.16	26.60	154.50	10.12	16.74	6.05	8.98	5.63	93.30	7.50	82.85	13.10	22.05	7.33	45.60	13.74	25.15	29.15	5.71
11/9/15	5.11	210.40	5.58	25.60	152.20	9.99	15.92	5.69	8.32	5.44	90.55	8.22	80.95	12.44	20.75	7.11	44.50	13.64	24.90	28.20	5.59
11/16/15	5.07	210.80	5.77	26.55	155.10	10.06	15.58	5.63	8.55	5.59	91.75	8.48	79.10	12.98	22.05	7.19	44.75	13.48	24.50	28.55	5.64
11/23/15	4.76	203.80	5.33	25.45	153.20	9.67	14.58	5.54	8.51	5.36	88.80	8.13	77.95	12.14	20.85	6.83	43.30	12.54	24.15	27.30	5.48
11/30/15	4.81	206.00	5.28	27.55	151.00	9.42	15.22	5.54	9.04	5.33	90.30	8.43	78.60	12.72	22.60	6.89	43.80	12.96	24.00	26.10	5.42
12/7/15	4.41	194.20	5.01	25.75	147.60	9.13	14.18	5.08	7.94	5.16	89.60	8.08	75.90	11.70	21.15	6.06	40.95	12.78	23.25	24.40	5.32
12/14/15	4.62	198.90	5.01	26.40	151.30	9.60	14.70	5.09	7.85	5.29	88.10	7.93	72.65	11.42	22.15	5.71	42.70	12.78	23.65	25.45	5.39
12/21/15	4.95	203.20	5.17	26.70	151.80	9.57	15.30	5.38	8.41	5.43	88.55	8.13	72.85	12.50	22.00	5.88	44.20	12.72	24.00	25.95	5.61
12/28/15	4.68	198.50	5.27	27.20	152.50	9.45	15.08	5.08	8.07	5.31	87.50	7.87	73.20	12.18	22.60	5.82	43.00	12.64	23.70	25.05	5.46