How does Implied Volatility Affect Option Price

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Abstract

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The paper seeks to explain and analyze the reaction of index option price to implied volatility in the Canada option market and to test the market efficiency based on the data between January 2011 and June 2011. The objective is to determine whether the implied volatility can affect the option price and how sensitive the option price reflects implied volatility. According to the output, the influence of previous implied volatility on call option price and put option price is different. For call option, the implied volatility of one day ago is statistically significant with the call price. For put option, the implied volatility of two days ago shows a statistically significant with put price. For both call price and put price, the influence of implied volatility is becoming weaker and weaker since the time pass.

Contents

Chapter One

Introduction

1.1 Purpose of this Study

The purpose of the paper is to find the relationship between implied volatility and option price in the Canada index option market to give a reasonable conclusion of that how sensitive the option price reflects implied volatility.

1.2 Options

An option is a derivative financial instrument that specifies a contract between two parties for a future transaction on an asset at the strike price. The greatest charm of these financial derivatives is that the investors associated with limited loss. From its essence, the options provide investors with the rights to sell or buy the underlying assets, such as stock index. In options trading, one party is the buyer, who is in a long position. The other party is the seller, who is in a short position.

The world's largest options exchange, the Chicago Board Options Exchange (CBOE), was established by the Chicago Board of Trade (CBOT) members on April 26, 1973. Before this, the options in the United States were traded by only a few inter-dealers in over-the-counter (OTC) trading. The CBOE established the options trading market and introduced standardized contracts; these led to a revolutionary change in options trading. This is a new stage for the Chicago Board Options

Exchange.

Since then, the options trading among investors became increasingly popular. In 1975, the option trading took place in the American Stock Exchange (AMEX) and Philadelphia Stock Exchange (PHLX). In early 1980s, with the increasing scale of options trading, the total trading volume of daily underlying stock options in Pacific Stock Exchange (PSE) is more than that of the New York Stock Exchange. In the 1980s, the American options were extended to foreign exchange options, stock index options, futures options. The Philadelphia Options Exchange is principally engaged in foreign exchange options trading as well. In addition, the American Stock Exchange is the Major Market of Stock Index Options; S&P 100 index options and S&P 500 stock index options are traded in the Chicago Board Options Exchange. Also, the NYSE index options are traded in the New York Stock Exchange.

There are two types of option. A call option gives the holder the right to buy the underlying asset by a certain date for a certain price. A put option gives the holder the right to sell the underlying asset by a certain date for a certain price. The price in the contract is known as the exercise price or strike price; the date in the contract is known as the expiration date or maturity. An American option allows option holders to exercise a option at any time prior to or at its maturity date. An European option can be exercised only on the expiration date itself. My research projects only focus on European options. There are five main factors that affect the price of an option: Stock

Price (S), the option expiration time (T-t), risk free interest rates (r), the strike price (x), and volatility of returns(б). For a particular option, given the existing market price of an option Call or Put, the stock price, the exercise price, the residual maturity, and the risk free rate of return, we can calculate implied volatility using the Black–Scholes model.

1.3 Volatility

The volatility is a very important variable. In generally, volatility is divided into two types**,** historical volatility and implied volatility. The historical volatility uses historical information to predict future volatility, such as the ARCH model that is most commonly used in the financial world, and the Stochastic Volatility model (SV model) that became popular in recent years. The other method is to use the implied volatility that derives from the market forecast of future volatility based on option prices.

Historical statistical volatility is a measure of how much the stock price fluctuated during a given time period. While historical volatility can be the indication of future volatility, it can also differ greatly from future volatility, depending on what was driving the price changes during the past period. Using historical volatility has some drawbacks: Firstly, the volatility does change over time and the data are too old to predict the future volatility. Secondly, the historical volatility method requires that history must repeat itself in the future, that is, the rule must be found based on

historical information.

Implied volatility is the volatility of the price of the underlying security that is implied by the market price of the option based on an option pricing model. Therefore, implied volatility is different from historical volatility. Implied volatility represents expectations about future fluctuations while historical volatility is observed by looking at past data. Moreover, implied volatility deduced from option prices (both call and put) on an underlying security, because these expectations are reflected in market prices of the option. Higher fluctuation expectations mean that the option has a greater probability of ending in the money, and thus the option commands a higher price and vice versa.

1.4 Options on Stock Indices

Several exchanges trade options on stock indices. Some of the indices track the movement of the market as a whole. Others are based on the performance of a particular sector, such as computer technology, transportation, oil and gas, and telecoms. Among the index options traded on the Chicago Board of Options Exchange are American and European option on the S&P 100, European options on the S&P 500 (SPX), European options on the Dow Jones Industrial Average (DJX), and European options on the NASDAQ 100 (NDX).

The fact that the implied volatility is "implied" and cannot be observed, which

increases the difficulty for investors to trade options. Therefore, the CBOE publishes indices of implied volatility. The most popular index, the VIX, is an index of the implied volatility of 30-day options on the S&P 500 calculated from a wide range of calls and puts. The other index that published by CBOE is VXN index. The VXN is an index of the volatility of the NASDAQ 100 index and the VXD is an index of the volatility of the Dow Jones Industrial Average. Trading in futures on the VIX started in 2004 and trading in options on the VIX stared in 2006. A trade involving futures or options on the S&P 500 is a bet on both the future level of the S&P 500 and the volatility of the S&P 500. By contrast, a futures or options contract on the VIX is a bet only on volatility.

1.5 Organization of the Study

Chapter 2 will present a literature review and provide research and analysis by previous studies. Chapter 3 will describe the model used to test the relationship between the option price and implied volatility, and present more details on data selection. Chapter 4 will analyze and explain the result. Finally, the conclusions will be in Chapter 5.

Chapter Two

Literature review

2.1 Black-Scholes Model

Although a lot of option pricing models have been established, it is still difficult to estimate the influence of volatility. It is meaningful for us to do research on the influence of volatility.

Black and Scholes (1973) derived the option pricing formula, known as the Black - Scholes model. The Black–Scholes model is a mathematical model of a financial market containing certain derivative investment instruments. Option prices relies on the volatility in the stock price, the risk-free interest rate, options expiration, strike price, and stock current price.

Black - Scholes pricing model, the following formula for the European call option pricing model with no dividend:

$$C(S,t) = N(d_1)\ S - N(d_2)\ Ke^{-r(T-t)}$$

$$d_1 = \frac{\ln(\frac{S}{K}) + (r + \frac{\sigma^2}{2})(T-t)}{\sigma\sqrt{T-t}}$$

$$d_2 = \frac{\ln(\frac{S}{K}) + (r - \frac{\sigma^2}{2})(T-t)}{\sigma\sqrt{T-t}} = d_1 - \sigma\sqrt{T-t}.$$

N (d) presents the cumulative normal distribution

S: spot price of stock

K: option exercise price

T-t: time to maturity

б: underling asset volatility

r: risk free rate

The price of a corresponding put option based on put-call parity is:

$$P(S,t) = Ke^{-r(T-t)} - S + C(S,t)$$
$$= N(-d_2)\ Ke^{-r(T-t)} - N(-d_1)\ S.$$

B-S model has seven important assumptions:

a) The stock price follows the lognormal distribution mode;

b) Options within the expiration date, the risk-free interest rates and financial return on assets variable is a constant;

c) The market without friction, no taxes and transaction costs, all securities can be completely split;

d) There is no dividend and other income within the expiration date;

e) The options are European options that can't be exercised before the option expires;

f) There is no risk-free arbitrage opportunity;

g) Investors can borrow or lend at the risk free rate.

American scholar Galai (1977) used data of listed stock in CBOE to test the Black–Scholes model. Manaster and Chiras (1978), using data that the options with

no more than two months expiration, demonstrated the implied volatility were different for different options of the same stock.

Breeden and Litzenberger (1978) implement the time-state preference model in a multi-period economy, deriving the prices of primitive securities from the prices of call options on aggregate consumption. An intertemporal capital asset pricing model is derived for payoffs that are jointly log normally distributed with aggregate consumption. It is shown that using the Black-Scholes equation for options on aggregate consumption implies that individuals' preferences aggregate to isoelastic utility.

2.2 Implied Volatility Analysis

Since Black and Scholes (1973) published the option pricing formula (BS model), a lot of research paper have studied on the implied volatility. Engle (1982) advanced the ARCH model and Bollerslow (1986) compared the implied volatility and GARCH model volatility. Because option prices reflect the investors expectation of the future price of underlying asset, it is widely considered that the implied volatility is better than historical volatility on forecasting the future price of underlying asset. If the options market is efficient and the BS formula is correct, we can regard implied volatility as an effective indicator of future volatility on options.

Implied volatility is widely believed to be informational superior to historical

volatility, because it is the markets' forecast of future volatility. But for S&P 100 index options, the most actively traded contract in the United States, Canina and Figlewski (1993) found that implied volatility to be a poor forecast of subsequent realized volatility. In aggregate and across subsamples separated by maturity and strike price, implied volatility has virtually no correlation with future volatility, and it does not incorporate the information contained in recent observed volatility.

Day and Lewis (1992) examine how well implied volatility forecasts future stock market volatility. If markets are efficient and the option pricing model is correct, the implied volatility calculated from option prices should be an unbiased and efficient predictor of future volatility; that is, it should correctly impound all available information, including the asset's price history. However, numerous studies have found that the implied volatility forecast is biased or is not efficient. Day and Lewis (1992) re-examine those issue using S&P500 futures options data, and found that implied volatility has strong predictive power and generally subsumes the information in historical volatility, and the efficiency results are quite sensitive to the forecasting horizon.

Previous studies of low-frequency (daily or weekly) index returns and implied volatilities have produced conflicting conclusions about the informational efficiency of the S&P 100 options market. Blair (2001) and Szakmary (2003) found that in the in-sample analysis of low-frequency data using ARCH models exists no evidence for

incremental information in daily index returns beyond that provided by the VIX index of implied volatilities. This conclusion is in agreement with the evidence of Christensen and Prabhala (1998) and Fleming (1998). Ederington and Guan (2002) pointed out that the accuracy of prediction based on the implied volatility is very sensitive to the length of forecasting date. And the influence of forecasting error on implied volatility is not clearly.

In study of Martens and Zein (2004), both the measurement and the forecasting of financial volatility are improved using high-frequency data and long memory modeling, the latest proposed method to model volatility. From their study, the results for the S&P 500, YEN/USD, and Light, Sweet Crude Oil provide a robust indication that volatility forecasts based on historical intraday returns do provide good volatility forecasts that can compete with and even outperform implied volatility.

In options markets where there is a significant or persistent volatility smile, implied tree models can ensure the consistency of exotic options prices with the market prices of liquid standard options. Kani and Chriss (1996) show how to build implied trinomial tree models of the volatility smile. Trinomial trees have inherently more parameters than binomial trees. They use these additional parameters to conveniently choose the “state space” of all node prices in the trinomial tree, and let only the transition probabilities be constrained by market options prices.

Based on research of Kani and Chriss (1996), Britten and Neuberger (2000) characterize all continuous price processes that are consistent with current option prices. Their characterization implies a volatility forecast that does not require a specific model, only current option prices. Also, Britten and Neuberger (2000) show how arbitrary volatility processes can be adjusted to fit current option prices exactly, just as interest rate processes can be adjusted to fit bond prices exactly. The procedure works with many volatility models, and can price exotic options efficiently using familiar lattice techniques.

Jiang and Tian's (2005) implement an estimation of the model-free implied volatility derived by Britten and Neuberger (2000) and investigate its information content in the S&P 500 index options. They illustrated that the model-free implied volatility is an efficient forecast for future realized volatility and subsumes all information contained in the Black-Scholes implied volatility and past realized volatility. Also, Jiang and Tian's (2005) found that the model-free implied volatility, under the log specification, is an unbiased forecast for future realized volatility after a constant adjustment.

Chapter Three

Methodology

The paper is going to find how the implied volatility affect option price, whether the previous implied volatility will influence the option price, and how sensitive the S&P/TSX 60 index options price to implied volatility.

3.1 The model

The following formulas represent the regression model.

$$\mathbf{C_t=\alpha_c+\beta_{c,1}\sigma_{t-1}+\beta_{c,2}\sigma_{t-2}+\beta_{c,3}\sigma_{t-3}+\beta_{c,4}\sigma_{t-4}+e_c}$$ (Equation 3.1)

$$\mathbf{P_t=\alpha_p+\beta_{p,1}\sigma_{t-1}+\beta_{p,2}\sigma_{t-2}+\beta_{p,3}\sigma_{t-3}+\beta_{p,4}\sigma_{t-4}+e_p}$$ (Equation 3.2)

where:

σ_{t-1}= implied volatility in period t-1

σ_{t-2}= implied volatility in period t-2

σ_{t-3}=implied volatility in period t-3

σ_{t-4}=implied volatility in period t-4

C_t= call price of underling asset in period t

α_c = intercept of the equation for call price

$\beta_{c,n}$= slope of the equation for call (n=1,2,3)

e_c= error term

P_t= put price of underling asset in period t

α_p = intercept of the equation for put price

$\beta_{p,n}$= slope of the equation for put (n=1,2,3)

e_p= error term

STATA program can be used to do the regression of Equation 3.1 and Equation 3.2.

To do the simple linear regression, we have four assumptions as following:

The expected value of the random error e is

$$E(e)=0$$

The variance of the random error e is

$$var(e)=\sigma^2=var(y)$$

The covariance between any pair of random errors e_i and e_j is

$$cov(e_i, e_j)=0=cov(y_i, y_j)$$

The random errors e are statistically independent; the values of the dependent variables y are also statistically independent

The values of e are normally distributed about their mean

$$e \sim N(0, \sigma^2)$$

3.2 Hypothesis

T-test can be used. Null hypothesis is stated:

For Equation 3.1

H_0:$\beta_{c,n}$= 0, $\beta_{c,n}$ is insignificant (n=1,2,3)

That is, no linear relationship exists between σ and C_t.

H_1: $\beta_{c,n} \neq 0$, $\beta_{c,n}$ is significant (n=1,2,3)

This means that a relationship exists, but that there may be either a positive or negative association between variables.

For Equation 3.2

H_0:$\beta_{p,n}$= 0, $\beta_{p,n}$ is insignificant (n=1,2,3)

H_1: $\beta_{p,n} \neq 0$, $\beta_{p,n}$ is significant (n=1,2,3)

In this paper, 5% confidence level is used for all test.

If we do not reject null hypothesis, we can conclude that option price not effect by implied volatility. If we not to reject the null hypothesis, implied volatility affect the option price.

3.3 Data sources

This study randomly chooses a series of S&P/TSX 60 index options on the Montréal Exchange between January 2011 and June 2011, which can be found at the website: http://www.m-x.ca/nego_fin_jour_en.php. The reason for choosing the data is that the data are current and can meet the recent economic research and forecasting needs.

Chapter Four

Analysis of Results

4.1 Overview

This section is going to analyze and explain the results of the models, which derive from Chapter 3. I have collected these data and run them in STATA to get these results.

4.2 The results analysis of Equation 3.1

Equation 3.1is sufficient to derive a linear relationship between call price and implied volatility. Table 4.1 is the output of regression of the model equation, which is shown as follows:

Table 4.1

```
. reg Price l(1/4).ImpliedVolatility
```

Source	SS	df	MS		
Model	1572.94409	4	393.236021	Number of obs	= 858
Residual	9019.21987	853	10.5735286	F(4, 853)	= 37.19
				Prob > F	= 0.0000
Total	10592.164	857	12.3595845	R-squared	= 0.1485
				Adj R-squared	= 0.1445
				Root MSE	= 3.2517

Price	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ImpliedVola~y						
L1.	.1460269	.0620053	2.36	0.019	.0243262	.2677277
L2.	.0067587	.0523883	0.13	0.897	-.0960664	.1095838
L3.	-.069826	.0698089	-1.00	0.317	-.2068434	.0671914
L4.	.0295944	.0543874	0.54	0.586	-.0771544	.1363433
_cons	-.159029	.2745297	-0.58	0.563	-.6978619	.3798039

For the T-test, the null hypothesis is stated: $\beta_{c,n}=0$ (n=1, 2, 3). And the alternative hypothesis is stated: $\beta_{c,n}\neq 0$ (n=1, 2, 3). If P-value is more than 0.05 (P>0.05), we do not reject the null hypothesis. If P-value is less than 0.05 (P<0.05), we reject null hypothesis. In the table 4.1, only one p-value less than 0.05. Therefore, we reject the null hypothesis (H_0:$\beta_{c,1}=0$) and do not reject the null hypothesizes (H_0:$\beta_{c,2}=0$, H_0:$\beta_{c,3}=0$, H_0:$\beta_{c,4}=0$). We can make a conclusion that only the implied volatility in period t-1 is statistic significant correlation with call price.

From the output, it indicates that α_c is -0.159029, and $\beta_{c,1}$, which means the correlation between call price in period t and implied volatility in period t-1, is 0.1460269. The larger of the absolute value of $\beta_{c,1}$, the more sensitive the call price in period t to the implied volatility in period t-1.It means the high potential implied volatility, the higher call price will be.

The $\beta_{c,2}$, $\beta_{c,3}$, $\beta_{c,4}$ are the correlation between C_t and σ_{t-2}, σ_{t-3}, σ_{t-4} respectively. The value of these coefficient are 0.006758, -0.069826, and 0.0295944. These results show that call price has the highest affect by implied volatility that one day before the call price and the more close the time of call price the more influence of pervious implied volatility. It means that the previous implied volatility before two days had very low influence on the call price.

R-squared is a broad application in linear regression. It measures whether the

original data points match linear regression. In other words, an R-squared value is to measure how well the final line fits the original data points. The high R-squared value indicates the option price match the market model better, which means that the option follow the performance of market. In this paper, the results show R-squared is 0.1485. The value is relatively low. Thus, the movement of call price in the sample does not follow previous implied volatility very well. There is not enough evidence to illustrate that the call price following the market performance. We can't only use these factors to make a accurate prediction of call price.

4.3 The results analysis of Equation 3.2

Equation 3.2 is sufficient to derive a linear relationship between call price and implied volatility. Table 4.2 is the output of regression of the model equation, which is shown as follows:

Table 4.2

```
. reg Price l(1/4).ImpliedVolatility
```

Source	SS	df	MS
Model	119.949988	4	29.987497
Residual	1153.90122	661	1.7456902
Total	1273.85121	665	1.91556573

Number of obs	666
F(4, 661)	17.18
Prob > F	0.0000
R-squared	0.0942
Adj R-squared	0.0887
Root MSE	1.3212

Price	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ImpliedVolatility						
L1.	.1259776	.0338963	3.72	0.000	.0594202	.1925351
L2.	-.1225393	.0370108	-3.31	0.001	-.1952123	-.0498663
L3.	-.050471	.0529039	-0.95	0.340	-.1543511	.053409
L4.	.0181681	.0420809	0.43	0.666	-.0644602	.1007964
_cons	1.833556	.1410161	13.00	0.000	1.556663	2.11045

For the T-test, the null hypothesis is stated: $\beta_{p,n}=0$ (n=1, 2, 3). And the alternative hypothesis is stated: $\beta_{p,n}\neq 0$ (n=1, 2, 3). If P-value is more than 0.05 (P>0.05), we do not reject the null hypothesis. If P-value is less than 0.05 (P<0.05), we reject null hypothesis. In the table 4.2, the p-values of $\beta_{p,1}$ and $\beta_{p,2}$ are less than 0.05. Therefore, we can reject the null hypothesizes ($\beta_{p,1}=0$, $\beta_{p,2}=0$) and do not reject the null hypothesizes ($\beta_{p,3}=0$, $\beta_{p,4}=0$). We can make a conclusion that the implied volatility in period t-1 and in period t-2 are statistic significant correlation with put price.

From the output, it indicates that α_p is 1.833556, $\beta_{p,1}$ is 0.1259776 and $\beta_{p,2}$ is -0.1225393. The larger of the absolute value of $\beta_{p,1}$ and $\beta_{p,2}$, the more sensitive the call price in period t to the implied volatility in period t-1 and in period t-2. It means the high potential implied volatility, the greater change of put price will be. The $\beta_{p,3}$, $\beta_{p,4}$ are the correlation between p_t and σ_{t-3}, σ_{t-4} respectively. The value of these coefficient are -0.050471 and 0.0181681. These results show that put price has the highest affect by implied volatility in two days ago. It means that the previous implied volatility of more than three days ago had very low influence on the put price.

In the table 4.2, the result show R-squared is 0.0942. The value is relatively low. Thus, the movement of put price in the sample does not follow the market performance. we can't only use these factors to make a accurate prediction of put price.

Chapter Five

Conclusion

5.1 Conclusion

According to the output, the data chosen in the sample do not track the performance of the market. The influence of previous implied volatility on call option price and put option price is different. For call option, the implied volatility of one day ago has a positive correlation with call price, and is statistically significant with the call price. This is consistent with the economic sense, the higher implied volatility the higher call price. But the influence of implied volatility is becoming weaker and weaker since the time pass. The implied volatility of more than two days ago is not significant to the call price, and only the implied volatility in one day ago has influence on call price. For put option, the implied volatility of two days ago shows a significantly negative correlation with put price. This is consistent with the economic sense that in BS model, the higher volatility, the lower put price. However, based on the results, the implied volatility of one day ago has a positive correlation with put price. This is not consistent with the BS model's sense that implied volatility has negative correlation with put price.

5.2 Limitations and Recommendations

Several limitation could accompany in the study. Firstly, some periods may have abnormal data. These may caused by the problem of the process of data collection

Secondly, the study just analyzes six months of data, which makes the result is not well present the market. The sample is merely enough to meet the requirement to do the test. If I enlarge the sample the output will be more favorable.

For further research, I would like to provide several suggestions. First, it might be better to adopt a longer time horizon. Moreover, using log-linear functional forms to do the regression model will be better. Because the option prices change randomly, the relationship between implied volatility and option price is not simple linear relation.

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Appendix

T	Strike Price	Expiry Date	Call/Put	P	IV	HV
2012/4/19	44	2012/4/21	1	0.05	233.652	10.6
2012/4/19	46	2012/4/21	1	0.05	202.31	10.6
2012/3/15	46	2012/3/17	1	0.03	187.799	10.2
2012/3/15	48	2012/3/17	1	0.06	178.757	11.2
2012/4/18	44	2012/4/21	1	0.04	174.267	10.6
2012/4/19	48	2012/4/21	1	0.05	171.939	10.6
2012/4/18	46	2012/4/21	1	0.04	150.839	10.6
2012/4/17	44	2012/4/21	1	0.06	137.702	11.47
2012/4/18	44	2012/4/21	0	15.15	136.682	10.16
2012/3/14	46	2012/3/17	1	0.03	135.075	10.18
2012/4/18	48	2012/4/21	1	0.04	128.12	10.6
2012/3/14	48	2012/3/17	1	0.08	124.877	10.18
2012/4/16	44	2012/4/21	1	0.03	120.46	10.71
2012/4/17	46	2012/4/21	1	0.06	119.017	11.47
2012/4/18	46	2012/4/21	0	13.15	117.2	10.16
2012/4/17	44	2012/4/21	0	14.3	116.265	11.47
2012/4/16	44	2012/4/21	0	13.75	114.975	10.91
2012/3/13	46	2012/3/17	1	0.03	111.544	10.14
2012/3/13	48	2012/3/17	1	0.09	107.906	10.14
2012/4/16	46	2012/4/21	1	0.03	103.45	10.71
2012/4/12	44	2012/4/21	0	14.25	102.327	11.21
2012/4/17	48	2012/4/21	1	0.06	100.91	11.47
2012/4/17	46	2012/4/21	0	12.3	99.722	11.47
2012/4/13	44	2012/4/21	0	14.75	99.443	11.21
2012/4/16	46	2012/4/21	0	11.75	98.483	10.91
2012/4/18	48	2012/4/21	0	11.15	98.447	10.16
2012/3/12	46	2012/3/17	1	0.03	90.904	10.25
2012/3/12	48	2012/3/17	1	0.1	88.663	10.25
2012/4/12	46	2012/4/21	0	12.25	88.575	11.21
2012/4/10	44	2012/4/21	0	14.4	87.893	11.89
2012/4/16	48	2012/4/21	1	0.03	86.92	10.71
2012/4/13	46	2012/4/21	0	12.75	85.171	11.21
2012/4/17	48	2012/4/21	0	10.3	83.791	11.47
2012/4/16	48	2012/4/21	0	9.75	82.493	10.91
2012/3/12	46	2012/3/17	0	11.95	82.051	10.95
2012/4/13	44	2012/4/21	1	0.03	80.653	10.35
2012/4/18	50	2012/4/21	0	9.15	80.346	10.16
2012/4/12	44	2012/4/21	1	0.03	79.392	9.21
2012/4/9	44	2012/4/21	0	14.65	77.85	12.12
2012/4/2	44	2012/4/21	0	15.35	77.55	11.21

2012/3/9	46	2012/3/17	0	11.55	76.93	10.37
2012/4/10	46	2012/4/21	0	12.4	75.654	11.89
2012/4/12	48	2012/4/21	0	10.25	75.204	11.21
2012/3/8	46	2012/3/17	0	11.05	73.556	11.13
2012/4/11	44	2012/4/21	1	0.03	73.279	9.31
2012/4/3	44	2012/4/21	0	15.5	72.184	10.95
2012/4/13	48	2012/4/21	0	10.75	71.276	11.21
2012/4/2	46	2012/4/21	0	13.35	69.874	11.21
2012/3/9	46	2012/3/17	1	0.03	69.632	10.37
2012/3/27	44	2012/4/21	0	15.65	69.509	10.03
2012/3/29	44	2012/4/21	0	15.65	69.403	9.23
2012/3/9	48	2012/3/17	1	0.11	69.251	10.37
2012/4/10	44	2012/4/21	1	0.03	69.017	9.69
2012/4/13	46	2012/4/21	1	0.03	68.68	10.35
2012/4/17	50	2012/4/21	0	8.3	68.391	11.47
2012/4/12	46	2012/4/21	1	0.04	68.264	9.21
2012/3/30	44	2012/4/21	0	15.35	67.877	9.08
2012/3/12	48	2012/3/17	0	9.95	67.697	10.95
2012/3/26	44	2012/4/21	0	15.35	67.592	9.45
2012/4/9	46	2012/4/21	0	12.65	66.916	12.12
2012/4/16	50	2012/4/21	0	7.75	66.905	10.91
2012/3/28	44	2012/4/21	0	15.65	66.694	9.94
2012/4/5	44	2012/4/21	0	15	66.663	9.52
2012/4/9	44	2012/4/21	1	0.03	66.629	9.78
2012/3/16	44	2012/4/21	0	15	65.152	10.03
2012/4/11	46	2012/4/21	1	0.04	65.143	9.31
2012/3/9	48	2012/3/17	0	9.55	64.234	10.37
2012/3/8	48	2012/3/17	1	0.11	63.877	11.13
2012/4/10	48	2012/4/21	0	10.4	63.748	11.89
2012/3/8	46	2012/3/17	1	0.03	63.486	11.13
2012/3/23	44	2012/4/21	0	14.9	63.292	9.88
2012/3/20	44	2012/4/21	0	15.15	62.908	9.85
2012/4/18	52	2012/4/21	0	7.25	62.787	10.16
2012/4/3	46	2012/4/21	0	13.55	62.67	10.95
2012/3/22	44	2012/4/21	0	14.8	62.457	9.41
2012/3/21	44	2012/4/21	0	15	62.387	9.93
2012/4/12	50	2012/4/21	0	8.25	62.121	11.21
2012/4/26	46	2012/5/19	0	13.1	62.047	10.61
2012/3/19	44	2012/4/21	0	15.2	61.549	9.12
2012/4/10	46	2012/4/21	1	0.03	61.272	9.69
2012/3/8	48	2012/3/17	0	9.05	61.195	11.13
2012/3/6	48	2012/3/17	0	10.05	61.155	10.98
2012/3/27	46	2012/4/21	0	13.65	60.784	10.03
2012/3/29	46	2012/4/21	0	13.65	60.503	9.23

2012/4/2	48	2012/4/21	0	11.35	60.091	11.21
2012/4/12	48	2012/4/21	1	0.04	59.707	9.21
2012/3/26	46	2012/4/21	0	13.35	59.099	9.45
2012/3/30	46	2012/4/21	0	13.35	59.073	9.08
2012/4/25	46	2012/5/19	0	13.15	58.676	10.61
2012/3/28	46	2012/4/21	0	13.65	58.208	9.94
2012/4/24	46	2012/5/19	0	13.2	58.098	10.61
2012/3/7	48	2012/3/17	1	0.08	58.039	10.76
2012/3/7	46	2012/3/17	1	0.04	58.003	13.76
2012/4/5	44	2012/4/21	1	0.03	57.823	9.52
2012/3/5	46	2012/3/17	1	0.04	57.766	11.65
2012/4/13	50	2012/4/21	0	8.75	57.657	11.21
2012/4/20	46	2012/5/19	0	13.45	57.532	10.6
2012/3/6	46	2012/3/17	1	0.04	57.373	10.78
2012/4/5	46	2012/4/21	0	13	57.365	9.52
2012/3/13	44	2012/4/21	0	13.75	57.353	10.54
2012/4/4	44	2012/4/21	1	0.03	57.239	9.28
2012/4/9	46	2012/4/21	1	0.03	57.114	9.62
2012/3/5	48	2012/3/17	1	0.13	57.07	11.65
2012/4/13	48	2012/4/21	1	0.04	57.051	10.35
2012/3/16	46	2012/4/21	0	13	57.043	10.03
2012/3/15	44	2012/4/21	0	14.45	57.022	10.75
2012/3/5	44	2012/4/21	0	13.95	56.442	11.75
2012/4/9	48	2012/4/21	0	10.65	56.308	12.12
2012/3/22	46	2012/4/21	0	12.8	55.807	9.41
2012/4/3	44	2012/4/21	1	0.03	55.65	9.38
2012/3/14	44	2012/4/21	0	14.7	55.489	11.61
2012/3/23	46	2012/4/21	0	12.95	55.205	9.88
2012/3/9	44	2012/4/21	0	13.6	55.156	10.37
2012/3/19	46	2012/4/21	0	13.2	55.008	9.12
2012/4/10	50	2012/4/21	0	8.4	54.992	11.89
2012/4/2	44	2012/4/21	1	0.04	54.874	9.89
2012/3/20	46	2012/4/21	0	13.15	54.835	9.85
2012/4/27	46	2012/5/19	0	12.9	54.821	10.61
2012/4/19	46	2012/5/19	0	13.2	54.729	10.6
2012/4/11	48	2012/4/21	1	0.04	54.613	11.31
2012/3/12	44	2012/4/21	0	14	54.436	10.95
2012/3/21	46	2012/4/21	0	13	54.265	9.93
2012/3/5	50	2012/3/17	0	7.95	54.183	11.75
2012/3/8	44	2012/4/21	0	13.15	53.957	11.13
2012/3/12	50	2012/3/17	0	7.95	53.775	10.95
2012/4/17	52	2012/4/21	0	6.3	53.443	11.47
2012/3/6	44	2012/4/21	0	14.1	52.702	10.98
2012/3/6	48	2012/3/17	1	0.12	52.458	10.78

2012/3/27	48	2012/4/21	0	11.65	52.304	10.03
2012/3/30	44	2012/4/21	1	0.04	52.302	9.42
2012/4/23	46	2012/5/19	0	13.45	52.235	10.6
2012/3/29	48	2012/4/21	0	11.65	51.856	9.23
2012/3/9	50	2012/3/17	0	7.55	51.836	10.37
2012/4/17	54	2012/4/21	0	5.1	51.792	11.47
2012/4/16	52	2012/4/21	0	5.8	51.603	10.91
2012/4/10	48	2012/4/21	1	0.04	51.271	9.69
2012/3/29	44	2012/4/21	1	0.03	51.082	9.44
2012/3/26	48	2012/4/21	0	11.35	50.85	9.45
2012/3/30	48	2012/4/21	0	11.35	50.524	9.08
2012/4/2	50	2012/4/21	0	9.35	50.517	11.21
2012/4/3	48	2012/4/21	0	11.55	50.446	10.95
2012/3/7	44	2012/4/21	0	13.25	50.361	10.56
2012/3/28	48	2012/4/21	0	11.65	50.001	9.94
2012/4/5	46	2012/4/21	1	0.03	49.998	9.52
2012/4/9	48	2012/4/21	1	0.03	49.998	9.62
2012/3/13	46	2012/4/21	0	11.75	49.937	10.54
2012/4/4	46	2012/4/21	1	0.03	49.775	9.28
2012/3/15	46	2012/4/21	0	12.45	49.698	10.75
2012/3/28	44	2012/4/21	1	0.03	49.342	9.82
2012/4/12	52	2012/4/21	0	6.25	49.308	11.21
2012/3/8	50	2012/3/17	0	7.05	49.275	11.13
2012/3/16	48	2012/4/21	0	11	49.169	10.03
2012/3/5	46	2012/4/21	0	11.95	49.077	11.75
2012/3/26	44	2012/4/21	1	0.03	48.873	10.45
2012/4/5	48	2012/4/21	0	11	48.523	9.52
2012/4/3	46	2012/4/21	1	0.03	48.411	9.38
2012/3/14	46	2012/4/21	0	12.7	48.17	11.61
2012/3/27	44	2012/4/21	1	0.04	48.129	10.45
2012/4/2	46	2012/4/21	1	0.04	47.857	9.43
2012/3/22	48	2012/4/21	0	10.8	47.799	9.41
2012/4/18	54	2012/4/21	0	5.15	47.554	10.16
2012/3/23	48	2012/4/21	0	10.95	47.398	9.88
2012/4/13	52	2012/4/21	0	6.75	47.371	11.21
2012/3/19	48	2012/4/21	0	11.2	47.261	9.12
2012/3/20	48	2012/4/21	0	11.15	47.012	9.85
2012/3/21	48	2012/4/21	0	11	46.395	9.93
2012/3/6	46	2012/4/21	0	12.1	46.231	10.98
2012/4/9	50	2012/4/21	0	8.65	46.111	12.12
2012/4/11	46	2012/5/19	0	12.2	45.64	11.31
2012/3/30	46	2012/4/21	1	0.04	45.526	9.42
2012/4/3	50	2012/4/21	0	9.55	44.501	10.95
2012/3/29	46	2012/4/21	1	0.04	44.462	9.44

2012/3/28	46	2012/4/21	1	0.04	44.289	9.45
2012/3/27	50	2012/4/21	0	9.65	44.065	10.03
2012/3/23	44	2012/4/21	1	0.03	43.918	9.7
2012/3/29	50	2012/4/21	0	9.65	43.458	9.23
2012/4/27	46	2012/5/19	1	0.04	43.393	9.9
2012/4/4	46	2012/5/19	0	13.15	43.217	9.28
2012/3/27	46	2012/4/21	1	0.04	43.174	9.75
2012/4/26	46	2012/5/19	1	0.04	43.133	9.29
2012/4/10	52	2012/4/21	0	6.4	43.082	11.89
2012/4/25	46	2012/5/19	1	0.04	42.851	9.24
2012/3/26	50	2012/4/21	0	9.35	42.833	9.45
2012/3/13	48	2012/4/21	0	9.75	42.672	10.54
2012/3/21	44	2012/4/21	1	0.04	42.619	9.73
2012/3/15	48	2012/4/21	0	10.45	42.523	10.75
2012/3/26	46	2012/4/21	1	0.03	42.379	9.85
2012/3/20	44	2012/4/21	1	0.04	42.319	9.85
2012/3/7	46	2012/4/21	0	11.25	42.276	10.56
2012/3/30	50	2012/4/21	0	9.35	42.243	9.08
2012/3/22	44	2012/4/21	1	0.04	42.195	9.48
2012/4/5	48	2012/4/21	1	0.03	42.142	9.52
2012/4/4	48	2012/4/21	1	0.03	42.111	9.28
2012/4/24	46	2012/5/19	1	0.04	42.057	10.31
2012/3/19	44	2012/4/21	1	0.04	42.002	9.92
2012/3/28	50	2012/4/21	0	9.65	41.997	9.94
2012/3/5	48	2012/4/21	0	10	41.853	11.75
2012/4/23	46	2012/5/19	1	0.04	41.41	11.37
2012/3/16	50	2012/4/21	0	9	41.407	10.03
2012/3/13	44	2012/4/21	1	0.08	41.226	10.14
2012/4/2	52	2012/4/21	0	7.35	41.123	11.21
2012/3/14	48	2012/4/21	0	10.7	40.992	11.61
2012/3/12	52	2012/3/17	0	5.95	40.978	10.95
2012/4/3	48	2012/4/21	1	0.03	40.978	9.78
2012/4/2	48	2012/4/21	1	0.04	40.648	9.43
2012/3/16	44	2012/4/21	1	0.04	40.004	10.03
2012/4/19	46	2012/5/19	1	0.05	39.969	11.6
2012/3/22	50	2012/4/21	0	8.8	39.902	9.41
2012/3/9	52	2012/3/17	0	5.55	39.826	10.37
2012/4/5	50	2012/4/21	0	9	39.728	9.52
2012/3/23	50	2012/4/21	0	8.95	39.703	9.88
2012/3/19	50	2012/4/21	0	9.2	39.628	9.12
2012/4/20	46	2012/5/19	1	0.05	39.518	12.44
2012/3/15	44	2012/4/21	1	0.05	39.325	10.2
2012/3/20	50	2012/4/21	0	9.15	39.303	9.85
2012/3/9	44	2012/4/21	1	0.1	38.962	10.37

2012/4/17	46	2012/5/19	1	0.06	38.909	11.47
2012/3/14	44	2012/4/21	1	0.08	38.818	10.18
2012/4/18	46	2012/5/19	1	0.06	38.767	12.6
2012/3/12	44	2012/4/21	1	0.1	38.699	10.25
2012/3/30	48	2012/4/21	1	0.04	38.645	9.42
2012/3/21	50	2012/4/21	0	9	38.635	9.93
2012/3/23	46	2012/4/21	1	0.03	37.945	9.7
2012/3/5	44	2012/4/21	1	0.13	37.836	12.65
2012/3/29	48	2012/4/21	1	0.03	37.742	9.44
2012/3/8	44	2012/4/21	1	0.1	37.713	11.13
2012/3/6	44	2012/4/21	1	0.11	37.577	10.88
2012/3/8	52	2012/3/17	0	5.05	37.283	11.13
2012/3/6	52	2012/3/17	0	6.05	37.049	10.98
2012/4/16	54	2012/4/21	0	3.8	36.658	10.91
2012/3/15	50	2012/4/21	0	8.95	36.511	10.75
2012/4/27	48	2012/5/19	1	0.04	36.47	9.78
2012/3/20	46	2012/4/21	1	0.04	36.464	9.85
2012/3/28	48	2012/4/21	1	0.03	36.398	9.45
2012/4/26	48	2012/5/19	1	0.04	36.386	9.5
2012/4/12	54	2012/4/21	0	4.25	36.381	11.21
2012/4/16	46	2012/5/19	1	0.06	36.351	10.71
2012/3/7	44	2012/4/21	1	0.13	36.343	10.76
2012/3/22	46	2012/4/21	1	0.03	36.312	9.48
2012/4/25	48	2012/5/19	1	0.04	36.266	9.24
2012/3/19	46	2012/4/21	1	0.04	36.242	9.92
2012/3/13	46	2012/4/21	1	0.1	36.139	10.14
2012/3/26	52	2012/4/21	0	7.7	36.1	9.45
2012/3/26	48	2012/4/21	1	0.03	36.088	10.95
2012/4/9	52	2012/4/21	0	6.65	35.901	12.12
2012/3/27	52	2012/4/21	0	7.7	35.89	10.03
2012/4/24	48	2012/5/19	1	0.04	35.613	10.31
2012/4/3	52	2012/4/21	0	7.55	35.612	10.95
2012/3/28	52	2012/4/21	0	7.65	35.552	9.94
2012/3/13	50	2012/4/21	0	7.75	35.541	10.54
2012/3/27	48	2012/4/21	1	0.04	35.449	10.49
2012/3/7	48	2012/4/21	0	9.25	35.384	10.56
2012/3/21	46	2012/4/21	1	0.04	35.384	9.73
2012/3/29	52	2012/4/21	0	7.7	35.118	9.23
2012/4/23	48	2012/5/19	1	0.04	35.099	10.37
2012/4/12	46	2012/5/19	1	0.06	35.093	9.21
2012/3/14	50	2012/4/21	0	8.7	34.903	11.61
2012/3/16	46	2012/4/21	1	0.04	34.496	10.03
2012/3/23	52	2012/4/21	0	6.95	34.279	9.88
2012/3/12	46	2012/4/21	1	0.1	34.166	10.25

2012/3/30	52	2012/4/21	0	7.35	34.014	9.08
2012/4/19	48	2012/5/19	1	0.05	33.978	10.6
2012/4/5	52	2012/4/21	0	7.05	33.916	9.52
2012/3/15	46	2012/4/21	1	0.05	33.891	10.2
2012/4/11	46	2012/5/19	1	0.06	33.761	9.31
2012/3/16	52	2012/4/21	0	7	33.713	10.03
2012/4/11	52	2012/4/21	0	6.2	33.687	11.31
2012/4/20	48	2012/5/19	1	0.05	33.56	10.44
2012/4/13	46	2012/5/19	1	0.06	33.515	10.35
2012/3/9	46	2012/4/21	1	0.12	33.349	13.37
2012/3/14	46	2012/4/21	1	0.09	33.314	10.18
2012/3/5	46	2012/4/21	1	0.13	33.305	11.85
2012/4/13	54	2012/4/21	0	4.75	33.107	11.21
2012/3/8	46	2012/4/21	1	0.12	33.105	11.13
2012/4/9	46	2012/5/19	1	0.06	33.086	9.78
2012/3/6	50	2012/4/21	0	8.15	33.046	10.98
2012/4/10	46	2012/5/19	1	0.06	33.03	9.69
2012/4/17	48	2012/5/19	1	0.06	32.982	11.17
2012/3/23	46	2012/5/19	1	0.14	32.976	9.7
2012/4/18	48	2012/5/19	1	0.06	32.864	10.6
2012/4/10	54	2012/4/21	0	4.45	32.741	11.89
2012/3/20	52	2012/4/21	0	7.15	32.573	9.85
2012/4/4	46	2012/5/19	1	0.05	32.47	9.28
2012/3/23	48	2012/4/21	1	0.03	32.157	9.7
2012/3/22	52	2012/4/21	0	6.8	32.088	9.41
2012/3/19	52	2012/4/21	0	7.2	32.079	9.12
2012/4/5	46	2012/5/19	1	0.06	32.009	9.52
2012/3/6	46	2012/4/21	1	0.13	31.937	10.78
2012/3/21	52	2012/4/21	0	7	31.886	9.93
2012/3/22	46	2012/5/19	1	0	31.867	9.48
2012/3/7	46	2012/4/21	1	0.13	31.748	10.76
2012/4/2	54	2012/4/21	0	5.35	31.689	11.21
2012/4/2	46	2012/5/19	1	0.05	31.598	9.43
2012/4/3	46	2012/5/19	1	0.05	31.408	9.38
2012/4/24	44	2012/7/21	1	0.11	30.928	11.31
2012/3/21	48	2012/4/21	1	0.04	30.878	9.73
2012/4/26	44	2012/7/21	1	0.12	30.835	9.29
2012/3/29	46	2012/5/19	1	0.05	30.801	9.44
2012/3/20	48	2012/4/21	1	0.04	30.784	9.85
2012/4/17	44	2012/7/21	1	0.15	30.77	11.47
2012/4/19	44	2012/7/21	1	0.13	30.744	10.6
2012/4/25	44	2012/7/21	1	0.12	30.739	9.24
2012/3/19	48	2012/4/21	1	0.04	30.658	9.92
2012/3/22	48	2012/4/21	1	0.04	30.606	9.48

2012/4/27	44	2012/7/21	1	0.13	30.581	9.03
2012/4/23	44	2012/7/21	1	0.12	30.565	10.37
2012/4/18	44	2012/7/21	1	0.14	30.517	10.6
2012/3/13	48	2012/4/21	1	0.1	30.505	10.14
2012/4/16	48	2012/5/19	1	0.06	30.475	10.71
2012/3/30	46	2012/5/19	1	0.06	30.371	9.42
2012/3/28	46	2012/5/19	1	0.05	30.313	9.45
2012/4/9	54	2012/4/21	0	4.65	30.162	12.12
2012/4/18	56	2012/4/21	0	3.15	30.076	10.16
2012/4/16	44	2012/7/21	1	0.15	30.046	10.71
2012/4/12	44	2012/7/21	1	0.15	30.008	9.21
2012/4/20	44	2012/7/21	1	0.13	29.981	10.44
2012/3/27	46	2012/5/19	1	0.05	29.895	9.45
2012/3/26	46	2012/5/19	1	0.14	29.664	9.45
2012/4/12	48	2012/5/19	1	0.06	29.572	10.91
2012/4/11	44	2012/7/21	1	0.15	29.476	9.31
2012/3/15	52	2012/4/21	0	6.85	29.431	10.75
2012/3/7	50	2012/4/21	0	7.3	29.338	10.56
2012/3/13	52	2012/4/21	0	5.8	29.234	10.54
2012/3/16	48	2012/4/21	1	0.04	29.153	10.03
2012/4/10	44	2012/7/21	1	0.15	29.123	9.69
2012/4/9	44	2012/7/21	1	0.14	29.104	9.62
2012/4/4	44	2012/7/21	1	0.13	28.954	10.28
2012/4/13	44	2012/7/21	1	0.15	28.943	10.35
2012/3/5	52	2012/4/21	0	6	28.723	11.75
2012/4/20	46	2012/7/21	1	0.14	28.704	10.44
2012/4/2	44	2012/7/21	1	0.08	28.666	10.43
2012/3/15	48	2012/4/21	1	0.05	28.622	10.2
2012/3/14	52	2012/4/21	0	6.7	28.578	11.61
2012/3/12	48	2012/4/21	1	0.11	28.479	10.25
2012/4/5	44	2012/7/21	1	0.14	28.478	9.52
2012/4/3	44	2012/7/21	1	0.13	28.398	10.38
2012/4/3	54	2012/4/21	0	5.55	28.338	10.95
2012/3/9	48	2012/4/21	1	0.13	28.322	11.37
2012/4/11	48	2012/5/19	1	0.07	28.297	10.41
2012/4/24	46	2012/7/21	1	0.13	28.286	10.31
2012/3/28	44	2012/7/21	1	0.12	28.273	9.45
2012/4/10	48	2012/5/19	1	0.06	28.265	10.69
2012/3/29	44	2012/7/21	1	0.13	28.205	9.44
2012/3/23	44	2012/7/21	1	0.14	28.096	9.7
2012/3/30	44	2012/7/21	1	0.14	28.095	9.42
2012/3/26	54	2012/4/21	0	0	27.995	9.45
2012/3/14	48	2012/4/21	1	0.09	27.966	10.18
2012/3/8	48	2012/4/21	1	0.13	27.939	12.13

2012/4/25	46	2012/7/21	1	0.13	27.919	11.24
2012/3/5	48	2012/4/21	1	0.14	27.905	11.65
2012/4/13	48	2012/5/19	1	0.06	27.865	10.35
2012/4/9	48	2012/5/19	1	0.06	27.767	10.62
2012/3/27	54	2012/4/21	0	5.7	27.739	10.03
2012/3/26	44	2012/7/21	1	0.09	27.728	9.45
2012/4/26	46	2012/7/21	1	0.14	27.664	9.29
2012/4/17	46	2012/7/21	1	0.17	27.553	11.47
2012/3/27	44	2012/7/21	1	0.13	27.55	9.45
2012/4/23	46	2012/7/21	1	0.14	27.542	10.37
2012/3/19	44	2012/7/21	1	0.15	27.522	9.92
2012/4/4	48	2012/5/19	1	0.05	27.491	9.28
2012/3/28	54	2012/4/21	0	5.65	27.455	9.94
2012/4/19	46	2012/7/21	1	0.14	27.439	10.6
2012/3/22	44	2012/7/21	1	0.15	27.384	9.48
2012/3/13	44	2012/7/21	1	0.19	27.333	10.14
2012/3/16	54	2012/4/21	0	5.25	27.199	10.03
2012/4/18	46	2012/7/21	1	0.15	27.167	10.6
2012/4/27	46	2012/7/21	1	0.14	27.123	9.72
2012/3/6	48	2012/4/21	1	0.13	27.117	10.78
2012/3/16	44	2012/7/21	1	0.15	27.092	10.83
2012/4/16	46	2012/7/21	1	0.19	27.027	10.71
2012/3/7	48	2012/4/21	1	0.14	26.956	13.76
2012/4/5	48	2012/5/19	1	0.06	26.954	9.52
2012/3/15	44	2012/7/21	1	0.17	26.908	10.2
2012/3/21	44	2012/7/21	1	0.15	26.865	9.73
2012/4/2	48	2012/5/19	1	0.06	26.839	9.43
2012/3/29	54	2012/4/21	0	5.7	26.799	9.23
2012/3/20	44	2012/7/21	1	0.15	26.786	9.85
2012/4/12	46	2012/7/21	1	0.18	26.708	11.21
2012/3/14	44	2012/7/21	1	0.21	26.666	10.18
2012/4/11	46	2012/7/21	1	0.18	26.657	9.31
2012/4/3	48	2012/5/19	1	0.05	26.585	9.38
2012/3/28	48	2012/5/19	1	0.05	26.457	9.45
2012/3/30	48	2012/5/19	1	0.06	26.416	9.42
2012/4/13	46	2012/7/21	1	0.17	26.381	10.35
2012/3/23	54	2012/4/21	0	4.95	26.369	9.88
2012/4/10	46	2012/7/21	1	0.17	26.306	9.69
2012/4/9	46	2012/7/21	1	0.16	26.196	9.62
2012/3/29	48	2012/5/19	1	0.06	26.138	9.44
2012/4/4	46	2012/7/21	1	0.15	26.079	9.28
2012/3/30	54	2012/4/21	0	5.4	25.826	9.08
2012/3/12	44	2012/7/21	1	0.18	25.76	10.25
2012/4/2	46	2012/7/21	1	0.15	25.74	9.43

2012/4/3	46	2012/7/21	1	0.14	25.637	12.38
2012/3/9	44	2012/7/21	1	0.19	25.571	10.37
2012/4/5	46	2012/7/21	1	0.16	25.559	9.52
2012/4/19	46	2012/10/20	1	0.42	25.42	10.6
2012/3/27	48	2012/5/19	1	0.05	25.42	9.45
2012/3/30	46	2012/7/21	1	0.15	25.396	9.42
2012/3/7	44	2012/7/21	1	0.21	25.338	10.76
2012/3/6	44	2012/7/21	1	0.18	25.321	12.78
2012/3/8	44	2012/7/21	1	0.2	25.287	11.13
2012/3/29	46	2012/7/21	1	0.15	25.278	9.44
2012/4/16	46	2012/10/20	1	0.59	25.274	10.71
2012/3/19	54	2012/4/21	0	5.3	25.258	9.12
2012/3/26	48	2012/5/19	1	0.07	25.234	9.45
2012/3/5	44	2012/7/21	1	0.18	25.229	11.95
2012/3/28	46	2012/7/21	1	0.15	25.22	9.45
2012/3/27	46	2012/7/21	1	0.14	25.211	9.45
2012/3/23	48	2012/5/19	1	0.06	25.172	9.7
2012/4/20	46	2012/10/20	1	0.43	25.152	10.44
2012/4/17	56	2012/4/21	0	3	25.13	11.47
2012/4/17	46	2012/10/20	1	0.54	25.094	11.47
2012/3/22	54	2012/4/21	0	4.8	25.052	9.41
2012/4/26	46	2012/10/20	1	0.38	25.024	9.29
2012/4/11	46	2012/10/20	1	0.56	24.989	9.31
2012/4/13	46	2012/10/20	1	0.53	24.963	10.35
2012/4/25	46	2012/10/20	1	0.39	24.957	9.24
2012/4/18	46	2012/10/20	1	0.45	24.874	10.6
2012/4/10	46	2012/10/20	1	0.53	24.86	11.69
2012/4/5	54	2012/4/21	0	5.05	24.793	9.52
2012/4/9	46	2012/10/20	1	0.49	24.776	9.62
2012/3/20	54	2012/4/21	0	5.2	24.773	9.85
2012/4/24	46	2012/10/20	1	0.33	24.755	10.31
2012/3/26	46	2012/7/21	1	0.15	24.745	9.45
2012/4/4	52	2012/4/21	0	7.15	24.732	9.28
2012/4/16	60.5	2012/4/21	0	0.06	24.704	10.91
2012/4/4	46	2012/10/20	1	0.45	24.698	9.28
2012/4/12	46	2012/10/20	1	0.55	24.671	9.21
2012/4/26	48	2012/7/21	1	0.15	24.65	9.29
2012/4/23	46	2012/10/20	1	0.41	24.619	10.37
2012/4/19	48	2012/7/21	1	0.15	24.593	10.6
2012/4/19	60.5	2012/4/21	0	0.07	24.571	10.6
2012/4/25	48	2012/7/21	1	0.15	24.563	9.24
2012/4/24	48	2012/7/21	1	0.15	24.482	10.31
2012/3/19	48	2012/5/19	1	0	24.388	9.92
2012/3/23	46	2012/7/21	1	0.15	24.386	9.7

2012/3/19	46	2012/7/21	1	0.16	24.374	9.92
2012/4/17	48	2012/7/21	1	0.22	24.346	11.47
2012/4/20	48	2012/7/21	1	0.16	24.343	10.44
2012/4/5	46	2012/10/20	1	0.45	24.336	9.92
2012/4/2	46	2012/10/20	1	0.45	24.319	9.43
2012/4/3	46	2012/10/20	1	0.44	24.312	9.99
2012/3/20	48	2012/5/19	1	0.07	24.307	9.85
2012/4/16	48	2012/7/21	1	0.26	24.302	10.71
2012/4/23	48	2012/7/21	1	0.15	24.285	10.37
2012/3/28	46	2012/10/20	1	0.42	24.171	9.45
2012/3/15	46	2012/7/21	1	0.2	24.133	10.2
2012/4/27	46	2012/10/20	1	0.43	24.108	9.78
2012/4/18	48	2012/7/21	1	0.12	24.083	10.6
2012/3/14	46	2012/7/21	1	0.18	24.057	11.18
2012/4/11	48	2012/7/21	1	0.24	24.052	9.31
2012/3/22	46	2012/7/21	1	0.16	24.041	9.48
2012/3/30	46	2012/10/20	1	0.44	24.04	9.42
2012/3/21	54	2012/4/21	0	5	24.015	9.93
2012/3/29	46	2012/10/20	1	0.43	23.979	9.44
2012/3/16	46	2012/7/21	1	0.18	23.977	10.03
2012/4/13	48	2012/7/21	1	0.2	23.976	10.35
2012/4/27	48	2012/7/21	1	0.16	23.93	9.03
2012/3/20	46	2012/7/21	1	0.16	23.9	9.85
2012/4/12	48	2012/7/21	1	0.24	23.883	9.21
2012/4/9	48	2012/7/21	1	0.21	23.843	9.62
2012/4/10	48	2012/7/21	1	0.23	23.825	9.69
2012/4/12	56	2012/4/21	0	2.64	23.813	11.21
2012/3/26	46	2012/10/20	1	0.44	23.769	9.45
2012/3/21	46	2012/7/21	1	0.16	23.74	12.73
2012/3/19	46	2012/10/20	1	0.48	23.73	9.92
2012/3/27	46	2012/10/20	1	0.42	23.711	9.45
2012/3/21	48	2012/5/19	1	0.07	23.711	9.73
2012/3/22	48	2012/5/19	1	0.07	23.638	9.48
2012/3/7	52	2012/4/21	0	5.3	23.633	10.56
2012/4/11	54	2012/4/21	0	4.35	23.626	11.31
2012/4/16	56	2012/4/21	0	1.8	23.554	10.91
2012/3/15	46	2012/10/20	1	0.57	23.545	10.2
2012/3/23	46	2012/10/20	1	0.48	23.514	9.7
2012/3/20	46	2012/10/20	1	0.49	23.509	9.85
2012/3/14	46	2012/10/20	1	0.52	23.471	10.18
2012/3/13	46	2012/7/21	1	0.2	23.454	10.14
2012/4/4	48	2012/7/21	1	0.19	23.44	9.28
2012/3/22	46	2012/10/20	1	0.48	23.42	9.48
2012/4/19	48	2012/10/20	1	0.54	23.418	10.6

2012/3/7	46	2012/7/21	1	0.26	23.358	15.76
2012/3/16	46	2012/10/20	1	0.51	23.331	9.03
2012/4/5	48	2012/7/21	1	0.2	23.287	9.52
2012/4/3	48	2012/7/21	1	0.18	23.252	9.38
2012/4/16	48	2012/10/20	1	0.65	23.241	10.71
2012/4/17	48	2012/10/20	1	0.68	23.222	11.47
2012/4/20	48	2012/10/20	1	0.55	23.206	10.44
2012/4/25	48	2012/10/20	1	0.51	23.194	9.24
2012/3/21	46	2012/10/20	1	0.48	23.186	9.73
2012/4/11	48	2012/10/20	1	0.73	23.14	9.31
2012/4/2	48	2012/7/21	1	0.19	23.137	9.43
2012/4/13	48	2012/10/20	1	0.63	23.097	10.35
2012/4/26	48	2012/10/20	1	0.53	23.093	9.29
2012/4/10	48	2012/10/20	1	0.68	23.088	9.69
2012/3/13	46	2012/10/20	1	0.58	23.05	10.14
2012/3/15	54	2012/4/21	0	4.55	23.039	10.75
2012/4/2	56	2012/4/21	0	3.4	23.023	11.21
2012/4/18	48	2012/10/20	1	0.58	23.018	10.6
2012/4/23	48	2012/10/20	1	0.53	22.949	10.37
2012/4/9	48	2012/10/20	1	0.63	22.928	9.62
2012/3/30	48	2012/7/21	1	0.18	22.922	9.42
2012/4/4	48	2012/10/20	1	0.58	22.907	9.28
2012/3/6	46	2012/7/21	1	0.22	22.904	10.78
2012/3/5	46	2012/7/21	1	0.24	22.898	11.65
2012/4/24	48	2012/10/20	1	0.51	22.897	10.31
2012/4/12	48	2012/10/20	1	0.71	22.86	9.21
2012/3/7	46	2012/10/20	1	0.67	22.821	10.76
2012/3/8	46	2012/7/21	1	0.29	22.818	11.13
2012/3/9	46	2012/7/21	1	0.23	22.794	10.37
2012/3/12	46	2012/7/21	1	0.2	22.764	10.25
2012/3/28	48	2012/7/21	1	0.17	22.737	9.45
2012/3/29	48	2012/7/21	1	0.17	22.665	9.44
2012/3/12	46	2012/10/20	1	0.56	22.663	9.25
2012/3/6	46	2012/10/20	1	0.62	22.623	11.78
2012/3/13	54	2012/4/21	0	4.1	22.619	10.54
2012/3/5	46	2012/10/20	1	0.53	22.606	11.65
2012/3/8	46	2012/10/20	1	0.7	22.573	11.13
2012/3/30	48	2012/10/20	1	0.58	22.528	9.42
2012/3/9	46	2012/10/20	1	0.62	22.524	10.37
2012/4/3	48	2012/10/20	1	0.56	22.477	9.38
2012/4/5	48	2012/10/20	1	0.63	22.468	9.52
2012/4/2	48	2012/10/20	1	0.6	22.449	9.43
2012/3/27	48	2012/7/21	1	0.17	22.377	9.45
2012/3/29	48	2012/10/20	1	0.55	22.346	9.44

2012/3/26	48	2012/7/21	1	0.17	22.327	9.45
2012/4/13	60.5	2012/4/21	0	0.06	22.303	11.21
2012/3/28	48	2012/10/20	1	0.54	22.29	9.45
2012/3/5	54	2012/4/21	0	4.1	22.226	11.75
2012/4/27	48	2012/10/20	1	0.55	22.19	9.85
2012/3/27	48	2012/10/20	1	0.54	22.143	9.45
2012/3/19	48	2012/7/21	1	0.21	22.129	9.92
2012/3/26	48	2012/10/20	1	0.57	22.065	9.45
2012/3/19	48	2012/10/20	1	0.62	21.986	9.92
2012/3/15	48	2012/7/21	1	0.27	21.953	10.2
2012/3/14	54	2012/4/21	0	4.45	21.915	11.61
2012/3/23	48	2012/7/21	1	0.2	21.88	9.7
2012/3/14	48	2012/7/21	1	0.24	21.875	10.18
2012/3/20	48	2012/7/21	1	0.21	21.849	9.85
2012/3/22	48	2012/7/21	1	0.21	21.836	9.48
2012/4/18	60.5	2012/4/21	0	0.07	21.81	10.16
2012/3/15	48	2012/10/20	1	0.71	21.765	10.2
2012/3/20	48	2012/10/20	1	0.63	21.757	9.85
2012/3/16	48	2012/7/21	1	0.23	21.752	10.03
2012/3/23	48	2012/10/20	1	0.61	21.732	9.7
2012/3/14	48	2012/10/20	1	0.66	21.685	10.18
2012/3/22	48	2012/10/20	1	0.63	21.683	9.48
2012/3/21	48	2012/7/21	1	0.21	21.66	9.73
2012/3/16	48	2012/10/20	1	0.64	21.617	10.03
2012/3/21	48	2012/10/20	1	0.63	21.612	9.73
2012/3/13	48	2012/10/20	1	0.66	21.396	10.14
2012/3/7	48	2012/10/20	1	0.9	21.385	10.76
2012/3/13	48	2012/7/21	1	0.29	21.374	10.14
2012/3/9	54	2012/4/21	0	3.95	21.293	10.37
2012/3/7	48	2012/7/21	1	0.37	21.241	12.76
2012/3/5	48	2012/7/21	1	0.33	21.126	13.65
2012/3/6	48	2012/7/21	1	0.3	21.084	10.78
2012/3/6	48	2012/10/20	1	0.76	21.052	10.78
2012/3/6	54	2012/4/21	0	4.2	21.034	10.98
2012/3/8	48	2012/10/20	1	0.93	21.032	11.13
2012/3/9	48	2012/7/21	1	0.32	21.002	10.37
2012/3/5	48	2012/10/20	1	0.79	20.995	11.65
2012/3/12	48	2012/10/20	1	0.74	20.948	10.25
2012/3/9	48	2012/10/20	1	0.82	20.942	10.37
2012/3/12	48	2012/7/21	1	0.28	20.924	10.25
2012/3/8	48	2012/7/21	1	0.38	20.902	11.13
2012/3/12	54	2012/4/21	0	4.1	20.862	10.95
2012/3/8	54	2012/4/21	0	3.3	20.834	11.13
2012/4/10	56	2012/4/21	0	2.15	20.682	11.89

2012/3/27	56	2012/4/21	0	3.7	20.281	10.03
2012/3/26	56	2012/4/21	0	3.4	19.746	9.45
2012/4/13	56	2012/4/21	0	1.85	19.592	11.21
2012/3/16	56	2012/4/21	0	3.3	19.485	10.03
2012/3/30	56	2012/4/21	0	3.4	19.466	9.08
2012/3/28	56	2012/4/21	0	3.65	19.238	9.94
2012/3/29	56	2012/4/21	0	3.7	19.223	9.23
2012/3/7	54	2012/4/21	0	3.15	19.027	10.56
2012/4/3	56	2012/4/21	0	3.55	18.982	10.95
2012/4/9	56	2012/4/21	0	2.5	18.779	12.12
2012/4/17	60.5	2012/4/21	0	0.08	18.576	11.47
2012/3/23	56	2012/4/21	0	2.99	18.273	9.88
2012/3/20	56	2012/4/21	0	3.1	18.109	9.85
2012/3/19	56	2012/4/21	0	3.2	17.913	9.12
2012/4/4	54	2012/4/21	0	5.2	17.775	9.28
2012/3/7	59	2012/3/17	0	0.14	17.772	10.56
2012/3/5	56	2012/4/21	0	2.11	17.731	11.75
2012/3/9	56	2012/3/17	0	1.59	17.67	10.37
2012/4/17	58	2012/4/21	0	1.17	17.653	11.47
2012/3/12	56	2012/3/17	0	1.95	17.581	10.95
2012/3/21	56	2012/4/21	0	2.7	17.501	9.93
2012/3/22	56	2012/4/21	0	2.87	17.419	9.41
2012/3/15	56	2012/4/21	0	2.62	17.184	10.75
2012/3/6	59	2012/3/17	0	0.13	17.099	10.98
2012/3/13	56	2012/4/21	0	2.6	16.948	10.54
2012/4/18	58	2012/4/21	0	1.08	16.762	10.16
2012/4/11	56	2012/4/21	0	2.16	16.576	11.31
2012/4/19	59	2012/4/21	0	0.45	16.432	10.6
2012/4/5	56	2012/4/21	0	2.56	16.31	9.52
2012/4/11	60.5	2012/4/21	0	0.04	16.164	11.31
2012/3/14	56	2012/4/21	0	2.97	16.063	11.61
2012/4/16	59	2012/4/21	0	0.1	15.95	10.91
2012/3/8	59	2012/3/17	0	0.11	15.936	11.13
2012/3/8	56	2012/3/17	0	1.64	15.812	11.13
2012/3/6	56	2012/3/17	0	2.08	15.552	10.98
2012/4/12	60.5	2012/4/21	0	0.04	15.505	11.21
2012/4/13	59	2012/4/21	0	0.1	15.358	11.21
2012/3/12	59	2012/3/17	0	0.12	15.281	10.95
2012/4/10	58	2012/4/21	0	0.65	15.031	11.89
2012/4/16	58	2012/4/21	0	0.5	14.974	10.91
2012/4/2	58	2012/4/21	0	1.49	14.964	11.21
2012/4/12	58	2012/4/21	0	0.85	14.702	11.21
2012/4/9	60.5	2012/4/21	0	0.08	14.502	12.12
2012/4/10	59	2012/4/21	0	0.2	14.391	11.89

2012/3/16	58	2012/4/21	0	1.42	14.318	10.03
2012/4/9	58	2012/4/21	0	0.61	14.242	12.12
2012/4/17	59	2012/4/21	0	0.31	14.19	11.47
2012/4/13	58	2012/4/21	0	0.36	13.876	11.21
2012/4/11	58	2012/4/21	0	0.7	13.813	11.31
2012/3/27	58	2012/4/21	0	1.94	13.75	10.03
2012/3/15	58	2012/4/21	0	1.31	13.719	10.75
2012/3/26	58	2012/4/21	0	1.8	13.68	9.45
2012/3/28	58	2012/4/21	0	1.76	13.546	9.94
2012/3/19	58	2012/4/21	0	1.49	13.509	9.12
2012/4/9	59	2012/4/21	0	0.23	13.435	12.12
2012/3/29	58	2012/4/21	0	1.36	13.391	9.23
2012/4/4	56	2012/4/21	0	3.2	13.379	9.28
2012/4/11	59	2012/4/21	0	0.23	13.302	11.31
2012/3/20	58	2012/4/21	0	1.3	13.264	9.85
2012/4/18	59	2012/4/21	0	0.34	13.11	10.16
2012/4/12	59	2012/4/21	0	0.25	12.973	11.21
2012/3/9	59	2012/3/17	0	0.04	12.87	10.37
2012/3/23	58	2012/4/21	0	1.26	12.861	9.88
2012/3/16	59	2012/4/21	0	0.82	12.732	10.03
2012/3/22	58	2012/4/21	0	1.25	12.718	9.41
2012/3/30	58	2012/4/21	0	1.65	12.622	9.08
2012/3/21	58	2012/4/21	0	1.27	12.595	9.93
2012/4/2	59	2012/4/21	0	0.72	12.588	11.21
2012/4/3	58	2012/4/21	0	1.64	12.568	10.95
2012/3/7	58	2012/3/17	0	0.1	12.211	10.56
2012/3/14	59	2012/3/17	0	0.14	12.024	11.61
2012/3/29	59	2012/4/21	0	0.6	11.938	9.23
2012/3/26	59	2012/4/21	0	0.97	11.926	9.45
2012/3/19	59	2012/4/21	0	0.73	11.909	9.12
2012/4/5	60.5	2012/4/21	0	0.11	11.837	9.52
2012/3/27	59	2012/4/21	0	1.15	11.827	10.03
2012/4/5	58	2012/4/21	0	0.95	11.8	9.52
2012/3/6	58	2012/3/17	0	0.15	11.773	10.98
2012/3/20	59	2012/4/21	0	0.85	11.681	9.85
2012/3/28	59	2012/4/21	0	0.77	11.633	9.94
2012/3/7	56	2012/3/17	0	1.1	11.482	10.56
2012/3/5	58	2012/3/17	0	0.42	11.259	11.75
2012/4/27	59	2012/5/19	0	0.39	11.191	10.61
2012/4/3	59	2012/4/21	0	0.5	11.177	10.95
2012/3/22	59	2012/4/21	0	0.62	11.174	9.41
2012/3/8	58	2012/3/17	0	0.18	11.172	11.13
2012/3/21	59	2012/4/21	0	0.48	11.087	9.93
2012/4/3	60.5	2012/4/21	0	0.19	11.063	10.95

2012/4/4	58	2012/4/21	0	1.25	10.969	9.28
2012/4/4	60.5	2012/4/21	0	0.15	10.926	9.28
2012/4/5	59	2012/4/21	0	0.35	10.92	9.52
2012/3/13	59	2012/3/17	0	0.07	10.91	10.54
2012/3/23	59	2012/4/21	0	0.72	10.9	9.88
2012/4/2	60.5	2012/4/21	0	0.15	10.832	11.21
2012/3/30	59	2012/4/21	0	0.83	10.821	9.08
2012/3/12	58	2012/3/17	0	0.17	10.768	10.95
2012/3/5	59	2012/3/17	0	0.14	10.766	11.75
2012/3/15	59	2012/3/17	0	0.12	10.711	10.75
2012/3/9	58	2012/3/17	0	0.23	10.679	10.37
2012/4/4	59	2012/4/21	0	0.55	10.545	9.28
2012/3/29	60.5	2012/4/21	0	0.14	10.267	9.23
2012/3/20	60.5	2012/4/21	0	0.15	10.233	9.85
2012/3/26	60.5	2012/4/21	0	0.26	10.205	9.45
2012/3/21	60.5	2012/4/21	0	0.17	10.183	9.93
2012/3/27	60.5	2012/4/21	0	0.29	10.075	10.03
2012/3/22	60.5	2012/4/21	0	0.15	10.065	9.41
2012/3/30	60.5	2012/4/21	0	0.19	9.94	9.08
2012/3/28	60.5	2012/4/21	0	0.25	9.681	9.94
2012/3/23	60.5	2012/4/21	0	0.14	9.632	9.88
2012/3/14	58	2012/3/17	0	0.55	9.515	11.61
2012/4/20	59	2012/5/19	0	0.64	8.803	10.6
2012/3/13	58	2012/3/17	0	0.56	7.949	10.54
2012/4/24	59	2012/5/19	0	0.51	7.839	10.61
2012/4/23	59	2012/5/19	0	0.55	7.645	10.6
2012/4/25	59	2012/5/19	0	0.4	7.173	10.61
2012/4/26	59	2012/5/19	0	0.25	6.987	10.61
2012/3/19	60.5	2012/4/21	0	0	1.826	9.12
2012/4/20	44	2012/4/21	1	0.03	0	10.44
2012/4/20	46	2012/4/21	1	0.03	0	10.44
2012/3/16	46	2012/3/17	1	0.02	0	10.52
2012/3/16	48	2012/3/17	1	0.05	0	10.03
2012/4/20	48	2012/4/21	1	0.03	0	10.44