Return and Risk Analysis of the S&P500 Index Options Strategies

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Abstract

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This paper mainly illustrates a risk and return framework to compares the relative performance of S&P500 index options strategies. I use net raw returns to obtain the average daily return and standard deviation for each strategy with the construction of constant moneyness and expiration date. Based on the S&P500 index's market movement during a two year empirical period (1st September, 2009 to 31st August, 2011), I find that strategy of a *covered call* has the highest Sharpe ratio while a *straddle* has the lowest Sharpe ratio. In addition, longing a *call* is more risky but typically has higher return than merely longing the underlying S&P500 index, and those volatility strategies, such as *straddle, strap, strip*, will probably generate negative returns when price level remains stable at most of the time.

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Chapter 1 Introduction

1.1 Objective of the Study

In this article, the main purpose is to shed some light on the relative performance of index options on each trading strategy using quantification of risk-return framework. I choose S&P500 as my empirical investigation for several reasons; S&P500, a capitalized-weighted index, is the most actively traded stock and regarded as the benchmark in the US market (Bloomberg). Besides, it is European-style contract and can only be held to its maturity, such characteristic does not take the time value that comes from early expiration into effect and will further facilitate my research process. Moreover, S&P500 index options (also known as SPX), nowadays, is commonly used in investor's portfolios for hedging purposes. As a result, risk & return analysis of SPX among various strategies becomes very important when investors incorporate it to reduce their portfolio's risk and meantime increase returns.

As Ronald T. Slivka (1980) defined "return is to mean the expected profit or loss on a strategy, expressed as a percentage of initial investment, by risk is to mean the statistical standard deviation of return on investment", I will illustrate the same definition of risk and return in my analysis of S&P500 index options.

1.2 background information

Since 1969, Malkiel and Quandt (1969) have demonstrated detailed comparison among various investment strategies by identifying the value of the underlying stock, the type and the number of options positions taken. The true benefit and risk behind trading options, however, are unclear and easily ignored by investors when they measure their profit by only maximizing the dollar amount earned on various strategies.

In most cases, options traders still use the dollar amount to measure a trading strategy's performance. The ignorance of risk associated with each strategy mislead many investors that trading options are not earning them expected returns. While in reality, options strategies can bring investors very high benefit if they have correctly understood and utilized these strategies.

In fact, many professionals, like Merton, Scholes, and Gladstein (1978) and Billingsley, R. S., & Chance, D. M. (1985), have specified expected returns on some popular options strategies, including call options and box spread options. Even though, they still emphasized returns derived from some popular strategies rather than take a huge risk associated into consideration. In addition, nowadays, other less familiar investment strategies, like bull/bear spread, straps, are becoming more appealing to investors. Thus there is a need to compare relative return and risk on other options strategies.

1.3 Rationale for this topic

The rationale behind this topic is to assist investors in making wise decisions when they aim to use options to hedge their portfolios. On the surface, while some trading strategies may bring greater dollar amount than others, the potential loss or risk might be extremely high that can lead to huge losses in the value of investors' portfolios. Based on S&P500's market movement during the empirical period, this paper will demonstrate investors a full picture of the average daily risk and return for different investment opportunities. Thus, they can manage their investment in options more wisely and successfully.

Chapter 2 literature review

2.1 Early risk & return analysis on stock options

Though Fisher Black (1975) introduced some key factors influencing options values by employing Black and Scholes (1973) formula and thus corrects many popularly held misconceptions about options investment, but he does not give us a quantitative description of the return patterns associated with various options strategies.

Subsequently, Merton, Scholes and Gladstein (1978, 1982) elaborated on the risk and returns of alternative call and put options portfolio investment strategies; they illustrated the return characteristics of some options strategies and risk factors over a period of varying market environments and demonstrated how options strategies can be used to modify the risk-return patterns of the underlying stocks. At that time, most researchers mainly emphasized on returns of merely call or put options while ignoring returns of other attractive strategies, but on the other hand, they have made a great contribution on measuring payoff of options strategies with risk-return framework rather than the dollar amount.

2.2 Quantitative method to measure risk & returns on various strategies

R.T. Slivka (1980) demonstrated a quantitative method to show the risk and return on stock options and showed portfolio managers which strategy generates higher return under varying market conditions. More importantly, Slivka (1980) has taken almost all of options strategies

into consideration, in this regard, he thus offers us a more comprehensive comparison. However, Bakshi, G., & Kapadia, N. (2003) provided insights that index options are more sensitive to market volatility than stock options are, their findings indicate that the performance of stock options might not be comparable as that of index options. Therefore, Bakshi and Kapadia's (2003) research proved that the strategy results for stock options obtained by R.T. Slivka (1980) might be arbitrary if we consider S&P500 index options as our empirical subject.

Specifically, Bookstaber, R and Clarke, R (1985) described return characteristics of various portfolio options trading strategies and showed that the return characteristics of optioned portfolios are not very sensitive to the pricing of the options used. Their findings are valuable as they offer the basic shape of return on some options strategies, such as covered call, protective put. Thus, I can use the return results to test whether returns on strategy results are in the distribution. Further, they actually used portfolio techniques to measure each strategy performance, later in my analysis, I also use these measures like Sharpe ratio, to compare risk and return results of each strategy.

2.3 literature on S&P500 index returns and determinants

As there is an increasing emphasis on the performance of S&P500 in the 20th century, Coval and Shumway (2001) started to examine returns associated with S&P500 and S&P100 indices using the data from January 1990 to October 1995. Empirically, they found that returns of call options are significantly larger than those of underlying index, and returns of put options are

significantly below the risk-free rate. In my analysis of SPX, there is a similar trend of return on call and put options.

Moreover, Coval and Shumway (2001) direct their attention to one of the most popular strategies: Straddle. They found that at-the-money SPX straddles will have expected returns equal to risk-free rate, and the risk associated with this strategy is relatively low that can be constructed with zero-beta straddles. Such strategy will be tested in later analysis using Sharpe ratio, and whether straddle can be a good tool for hedging purposes will also be examined.

When Ruffy, F (2003) introduced changes in the weights of components in S&P500, more searchers are trying to find the potential impact on S&P500 index options price and its underlying stock value. Specifically, Charles and Jing-Zhi Huang (2008) conducted a research on the determinants of S&P500 index options returns. They calculate daily returns using options prices and then obtain a three-factor model to explain returns of S&P500 index options, namely, the three factors are underlying S&P500 asset, options implied volatility and equally weighted options index. Though their research emphasized the determinants of S&P500 index options returns rather than analyze risk and return of each strategy, they provided insights about the influencing factors that could change the expected returns. Actually, the first determinant they mentioned, the underlying stock value, will somehow indicate what the percentage of change in SPX returns is when the value of underlying S&P500 index changes.

Furthermore, Mekeon (2013) specifies returns on trading call options, one popular trading

strategy employed by many investors. In his article, he altered investors' perception about the

poor returns in options by demonstrating the actual S&P500 options returns traders receive in the

stock market. His research found that call options returns for SPX are generally low and

decreasing in the strike price, and even lower or negative returns if these call options are deep

out the money.

Virtually, McKeon's (2013) findings are inconsistent with conventional asset pricing theory, as

standard asset pricing hold that call options returns should be higher and increasing in the strike

price. In my research, the call options are likely to possess higher returns than its underlying

stock .While his research mentioned little about the performance of other strategies, he, at least,

shed some light on what returns investors receive in call options trading.

Chapter 3 Methodology

3.1 Methodologies employed by other researchers

My research objective is to address the respective risk and returns of S&P500 index options on various strategies. Actually, R.T. Slivka (1980) has clearly defined options risk and returns, as he said, "return is return on investment (ROI) and risk a measure of variability of ROI". In his article, the methodology is to calculate risk and return among various strategies and thus gives investors a better quantitative comparison. I also use ROI and the standard deviation of ROI to measure return and risk of S&P500 index options returns. It is worth noting, however, his methodology only specified one certain strike price, and thus the analysis could be unrepresentative.

Since we have to compare daily returns of these strategies, we have to ensure that the returns are at least comparable; therefore, the next key thing is to build a constant moneyness (S/K) and maturity (T) system. The methodology of Charles and Huang's research (2008) provides basis for my research. They use specific techniques to separate the effect of moneyness and maturity on options returns. The step of constructing same moneyness and maturity is of high value, as we know options values are easily affected by many factors, such as time to maturity and strike price. So, before calculating daily returns, it would be essential to ensure options returns are not influenced by those factors. Later I will show the necessary procedures to achieve such goals.

Given that different approach of calculating daily returns also determines the strategy results, the choices between using logarithmic returns and net raw returns also draw a lot of discussions. Aamir M. Sheikh and Ehud I. Ronn (1994) studied options returns and actually used logarithmic options returns, while Coval and Shumway (2001) showed that using raw returns might be more appropriate. Because they stated that "options held to maturity will normally have net returns of -1, thus the log-transformation of options returns over any finite holding period will be significantly lower than the raw net returns, it also means that the expected log return of any options held to expiration is negative infinity", therefore, using net raw returns will give investors more realistic returns.

I quite agree that the returns of using logarithmic method are significantly lower than using net raw returns. In my analysis, therefore, I determine to use raw returns to obtain strategy results, and calculated other strategies all using net raw returns for consistency. So in order to make the results comparable, the approach of net raw returns is more preferable.

3.2 data description

Regarding the quoted data, I collected 2 years (01/09/2009 to 31/08/ 2011) S&P500 index options data from Historical Options Data website. The data contains open price, bid price, ask price, volume and open interest. Based on the specific expiration date, quoted date, as well as strike price, I can find corresponding options price on that specific day, and then record the options price for later analysis. During each month, there are almost 3-4 expiration dates available on each day, so we can pick the options we need based on its time to maturity.

As existing literature does, I use the midpoint of bid and ask spread as options premium; it is also a facilitating process even though the choice of determining options premium may have effect on options returns. Actually, McKeon, R (2013) has specified the impact on options returns due to different choices of bid and ask spread, in his research, he showed that small price movements in very low-priced options could lead to large percentage increases in the bid-ask midpoint. Such things do happen in the database, but the possibility of very low-priced options is so small that can be ignored when compared to the overall two years data. As a result, I will still use midpoint of bid and ask price to represent the quoted call or put price. Besides, I assume that those quoted bid and ask prices are correctly priced under normal asset pricing theory.

3.3 Methodology of my research

In my research, I combined Charles and Jing-Zhi Huang and R.T. Slivka's methodologies, I use historical database to manually record the SPX index options, and calculate the daily return after constructing constant moneyness and maturity. Similarly, it is common that many researchers divide moneyness into three main parts that are ATM (at the money), ITM (in the money) and OTM (out of the money). But in my paper, I will only illustrate the ATM situation due to the fact that most investors are purchasing ATM S&P500 index options in the market.

My methodology here is to mimic Charles and Huang's approach (2008) in building S&P500 index options data with the same moneyness and maturity. In their article, while they considered all of the three moneyness situations, I will only concentrate on ATM (S/K=1) SPX options. Due to the difficulty in finding SPX options with exactly the same strike prices as S&P500 index

price, so I allow an approximate 1% deviation from value 1, which means, the ratio of strike price to underlying stock price is ranged from 0.99 to 1.01.

As to time to maturity, Wilkens (2007) have demonstrated that options returns can be significantly different with short or long time to expiration, and Charles and Huang also take short term (30 days) and long term (90 days) into account in their paper. Yet my research purpose is to compare daily options returns among various strategies rather than analyze time effect on options values, so I will only focus on 30 days maturity period.

The following is the procedure of constructing constant moneyness and maturity; these rules are very similar to of Charles and Huang's approach (2008).

i.   Assume that there is no options possessing an exact 30 days to expiration in the database; they are options whose time to expiration is either less or more than 30 days. For convenience, on day t, name one options as $C_{\varepsilon_1}(t, \varepsilon_1, X)$ with maturity less than, but closest to 30 days ($\varepsilon_1 < 30$) , while the other one as $C_{\varepsilon_2}(t, \varepsilon_2, X)$ with maturity more than, but also closet to 30 days ($\varepsilon_1 > 30$). Given recorded , it will be easy to calculate the options with exactly 30 days to expiration using linear interpolation that is

$$C(t, \varepsilon = 30, X) = C_{\varepsilon_1} + (30 - \varepsilon_1) * (C_{\varepsilon_2} - C_{\varepsilon_1})/(\varepsilon_2 - \varepsilon_1)$$

ii.   After the construction of constant maturity, next goal is to find options with the strike price close to its index value. As I mentioned, provided the ratio of index value to the strike price is limited into a 1% deviation, the option can be regarded as at the money. We will have three strike prices for our later strategy analysis, and we denote X_1 is a

strike price that is the closest to its underlying index value, and denote the lower one as

X_0 and the upper one as X_2. X_0, X_1 and X_2 are all ATM strikes.

iii.   Put options will use the same steps as I showed, repeat above procedures until all the

options have the same strike prices and expiration dates (T=30 days).

In measuring each strategy's performance, a more comprehensive indicator is needed besides

risk and return. It is understandable that high return of a certain strategy does not necessarily

suggest this strategy is adoptable, as the risk associated might be extremely high that outweighs

investors' tolerance. For this reason, I will use Sharpe ratio to measure the overall strategy's

performance as Sharpe ratio is normally used in portfolio's analysis, a high Sharpe ratio will

increase the value of investors' portfolios when they try to use the benchmark S&P500 index to

balance their portfolios. As to the risk free rate, I collected two years (09/2009-09/2011) daily

bank discount rate from US Department of Treasury, and obtained the average daily risk-free

rate (0.33%) as basis of my later calculations.

3.4 limitations on the data

Nevertheless, there are some empirical questions needed to be addressed in this research. Firstly,

the database itself has some limitations, for example, some options whose time to maturity are

close to 30 days, have less available strike prices that can make the options at the money. Faced

with this issue, I use Bloomberg to evaluate SPX options prices when such strike price is not

available in the historical database, while it is certain that the options price obtained from

Bloomberg will not be exactly the same as we record from the historical database, the effect coming from price difference is quite small that will not alter the strategy results of my research.

Moreover, it is known that options are not traded on weekends and some specific days, for this reason, if we buy one SPX contract on Friday and hold it for one day and cannot exercise it on Saturday, so we have to wait until next week, and probably exercise it on next Monday, so the call/put prices recorded will be for Friday and next Monday. Such method neglects the weekend effect and automatically defines Monday as the following day of last Friday.

In addition, we need assume explicitly that there is no transaction costs, taxes and dividends, mainly due to complexity of measurement and calculation. Since these factors do have an impact on options prices, so strategy results might change slightly if I incorporate these factors into my analysis. For example, when we take dividends into account, the options prices will be slightly higher than normal ones. Besides, we aim to construct the exact 30-day time to maturity, and use linear interpolation to achieve this goal, but in most cases, I find that options with time to expiration very close to 30-day are not available, under such situation, using the measurement of liner interpolation might affect the accuracy in SPX options price.

3.5 Predication of strategy results

Theoretically, the stock price of S&P500 in 2009-2011 experiences a continuous upward trend, but with some big fluctuations during the 2-year period. We can regard S&P500 index as a bullish market to predict and analyze the performance of various strategies.

Graph 1

We saw that S&P500 stock price rose by around 22.13%. Therefore, we can predict that average daily returns of S&P500 should be positive at most time. On one hand, covered call strategy should also bring positive but higher daily return than that of merely purchasing S&P500 stock. On the other hand, protective put strategy may have negative daily returns, but when the price increases to a certain level, which arrives over the break-even point, the net profit will become positive, the average daily return may convert into positive signs. For the butterfly strategy, we can predict that average daily return could be positive at most time, because the underlying S&P500 index increased gradually as a whole in this two years.

For the volatility strategies, like straddle, strap and strip, may experience negative returns because the S&P500 index market is not volatile enough, and the increasing trend may have

opposite effect on the daily returns of these volatile strategies, which can only realize positive

returns when there are big price movements.

Chapter 4 Empirical results

4.1 Strategy Results and Analysis

As showed in the methodology, I will list three strike prices, namely; that are. Specifically, X_0 represents the lower strike price, X_1 stands for the middle strike price, which is also the closest to the true underlying index value, and X_2 is the higher strike price. Correspondingly, the call & put prices for the three strike prices are C_0 & P_0, C_1 & P_1, C_2 & P_2 there is a relationship among these three strike prices, that is

$$2X_1 = X_0 + X_2 \quad and \quad X_2 - X_1 = X_1 - X_0 = 5$$

The procedure to obtain daily returns:

1. On day t, the index value is S_0, X_1 the strike price of an ATM options, and call price is C_1 . Hold it until day t+1, the index value changes to S_T, the call price changes into C_1^* under the same strike price. Then the daily return for day t is ROI $= (C_1^*/C_1) - 1$

2. On day t+1, to make the option on this day still ATM, the strike price will be adjusted, and the recorded call price will also change. Hold it on day t+2, record the call price on day t+2, and repeat the approach in step 1, then we can calculate the daily return for day t+2.

3. Repeat the procedures until we have all the daily returns during the two years period. Finally, the average daily return the average of all the past two years' daily returns we have got.

Table1 daily risk & return for ATM SPX under various strategies

Strategies (long)	Average Daily ROI	S.D of ROI	Sharpe Ratio
Underlying Index	0.01%	0.36%	-0.89
Call	2.77%	22.59%	0.11
Covered Call	1.67%	0.86%	1.55
Protective Put	-1.70%	0.76%	-2.68
Bull Call Spreads	-6.35%	82.52%	-0.08
Bear Call Spreads	-6.35%	82.52%	-0.08
Butterfly Spreads	103.42%	4121.66%	0.03
Straddle	-80.18%	16.57%	-4.86
Strip	-82.05%	18.87%	-4.37
Strap	-78.50%	18.05%	-4.37

Long an S&P500 index: investors commonly long the S&P500 when they predict there will be an expected appreciation in the value of this index during the term of options. During 09/2009-09/2011, it turns out that mimicking the S&P500 index will bring investors positive daily return because we have witnessed an upward trend in the index's value. Nevertheless, we notice a quite low average daily return which is smaller than the risk-free rate, this is mainly attributed to the great price fluctuations on the second half year of 2010. Even though, the overall daily risk is the lowest on average. We obtain a negative Sharpe ratio, which indicates that longing the S&P500 index will bring investors returns lower than risk-free rate.

I use log returns to calculate the index`s daily return, the equation is

$$ROI_{long\ an\ index} = Log(\frac{S_T}{S_0})$$

Long a Call: this strategy is one of the basic options strategies, and it allows investors to purchase an ATM call with the belief that the value of underlying index will go up substantially beyond the strike price. Based on pricing models, we can estimate how a one dollar index change affect the call's price, assuming other factors remains the same. Therefore, I choose those strike prices that are closest to the index value, record the corresponding call price, and calculate the daily return for this strategy. The equation is:

$$ROI_{long\ a\ call} = (C_1^*/C_1) - 1$$

I find that the average daily return is much higher than merely longing the S&P500 index, the main reason is that the percentage increases can be significant if the market movement is on investors' forecast. What is more, the smaller initial investment required by this strategy also gives buyers a chance to achieve greater percentage gains.

If we look at the associated risk, however, the standard deviation of longing a call is substantially higher compared to longing an index (22.59% vs 0.36%). Though the risk of this strategy itself is limited to options premium, the variation of daily return could be large on a day-to-day basis due to the underlying index level fluctuations. As a result, the standard deviation of daily return increases.

Covered Call: unlike long call options, this strategy gives an investor to hold a long position on S&P500 while meantime short sell a call options on the same asset. If the level of the index rises, investors can gain from buying the index; if the value of the index decreases, then investors can

also realize a gain from writing a call position. So, this strategy is popularly employed when investors are not clear whether the value of the underlying asset will rise or fall.

For the same reason, I use strike price of X_1 and call price of C_1. The profit equation for this strategy is $\pi = S_T - S_0 - MAX(0, S_T - X_1) + C_1$, the initial cost is $S_0 - C_1$, and thus the daily return is

$$ROI_{C.C} = [S_T - S_0 - MAX(0, S_T - X_1) + C_1]/(S_0 - C_1)$$

Covered Call enjoys its popularity mainly because it decreases portfolio's risk and meantime increase returns. It is also proved here that purchasing a stock and short a call will decrease the standard deviation substantially, compared to the risky strategy of buying a call. Therefore, though the average daily return is slightly lower, the Sharpe ratio for covered call is the greatest among all of these strategies listed. Such findings will indicate investors to choose this strategy if they aim to minimize their portfolio's risk and meantime increase their returns.

Protective Put: it is a risk management strategy. Investors purchase the S&P500 index as well as purchasing a put options to guard against the unrealized gains. The put option in this strategy acts as an insurance policy. Even though, it increases investor`s initial investment, it reduces the risk of loss when the value of the index decreases. Once again, we still use the closest strike price X_1 and the put price P_1 the daily return for this strategy is

$$ROI_{P.P} = [S_T - S_0 + MAX(0, X_1 - S_T) - P_1]/(S_0 + P_1)$$

It is not surprising that this strategy incurs negative daily returns, because at most of the time, the

put options prices far outweigh the daily index value changes and the differences between strike

price and the next day`s index value ($when\ S_T < X_1$), which results in a negative payoff. The

risk associated with this strategy is also very small that can be a good alternative to hedge

portfolio`s risks.

Bull Call Spread: this strategy is a type of vertical spread. It consists of two call options that

have the same expiration dates but different strikes. Investors long a call that has a lower strike

price (X_1), and simultaneously short a call has a higher strike price (X_2). The profit equation for

this strategy is and the initial cost is. Thus, the daily return will be

$$ROI_{Bull.S} = [MAX(0, S_T - X_1) - MAX(0, S_T - X_2) - C_1 + C_2]/(C_1 - C_2)$$

As the results showed, I obtained a negative average daily return for this strategy. We should

remind that $X_2 - X_1 = 5$. On one hand, if $X_1 < S_T < X_2\ or\ S_T > X_2$, the profit can be positive or

negative depending on the degree of such increase in the value of underlying index. On the other

hand, if $S_T < X_1$, the daily return will always be negative and equals to -1. The negative average

ROI indicates that at most time, the next day`s price is less than the smaller strike price.

It is also worth noting that this strategy has the second biggest standard deviation (82.52%), as

the daily return changes from -100% to 370.94%. The Sharpe ratio is negative but is only slightly

less than zero, which means that this strategy gives investors average daily returns a bit lower

than a risk-free rate.

Bear Call Spread: It also consists of two call options the same as Bull Spread's, but investors long a call with a higher strike price (X_2) and short a call with a lower strike price (X_1). Remarkably, this strategy will generate a cash inflow at the outset.

$$ROI_{Bear.S} = [MAX(0, S_T - X_2) - MAX(0, S_T - X_1) - C_2 + C_1]/(C_2 - C_1)$$

Compared to the daily return equation of Bull Call Spread, this strategy has the same risk and return patterns when we use the same strike prices and expiration date.

Long a call butterfly: this strategy combines one short call at a middle price (X_1), and two long calls each at a lower (X_0) and upper strike price (X_2). All the options have the same time to maturity, and the sum of the lower and upper strikes is twice of the middle strike. The daily return equation is

$$ROI_{Butterfly.S} = [MAX(0, S_T - X_0) - 2MAX(0, S_T - X_1) + MAX(0, S_T - X_2) - (C_0 + C_2 - 2C_1)]/(C_0 + C_2 - 2C_1)$$

We have the highest average daily return for this strategy 103%, as there are very large daily returns on some certain days. The large positive returns are mainly attributed to the extremely low initial cost, so even the profit of this strategy is small, the percentage gains can be substantially high. When the initial cost is low but negative, the percentage loss can also be extremely huge. As a consequence, the average standard deviation is the largest among all of the strategy alternatives.

Straddle: investors holds a position in both a call and a put with the same strike price (X_1)aand expiration date. Investors typically head for this strategy when they predict that there will be sharp price movements, either up or down. So this strategy is most appropriate when the market is quite volatile. The daily return for this strategy is

$$ROI_{Straddle} = [MAX(0, S_T - X_1) + MAX(0, X_1 - S_T) - C_1 - P_1]/(C_1 + P_1)$$

Yet we have large negative returns, as the difference of S_T and X_1 is smaller than the sum of call and put price at most time. The risk is not that high compared to its returns, since those daily returns are mainly negative and limited into -100%. The lowest Sharpe ratio indicates the expected changes in the value of S&P500 is not big enough to realize positive returns.

Strip: this strategy is a modified, more bearish version of the common *straddle*. It contains longing a call and two puts with the same strike price and time to maturity. The daily return for this strategy is

$$ROI_{Strip} = [MAX(0, S_T - X_1) + 2MAX(0, X_1 - S_T) - C_1 - 2P_1]/(C_1 + 2P_1)$$

For it is more bearish, the average daily return for such strategy is even lower than straddles. Same rationale for straddle as I showed before also applies here, the profit is negative at most time, and daily returns are negative and always higher than -100%, so the risk, similar to straddle, is moderate.

Strap: it is a modified, more bullish version of straddle, and it contains longing a put and two calls with the same strike price and expiration date. The daily return for this strategy is

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$$ROI_{Strip} = [2MAX(0, S_T - X_1) + MAX(0, X_1 - S_T) - 2C_1 - P_1]/(2C_1 + P_1)$$

This strategy is more bullish than straddle, so even the average daily return is negative but higher than both straddle and strip. Risk of Strap is also moderate, approximately 20%.

4.2 Comparison with previous research results

As I mentioned before, R.T. Slivka (1980) illustrated a quantitative approach to obtain each strategy's annualized return and risk. It is easy to turn the daily risk and return obtained in my analysis into a year basis, and I find that there are some differences need to be addressed. In his research, purchasing a stock has the same return as purchasing a call, while in my findings, longing a call will bring a higher return than longing the index only. Actually, this had been verified by Black-Scholes (1973) model that under standard asset pricing assumptions, returns from buying a call should be higher than return from underlying stock. As to the standard deviation of ROI, it is consistent with Silvka's research that longing a call will bring higher volatility than purchasing a stock.

The comparison between covered call and protective put is again verified in 1980, the positive daily return from covered call and negative daily return from protective put obtained are consistent with Silvka's research, as he showed that the risk of these two strategy is quite close, but the returns are oppositely monitored.

The Butterfly strategy, known for its low initial investment, brings a huge average daily return and risk, which might suggest that due to the great variation, this strategy is not favored by most risk-averse investors.

Results from volatility strategies (Straddle/strips/strap), however, are quite different from pervious analysis. Coval and Shumway (2001) specifically directed their attention to Straddle positions, as I observed, the Straddle has the lowest Sharpe ratio , and its average daily return and risk are so high that might make it unfavorable. In their findings, nevertheless, they argued that investors actually can use Straddle to hedge their risk and minimize their loss, and meantime straddle can guarantee investors against volatile states of the world.

4.3 Implications on the economy

This paper is aimed to compare the relative performance of different options strategies using a quantitative approach. Since, in reality, investors do not have much knowledge on distinguishing options strategies, the strategy results obtained suggest that investors can choose some less familiar strategy to accomplish their portfolio's goals. The analysis shows that covered call will bring investors the best benefit when they expect the market to bullish in the future. Thus they can use S&P500 index options to hedge their portfolios.

Although we have negative Sharpe ratio for the last four strategies, it does not mean that they have no use in the options market. Because the price of S&P500 index is increasing in the

period, so if we use these volatility strategies, it will probably show unsatisfying results. When it is expected that there will be a volatile market, using the last four strategies might give investors impressive returns. Therefore, it is not appropriate to just memorize the results of these risk and returns, as strategy results can change substantially when market situation totally changes.

Chapter 5 Conclusions

5.1 Summarizations

Recent years, we witness that the market is doing better as years passed by, so this paper pay much attention to the risk & return analysis of S&P500 index options strategies. After constructing constant moneyness and maturity for the SPX options data, I obtained daily return and risk (standard deviation of daily return), and subsequently calculated Sharpe ratio for each strategy. If we compare these strategy results, we find that under a bullish market, like S&P500 index, covered call do have the highest Sharpe ratio even though the average daily return for this strategy is not very high compared to others. In this regard, risk-averse investors might find it appropriate due to low risk and high Sharpe ratio.

As to the great variations appeared in butterfly strategy, we see the highest daily return and highest deviation in this strategy. As we observed in the data, average daily return changes significantly, thus the standard deviation is huge. Under the S&P500 index's market trend in 09/2009-09/2011, some risk-lover investors will find it is exciting to exercise this strategy as at certain time they might get much-than-average return.

On the other hand, strategies, such as straddle, strap, and strip all incur the lowest Sharpe ratios mainly stemmed from negative daily returns. Unlike other strategies, they consistently have low and negative daily returns during the empirical period, we thus guess that even S&P500 index has experienced a rise in its value, the degree of its increase is relatively small and still makes the

payoff of exercising straddle and similar strategies negative. If the price has big movements, these seemed unfavorable strategies might bring positive returns.

5.2 limitations of these findings

The strategies listed are typical examples and commonly known by most investors. As a matter of fact, there are many other complicated options strategies, which might bring higher returns and lower risks than the strategies I have analyzed. In the options market, experienced investors will use these complicated strategies to better hedge their portfolios. In addition, the strategy results are based on the market movement of the underlying S&P500 index, when the market changes, we will obtain different Sharpe ratios for these strategies listed.

5.3 Avenues for further research

Further, to make the strategy results more comprehensive, researchers can include more options strategies, and try to analyze their performance under different market situations. What is more, future analysis can take a longer period of historical data into consideration, like 5 or 10 years, to capture the trend of the whole market movements. Researches can also take taxes, dividends, etc. into account, and verify the exact influence on options prices and later strategy results.

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Appendix daily return for each strategy during 01/09/2009-31/08/2011

	Strategies	Buy an index	Long a call	C.C	P.P	Bull. S	Bear. S	Butterfly. S	straddle	strip	strap
Date	Adj Close	daily ROI	daily ROI	daily ROI	daily ROI	daily ROI	daily ROI	daily ROI	daily ROI	daily ROI	daily ROI
2009-9-1	998.04	-0.14%	-6.27%	2.77%	-3.11%	-100.00%	-100.00%	-827.48%	-99.58%	-99.43%	-99.72%
2009-9-2	994.75	0.37%	10.23%	2.73%	-1.86%	79.89%	79.89%	-100.00%	-77.39%	-84.63%	-70.44%
2009-9-3	1003.24	0.57%	20.25%	2.49%	-1.27%	139.50%	139.50%	-100.00%	-69.52%	-79.52%	-59.67%
2009-9-4	1016.4	0.38%	22.68%	2.45%	-1.58%	59.86%	59.86%	-100.00%	-79.69%	-86.44%	-72.95%
2009-9-8	1025.39	0.34%	12.12%	2.44%	-1.67%	110.29%	110.29%	-100.00%	-83.39%	-88.98%	-77.75%
2009-9-9	1033.37	0.45%	22.95%	2.26%	-1.26%	42.55%	42.55%	-100.00%	-71.82%	-80.95%	-62.94%
2009-9-10	1044.14	-0.06%	0.13%	2.16%	-2.31%	-30.37%	-30.37%	-209.54%	-94.47%	-96.24%	-92.77%
2009-9-11	1042.73	0.27%	8.17%	2.30%	-1.67%	37.30%	37.30%	-100.00%	-81.52%	-87.53%	-75.65%
2009-9-14	1049.34	0.14%	0.21%	2.23%	-1.94%	8.78%	8.78%	-100.00%	-85.11%	-89.87%	-80.53%
2009-9-15	1052.63	0.66%	45.97%	2.09%	-0.78%	95.09%	95.09%	-100.00%	-61.45%	-74.38%	-48.43%
2009-9-16	1068.76	-0.13%	0.82%	2.09%	-2.52%	-80.96%	-80.96%	879.18%	-99.02%	-99.34%	-98.70%
2009-9-17	1065.49	0.11%	-4.31%	2.43%	-1.98%	24.53%	24.53%	580.00%	-93.43%	-95.58%	-91.32%
2009-9-18	1068.3	-0.15%	-3.54%	2.02%	-2.68%	-100.00%	-100.00%	4430.56%	-99.33%	-99.11%	-99.55%
2009-9-21	1064.66	0.28%	10.05%	2.22%	-1.59%	28.45%	28.45%	-100.00%	-77.60%	-84.73%	-70.76%
2009-9-22	1071.66	-0.44%	-15.17%	1.28%	-2.34%	-100.00%	-100.00%	-100.00%	-81.04%	-74.68%	-87.38%
2009-9-23	1060.87	-0.42%	-24.96%	1.52%	-2.22%	-100.00%	-100.00%	-100.00%	-81.21%	-74.50%	-87.69%
2009-9-24	1050.78	-0.27%	-9.82%	1.76%	-2.53%	-100.00%	-100.00%	-100.00%	-88.95%	-85.46%	-92.53%
2009-9-25	1044.38	0.77%	38.74%	2.36%	-0.62%	40.81%	40.81%	-100.00%	-57.08%	-70.81%	-43.88%
2009-9-28	1062.98	-0.10%	-10.39%	2.07%	-2.23%	-100.00%	-100.00%	-484.68%	-91.24%	-88.51%	-94.07%
2009-9-29	1060.61	-0.14%	-3.06%	1.98%	-2.46%	-100.00%	-100.00%	1155.17%	-94.18%	-92.34%	-96.07%
2009-9-30	1057.08	-1.13%	-37.84%	-0.11%	-2.52%	-100.00%	-100.00%	-100.00%	-50.95%	-34.22%	-67.48%
2009-10-1	1029.85	-0.20%	-8.32%	2.56%	-3.03%	-91.45%	-91.45%	303.20%	-99.64%	-99.75%	-99.52%
2009-10-2	1025.21	0.64%	24.53%	2.76%	-1.24%	83.73%	83.73%	-100.00%	-72.41%	-81.67%	-63.08%
2009-10-5	1040.46	0.59%	28.45%	2.45%	-1.18%	95.75%	95.75%	-100.00%	-71.81%	-81.38%	-62.06%
2009-10-6	1054.72	0.12%	2.10%	2.24%	-2.04%	24.71%	24.71%	-100.00%	-85.58%	-90.20%	-81.11%
2009-10-7	1057.58	0.32%	24.62%	2.12%	-1.52%	86.17%	86.17%	-100.00%	-78.56%	-85.69%	-71.44%
2009-10-8	1065.48	0.24%	5.65%	2.31%	-1.65%	90.11%	90.11%	-100.00%	-86.60%	-91.03%	-82.20%
2009-10-9	1071.49	0.19%	12.33%	2.04%	-1.63%	94.55%	94.55%	-100.00%	-86.36%	-90.88%	-81.86%
2009-10-12	1076.19	-0.12%	-6.93%	1.89%	-2.34%	-100.00%	-100.00%	1253.33%	-96.19%	-94.98%	-97.43%
2009-10-13	1073.19	0.76%	46.72%	2.11%	-0.43%	23.44%	23.44%	-100.00%	-54.96%	-69.60%	-40.67%
2009-10-14	1092.02	0.18%	-0.72%	2.01%	-1.73%	94.88%	94.88%	-100.00%	-86.17%	-90.80%	-81.51%
2009-10-15	1096.56	-0.35%	-15.75%	1.09%	-2.30%	-100.00%	-100.00%	-100.00%	-83.68%	-78.82%	-88.82%
2009-10-16	1087.68	0.41%	28.96%	1.94%	-1.10%	42.75%	42.75%	-100.00%	-71.82%	-81.09%	-62.67%
2009-10-19	1097.91	-0.27%	-15.96%	1.61%	-2.36%	-100.00%	-100.00%	-127.22%	-91.74%	-88.94%	-94.52%
2009-10-20	1091.06	-0.39%	-21.67%	1.27%	-2.10%	-100.00%	-100.00%	-100.00%	-81.08%	-74.61%	-87.47%
2009-10-21	1081.4	0.46%	23.64%	2.09%	-1.17%	76.83%	76.83%	-100.00%	-73.12%	-82.20%	-63.92%
2009-10-22	1092.91	-0.53%	-24.09%	1.00%	-2.36%	-100.00%	-100.00%	-100.00%	-78.07%	-70.63%	-85.44%
2009-10-23	1079.6	-0.51%	-17.11%	1.26%	-2.54%	-100.00%	-100.00%	-100.00%	-83.66%	-77.84%	-89.29%
2009-10-26	1066.95	-0.14%	-8.83%	2.17%	-2.50%	-100.00%	-100.00%	572.39%	-96.91%	-95.86%	-97.95%
2009-10-27	1063.41	-0.86%	-26.77%	0.62%	-2.71%	-100.00%	-100.00%	-100.00%	-67.41%	-56.26%	-78.41%
2009-10-28	1042.63	0.97%	39.75%	2.69%	-0.55%	20.59%	20.59%	-100.00%	-55.94%	-70.54%	-41.42%

2009-10-29	1066.11	-1.24%	-40.82%	-0.55%	-2.53%	-100.00%	-100.00%	-100.00%	-43.22%	-25.45%	-61.55%
2009-10-30	1036.19	0.28%	10.06%	2.77%	-2.28%	51.52%	51.52%	-100.00%	-86.89%	-91.35%	-82.34%
2009-11-2	1042.88	0.11%	-0.09%	2.77%	-2.64%	6.46%	6.46%	-100.00%	-91.25%	-94.16%	-88.33%
2009-11-3	1045.41	0.05%	8.27%	2.63%	-2.66%	-51.83%	-51.83%	-2433.33%	-97.36%	-98.27%	-96.43%
2009-11-4	1046.5	0.83%	28.76%	2.74%	-0.63%	63.17%	63.17%	-100.00%	-61.56%	-73.99%	-49.50%
2009-11-5	1066.63	0.11%	1.79%	2.27%	-2.18%	75.51%	75.51%	250.00%	-91.69%	-94.50%	-88.83%
2009-11-6	1069.3	0.96%	59.01%	2.19%	-0.11%	19.11%	19.11%	-100.00%	-46.09%	-63.57%	-29.08%
2009-11-9	1093.08	0.00%	-4.39%	2.21%	-2.29%	-31.26%	-31.26%	-163.61%	-94.23%	-96.13%	-92.36%
2009-11-10	1093.01	0.22%	13.85%	2.10%	-1.68%	56.63%	56.63%	-100.00%	-82.89%	-88.51%	-77.36%
2009-11-11	1098.51	-0.45%	-15.47%	1.37%	-2.47%	-100.00%	-100.00%	-100.00%	-84.57%	-79.18%	-89.83%
2009-11-12	1087.24	0.25%	7.71%	2.35%	-1.84%	34.77%	34.77%	-100.00%	-84.26%	-89.48%	-79.08%
2009-11-13	1093.48	0.62%	38.45%	2.07%	-0.68%	62.60%	62.60%	-100.00%	-60.61%	-73.33%	-48.27%
2009-11-16	1109.3	0.04%	0.81%	2.12%	-2.10%	25.02%	25.02%	-100.00%	-89.78%	-93.08%	-86.59%
2009-11-17	1110.32	-0.02%	-1.39%	2.08%	-2.27%	-100.00%	-100.00%	1519.28%	-99.59%	-99.46%	-99.72%
2009-11-18	1109.8	-0.59%	-26.81%	1.11%	-2.52%	-100.00%	-100.00%	-100.00%	-80.06%	-72.85%	-86.98%
2009-11-19	1094.9	-0.14%	-39.70%	2.11%	-2.46%	-64.06%	-64.06%	-336.60%	-97.32%	-98.17%	-96.50%
2009-11-20	1091.38	0.59%	31.31%	2.04%	-0.76%	58.10%	58.10%	-100.00%	-65.04%	-76.72%	-53.33%
2009-11-23	1106.24	-0.02%	-4.40%	1.87%	-2.11%	-75.93%	-75.93%	-1622.50%	-98.55%	-99.04%	-98.03%
2009-11-24	1105.65	0.20%	15.48%	1.83%	-1.50%	85.19%	85.19%	-100.00%	-86.74%	-91.26%	-82.12%
2009-11-25	1110.63	-0.75%	-22.88%	0.13%	-2.03%	-100.00%	-100.00%	-100.00%	-56.87%	-43.32%	-70.82%
2009-11-27	1091.49	0.16%	5.18%	2.22%	-1.97%	107.72%	107.72%	-100.00%	-89.02%	-92.73%	-85.26%
2009-11-30	1095.63	0.52%	29.71%	2.14%	-1.18%	78.46%	78.46%	-100.00%	-72.31%	-81.89%	-62.35%
2009-12-1	1108.86	0.01%	-1.52%	1.96%	-1.98%	17.31%	17.31%	-152.41%	-91.16%	-94.01%	-88.40%
2009-12-2	1109.24	-0.37%	-15.16%	1.42%	-2.32%	-100.00%	-100.00%	-100.00%	-89.14%	-85.22%	-92.90%
2009-12-3	1099.92	0.24%	6.62%	2.02%	-1.51%	20.77%	20.77%	-100.00%	-77.86%	-84.88%	-71.18%
2009-12-4	1105.98	-0.11%	-7.13%	1.92%	-1.99%	-100.00%	-100.00%	60566.67%	-96.11%	-94.73%	-97.45%
2009-12-7	1103.25	-0.45%	-19.22%	1.28%	-2.36%	-100.00%	-100.00%	-100.00%	-83.37%	-77.56%	-89.04%
2009-12-8	1091.94	0.16%	8.37%	2.10%	-1.90%	82.89%	82.89%	-100.00%	-88.00%	-92.05%	-83.90%
2009-12-9	1095.95	0.25%	12.26%	2.11%	-1.54%	81.35%	81.35%	-100.00%	-84.42%	-89.62%	-79.21%
2009-12-10	1102.35	0.16%	10.22%	1.97%	-1.63%	77.78%	77.78%	-100.00%	-86.06%	-90.63%	-81.56%
2009-12-11	1106.41	0.30%	15.29%	1.99%	-1.21%	80.65%	80.65%	-100.00%	-79.45%	-86.13%	-72.93%
2009-12-14	1114.11	-0.24%	-12.76%	1.73%	-2.31%	-100.00%	-100.00%	-218.55%	-95.61%	-94.03%	-97.13%
2009-12-15	1107.93	0.05%	1.07%	1.98%	-1.91%	39.07%	39.07%	-771.35%	-91.15%	-94.03%	-88.33%
2009-12-16	1109.18	-0.52%	-22.24%	1.07%	-2.29%	-100.00%	-100.00%	-100.00%	-80.77%	-73.79%	-87.45%
2009-12-17	1096.08	0.25%	4.59%	2.22%	-1.46%	66.67%	66.67%	-100.00%	-84.29%	-89.37%	-79.36%
2009-12-18	1102.47	0.45%	24.78%	1.91%	-0.97%	72.50%	72.50%	-100.00%	-69.14%	-79.35%	-59.02%
2009-12-21	1114.05	0.15%	4.82%	1.79%	-1.51%	16.11%	16.11%	-100.00%	-82.03%	-87.79%	-76.48%
2009-12-22	1118.02	0.10%	9.32%	1.68%	-1.53%	46.69%	46.69%	-100.00%	-86.51%	-90.91%	-82.21%
2009-12-23	1120.59	0.23%	17.67%	1.72%	-1.30%	84.79%	84.79%	-100.00%	-83.90%	-89.38%	-78.31%
2009-12-24	1126.48	0.05%	5.73%	1.67%	-1.62%	-0.36%	-0.36%	1068.42%	-93.03%	-95.35%	-90.70%
2009-12-28	1127.78	-0.06%	-4.52%	1.71%	-1.93%	-66.44%	-66.44%	-371.82%	-97.16%	-98.09%	-96.25%
2009-12-29	1126.2	0.01%	-1.89%	1.74%	-1.77%	-48.68%	-48.68%	1873.23%	-96.53%	-97.69%	-95.37%
2009-12-30	1126.42	-0.44%	-17.77%	0.79%	-1.92%	-100.00%	-100.00%	-100.00%	-75.64%	-67.68%	-83.68%
2009-12-31	1115.1	0.69%	42.55%	1.97%	-0.36%	79.21%	79.21%	-100.00%	-58.78%	-72.57%	-44.93%
2010-1-4	1132.99	0.14%	5.50%	1.70%	-1.49%	44.40%	44.40%	-100.00%	-84.72%	-89.72%	-79.81%

2010-1-5	1136.52	0.02%	1.05%	1.62%	-1.68%	-17.24%	-17.24%	964.89%	-94.61%	-96.42%	-92.79%
2010-1-6	1137.14	0.17%	13.50%	1.59%	-1.30%	89.70%	89.70%	-100.00%	-83.05%	-88.68%	-77.44%
2010-1-7	1141.69	0.12%	6.12%	1.60%	-1.43%	88.64%	88.64%	-91.67%	-87.41%	-91.63%	-83.18%
2010-1-8	1144.98	0.08%	9.46%	1.46%	-1.37%	45.20%	45.20%	-100.00%	-82.25%	-87.82%	-77.00%
2010-1-11	1146.98	-0.41%	-20.66%	0.73%	-1.81%	-100.00%	-100.00%	-100.00%	-76.98%	-69.35%	-84.63%
2010-1-12	1136.22	0.36%	19.44%	1.70%	-0.85%	82.48%	82.48%	-100.00%	-72.95%	-81.82%	-64.20%
2010-1-13	1145.68	0.11%	9.11%	1.54%	-1.44%	31.13%	31.13%	238.99%	-90.81%	-93.95%	-87.58%
2010-1-14	1148.46	-0.47%	-30.39%	0.67%	-1.87%	-100.00%	-100.00%	-100.00%	-76.62%	-68.40%	-84.63%
2010-1-15	1136.03	0.54%	40.17%	1.69%	-0.41%	61.74%	61.74%	-100.00%	-60.68%	-73.57%	-48.01%
2010-1-19	1150.23	-0.46%	-28.21%	0.47%	-1.74%	-100.00%	-100.00%	-100.00%	-68.25%	-58.64%	-78.33%
2010-1-20	1138.04	-0.83%	-34.75%	-0.03%	-2.01%	-100.00%	-100.00%	-100.00%	-55.30%	-39.93%	-70.43%
2010-1-21	1116.48	-0.97%	-26.59%	-0.25%	-2.27%	-100.00%	-100.00%	-100.00%	-49.97%	-34.44%	-66.05%
2010-1-22	1091.76	0.20%	-5.66%	2.53%	-1.90%	66.67%	66.67%	-100.00%	-87.66%	-91.65%	-83.79%
2010-1-25	1096.78	-0.18%	-16.34%	1.81%	-2.38%	-100.00%	-100.00%	-13.03%	-94.22%	-92.34%	-96.12%
2010-1-26	1092.17	0.21%	9.08%	1.93%	-1.73%	81.82%	81.82%	-100.00%	-84.20%	-89.59%	-78.66%
2010-1-27	1097.5	-0.52%	-21.81%	1.19%	-2.50%	-100.00%	-100.00%	-100.00%	-79.60%	-72.78%	-86.40%
2010-1-28	1084.53	-0.43%	-23.47%	1.66%	-2.74%	-100.00%	-100.00%	-100.00%	-88.68%	-84.69%	-92.55%
2010-1-29	1073.87	0.62%	27.50%	2.22%	-0.95%	-28.57%	-28.57%	-100.00%	-63.72%	-75.60%	-52.05%
2010-2-1	1089.19	0.56%	27.93%	2.06%	-0.94%	13.22%	13.22%	-100.00%	-63.82%	-75.64%	-52.24%
2010-2-2	1103.32	-0.24%	-11.29%	1.64%	-2.36%	-100.00%	-100.00%	-157.41%	-94.20%	-92.24%	-96.15%
2010-2-3	1097.28	-1.37%	-47.24%	-0.98%	-2.32%	-100.00%	-100.00%	-100.00%	-32.82%	-10.49%	-55.19%
2010-2-4	1063.11	0.13%	5.61%	2.43%	-2.25%	75.13%	75.13%	-100.00%	-88.93%	-92.59%	-85.29%
2010-2-5	1066.19	-0.39%	-10.70%	1.41%	-2.68%	-100.00%	-100.00%	-100.00%	-84.20%	-79.46%	-89.20%
2010-2-8	1056.74	0.56%	25.86%	2.46%	-1.24%	64.51%	64.51%	-100.00%	-71.38%	-80.93%	-61.81%
2010-2-9	1070.52	-0.10%	-8.22%	2.20%	-2.52%	-100.00%	-100.00%	-457.71%	-96.44%	-95.30%	-97.60%
2010-2-10	1068.13	0.42%	18.82%	2.35%	-1.48%	16.63%	16.63%	-100.00%	-75.14%	-83.32%	-67.05%
2010-2-11	1078.47	-0.12%	-8.51%	2.20%	-2.55%	-87.10%	-87.10%	-311.54%	-99.02%	-99.34%	-98.70%
2010-2-12	1075.51	0.77%	37.34%	2.40%	-0.32%	70.94%	70.94%	-100.00%	-59.06%	-72.17%	-46.45%
2010-2-16	1094.87	0.18%	8.97%	2.03%	-1.70%	19.68%	19.68%	-100.00%	-81.09%	-87.14%	-75.26%
2010-2-17	1099.51	0.29%	12.10%	1.97%	-1.39%	59.76%	59.76%	-100.00%	-75.80%	-83.55%	-68.34%
2010-2-18	1106.75	0.09%	-0.61%	1.85%	-1.70%	70.20%	70.20%	107.50%	-90.41%	-93.60%	-87.24%
2010-2-19	1109.17	-0.05%	-8.82%	1.77%	-1.96%	-33.52%	-33.52%	-160.34%	-93.22%	-95.40%	-91.12%
2010-2-22	1108.01	-0.53%	-22.10%	0.73%	-2.05%	-100.00%	-100.00%	-100.00%	-74.89%	-66.19%	-83.43%
2010-2-23	1094.6	0.42%	22.69%	1.89%	-1.01%	206.28%	206.28%	-100.00%	-67.39%	-77.79%	-57.42%
2010-2-24	1105.24	-0.09%	-6.14%	1.71%	-2.02%	-100.00%	-100.00%	-376.24%	-95.25%	-93.75%	-96.79%
2010-2-25	1102.94	0.06%	2.30%	1.81%	-1.70%	52.85%	52.85%	353.33%	-89.60%	-92.97%	-86.33%
2010-2-26	1104.49	0.44%	25.31%	1.71%	-0.76%	42.10%	42.10%	-100.00%	-63.30%	-74.91%	-52.26%
2010-3-1	1115.71	0.10%	10.16%	1.72%	-1.58%	34.22%	34.22%	514.55%	-91.75%	-94.55%	-88.90%
2010-3-2	1118.31	0.02%	1.97%	1.65%	-1.70%	35.01%	35.01%	334.36%	-90.81%	-93.80%	-87.91%
2010-3-3	1118.79	0.16%	8.72%	1.65%	-1.35%	68.78%	68.78%	-100.00%	-80.75%	-86.93%	-74.80%
2010-3-4	1122.97	0.60%	38.57%	1.61%	-0.27%	98.02%	98.02%	-100.00%	-52.75%	-67.99%	-37.98%
2010-3-5	1138.7	-0.01%	-1.55%	1.49%	-1.58%	-9.89%	-9.89%	-175.04%	-90.89%	-93.81%	-88.08%
2010-3-8	1138.5	0.07%	9.87%	1.47%	-1.38%	78.75%	78.75%	-100.00%	-85.62%	-90.24%	-81.18%
2010-3-9	1140.45	0.20%	19.61%	1.67%	-1.24%	80.88%	80.88%	-100.00%	-85.52%	-90.38%	-80.64%
2010-3-10	1145.61	0.18%	12.26%	1.72%	-1.33%	82.77%	82.77%	-100.00%	-86.91%	-91.29%	-82.53%

2010-3-11	1150.24	-0.01%	0.24%	1.69%	-1.72%	-100.00%	-100.00%	898.00%	-99.97%	-99.97%	-99.98%
2010-3-12	1149.99	0.02%	7.87%	1.54%	-1.51%	73.65%	73.65%	-100.00%	-86.40%	-90.62%	-82.46%
2010-3-15	1150.51	0.34%	23.51%	1.71%	-0.97%	70.63%	70.63%	-100.00%	-76.39%	-84.32%	-68.40%
2010-3-16	1159.46	0.25%	18.90%	1.59%	-1.05%	25.22%	25.22%	-100.00%	-73.09%	-81.56%	-65.08%
2010-3-17	1166.21	-0.01%	0.00%	1.53%	-1.65%	-66.12%	-66.12%	449.46%	-97.82%	-98.55%	-97.08%
2010-3-18	1165.83	-0.22%	-18.83%	1.12%	-1.69%	-100.00%	-100.00%	-100.00%	-86.60%	-82.20%	-91.03%
2010-3-19	1159.9	0.22%	12.26%	1.46%	-1.05%	41.46%	41.46%	-100.00%	-72.89%	-81.42%	-64.82%
2010-3-22	1165.81	0.31%	24.78%	1.48%	-0.85%	95.93%	95.93%	-100.00%	-74.63%	-83.18%	-65.96%
2010-3-23	1174.17	-0.24%	-9.42%	1.17%	-1.80%	-100.00%	-100.00%	-278.00%	-93.88%	-91.64%	-96.01%
2010-3-24	1167.72	-0.07%	-7.80%	1.58%	-1.81%	-81.62%	-81.62%	-318.61%	-98.19%	-98.78%	-97.61%
2010-3-25	1165.73	0.03%	-4.08%	1.61%	-1.52%	-41.11%	-41.11%	919.08%	-95.83%	-97.21%	-94.46%
2010-3-26	1166.59	0.25%	18.49%	1.47%	-0.96%	85.32%	85.32%	-100.00%	-77.42%	-84.88%	-70.03%
2010-3-29	1173.22	0.00%	-3.92%	1.34%	-1.43%	12.85%	12.85%	531.74%	-90.84%	-93.80%	-87.98%
2010-3-30	1173.27	-0.14%	1.71%	1.00%	-1.40%	-100.00%	-100.00%	-100.00%	-83.53%	-78.67%	-88.68%
2010-3-31	1169.43	0.32%	23.76%	1.38%	-0.72%	166.44%	166.44%	-100.00%	-65.08%	-76.07%	-54.68%
2010-4-1	1178.1	0.34%	24.39%	1.44%	-0.75%	59.24%	59.24%	-100.00%	-67.41%	-78.00%	-57.08%
2010-4-5	1187.44	0.07%	8.49%	1.37%	-1.33%	62.59%	62.59%	1547.06%	-87.84%	-91.86%	-83.86%
2010-4-6	1189.44	-0.26%	-16.52%	1.12%	-1.81%	-100.00%	-100.00%	-289.84%	-93.19%	-90.69%	-95.56%
2010-4-7	1182.45	0.15%	10.74%	1.47%	-1.20%	32.78%	32.78%	-100.00%	-83.05%	-88.58%	-77.64%
2010-4-8	1186.44	0.29%	26.09%	1.42%	-0.79%	77.94%	77.94%	-100.00%	-73.54%	-82.27%	-64.90%
2010-4-9	1194.37	0.08%	5.49%	1.33%	-1.23%	36.78%	36.78%	-100.00%	-82.52%	-88.03%	-77.30%
2010-4-12	1196.48	0.03%	1.94%	1.39%	-1.43%	-17.65%	-17.65%	1160.00%	-93.63%	-95.77%	-91.48%
2010-4-13	1197.3	0.48%	41.73%	1.35%	-0.37%	76.32%	76.32%	-100.00%	-56.66%	-71.02%	-42.38%
2010-4-14	1210.65	0.04%	9.01%	1.27%	-1.39%	-28.89%	-28.89%	258.62%	-95.07%	-96.79%	-93.28%
2010-4-15	1211.67	-0.71%	-32.54%	-0.20%	-1.55%	-100.00%	-100.00%	-100.00%	-48.40%	-31.34%	-65.53%
2010-4-16	1192.13	0.20%	9.02%	1.57%	-1.21%	370.94%	370.94%	-100.00%	-81.48%	-87.59%	-75.42%
2010-4-19	1197.52	0.35%	27.64%	1.46%	-0.78%	35.98%	35.98%	-100.00%	-68.61%	-78.96%	-58.35%
2010-4-20	1207.17	-0.04%	-6.79%	1.33%	-1.45%	-63.19%	-63.19%	876.63%	-97.28%	-98.16%	-96.42%
2010-4-21	1205.94	0.10%	0.49%	1.33%	-1.32%	27.35%	27.35%	-521.74%	-89.73%	-93.29%	-86.02%
2010-4-22	1208.67	0.31%	27.83%	1.40%	-0.81%	-17.49%	-17.49%	-100.00%	-68.36%	-78.57%	-58.46%
2010-4-23	1217.28	-0.19%	-7.70%	1.09%	-1.73%	-100.00%	-100.00%	-2266.04%	-92.11%	-89.56%	-94.70%
2010-4-26	1212.05	-1.03%	-40.65%	-0.71%	-1.79%	-100.00%	-100.00%	-100.00%	-33.95%	-12.03%	-55.92%
2010-4-27	1183.71	0.28%	11.35%	2.15%	-1.47%	81.82%	81.82%	-100.00%	-87.03%	-91.46%	-82.49%
2010-4-28	1191.36	0.56%	31.72%	1.87%	-0.54%	97.74%	97.74%	-100.00%	-62.88%	-75.03%	-50.96%
2010-4-29	1206.78	-0.73%	-29.82%	0.06%	-1.74%	-100.00%	-100.00%	-100.00%	-54.64%	-38.93%	-70.04%
2010-4-30	1186.69	0.57%	26.19%	2.02%	-0.61%	53.17%	53.17%	-100.00%	-64.13%	-75.73%	-52.87%
2010-5-3	1202.26	-1.05%	-44.32%	-0.55%	-1.97%	-100.00%	-100.00%	-100.00%	-40.08%	-19.92%	-60.14%
2010-5-4	1173.6	-0.29%	-10.69%	1.79%	-2.55%	-100.00%	-100.00%	-186.51%	-92.53%	-89.97%	-95.05%
2010-5-5	1165.87	-1.43%	-45.32%	-0.98%	-2.41%	-100.00%	-100.00%	-100.00%	-32.44%	-10.65%	-54.59%
2010-5-6	1128.15	-0.67%	-16.30%	2.07%	-3.61%	-100.00%	-100.00%	-100.00%	-82.08%	-76.02%	-88.09%
2010-5-7	1110.88	1.87%	63.86%	3.63%	0.46%	69.70%	69.70%	-100.00%	-40.30%	-60.79%	-19.16%
2010-5-10	1159.73	-0.15%	-11.80%	2.55%	-2.93%	-82.24%	-82.24%	-276.78%	-98.77%	-99.17%	-98.38%
2010-5-11	1155.79	0.59%	24.58%	2.55%	-1.22%	68.67%	68.67%	-100.00%	-72.15%	-81.52%	-62.67%
2010-5-12	1171.67	-0.53%	-23.47%	1.13%	-2.42%	-100.00%	-100.00%	-100.00%	-76.98%	-69.36%	-84.63%
2010-5-13	1157.44	-0.82%	-27.45%	0.72%	-2.67%	-100.00%	-100.00%	-100.00%	-67.35%	-56.32%	-78.30%

2010-5-14	1135.68	0.05%	-2.99%	2.80%	-2.64%	-36.09%	-36.09%	-5812.00%	-96.96%	-97.98%	-95.93%
2010-5-17	1136.94	-0.62%	-17.34%	1.32%	-2.92%	-100.00%	-100.00%	-100.00%	-77.40%	-70.10%	-84.82%
2010-5-18	1120.8	-0.22%	-8.28%	2.56%	-3.16%	-100.00%	-100.00%	-92.47%	-92.86%	-90.58%	-95.19%
2010-5-19	1115.05	-1.73%	-31.35%	-0.89%	-3.24%	-100.00%	-100.00%	-100.00%	-38.96%	-19.94%	-58.62%
2010-5-20	1071.59	0.65%	7.38%	4.32%	-2.74%	92.31%	92.31%	-100.00%	-80.90%	-87.30%	-74.45%
2010-5-21	1087.69	-0.56%	-24.31%	2.63%	-3.82%	-100.00%	-100.00%	-100.00%	-86.15%	-81.44%	-90.81%
2010-5-24	1073.65	0.02%	-7.11%	3.57%	-3.44%	-5.90%	-5.90%	-139.34%	-94.91%	-96.58%	-93.26%
2010-5-25	1074.03	-0.25%	-8.29%	3.05%	-3.53%	-100.00%	-100.00%	-456.19%	-97.18%	-96.20%	-98.14%
2010-5-26	1067.95	1.40%	51.71%	3.36%	-0.10%	-12.47%	-12.47%	-100.00%	-48.42%	-65.40%	-31.64%
2010-5-27	1103.06	-0.54%	-16.81%	1.68%	-2.88%	-100.00%	-100.00%	-100.00%	-82.71%	-76.67%	-88.60%
2010-5-28	1089.41	-0.75%	-18.03%	1.62%	-3.30%	-100.00%	-100.00%	-100.00%	-79.12%	-71.73%	-86.29%
2010-6-1	1070.71	1.11%	34.91%	3.36%	-0.77%	96.63%	96.63%	-100.00%	-60.46%	-73.72%	-47.11%
2010-6-2	1098.38	0.18%	7.60%	2.82%	-2.36%	-6.34%	-6.34%	-100.00%	-87.87%	-91.82%	-84.02%
2010-6-3	1102.83	-1.52%	-42.36%	-0.66%	-2.86%	-100.00%	-100.00%	-100.00%	-41.85%	-21.93%	-61.50%
2010-6-4	1064.88	-0.59%	-19.02%	2.48%	-3.71%	-100.00%	-100.00%	-100.00%	-87.43%	-82.96%	-91.76%
2010-6-7	1050.47	0.47%	7.43%	3.53%	-2.27%	55.04%	55.04%	-100.00%	-83.46%	-88.97%	-77.95%
2010-6-8	1062	-0.26%	-7.11%	2.57%	-3.26%	-100.00%	-100.00%	204.25%	-93.51%	-91.39%	-95.66%
2010-6-9	1055.69	1.26%	53.98%	3.18%	-0.27%	78.12%	78.12%	-100.00%	-52.72%	-68.62%	-36.69%
2010-6-10	1086.84	0.19%	2.87%	2.76%	-2.35%	72.41%	72.41%	-100.00%	-89.36%	-92.91%	-85.81%
2010-6-11	1091.6	-0.08%	3.49%	2.52%	-2.77%	-100.00%	-100.00%	1834.93%	-99.37%	-99.16%	-99.57%
2010-6-14	1089.63	1.01%	40.67%	2.80%	-0.44%	12.44%	12.44%	-100.00%	-53.32%	-68.28%	-38.92%
2010-6-15	1115.23	-0.02%	2.14%	2.37%	-2.46%	-100.00%	-100.00%	-3101.86%	-99.28%	-99.05%	-99.52%
2010-6-16	1114.61	0.06%	0.73%	2.47%	-2.31%	16.14%	16.14%	-100.00%	-89.78%	-93.05%	-86.64%
2010-6-17	1116.04	0.06%	-3.54%	2.32%	-2.27%	6.81%	6.81%	107.50%	-95.33%	-96.91%	-93.74%
2010-6-18	1117.51	-0.17%	1.00%	1.93%	-2.43%	-100.00%	-100.00%	-458.97%	-96.44%	-95.25%	-97.63%
2010-6-21	1113.2	-0.70%	-28.12%	1.02%	-2.65%	-100.00%	-100.00%	-100.00%	-73.77%	-64.61%	-82.71%
2010-6-22	1095.31	-0.13%	-10.02%	2.34%	-2.57%	-100.00%	-100.00%	326.27%	-94.79%	-93.07%	-96.52%
2010-6-23	1092.04	-0.74%	-25.06%	0.97%	-2.67%	-100.00%	-100.00%	-100.00%	-71.13%	-61.33%	-80.84%
2010-6-24	1073.69	0.12%	-0.65%	2.94%	-2.59%	4.08%	4.08%	-100.00%	-89.74%	-93.07%	-86.50%
2010-6-25	1076.76	-0.09%	-2.20%	2.58%	-2.79%	-100.00%	-100.00%	-1195.55%	-99.26%	-99.02%	-99.51%
2010-6-28	1074.57	-1.37%	-42.73%	-0.11%	-3.03%	-100.00%	-100.00%	-100.00%	-52.88%	-36.04%	-69.13%
2010-6-29	1041.24	-0.44%	-19.33%	2.27%	-3.37%	-100.00%	-100.00%	-100.00%	-86.43%	-82.05%	-90.89%
2010-6-30	1030.71	-0.14%	-10.45%	2.92%	-3.43%	-100.00%	-100.00%	5251.61%	-96.15%	-94.95%	-97.39%
2010-7-1	1027.37	-0.20%	-21.10%	2.82%	-3.30%	-100.00%	-100.00%	-308.06%	-96.30%	-95.06%	-97.54%
2010-7-2	1022.58	0.23%	17.54%	2.59%	-2.36%	101.73%	101.73%	-100.00%	-86.26%	-90.94%	-81.47%
2010-7-6	1028.06	1.34%	65.87%	2.74%	0.37%	87.17%	87.17%	-100.00%	-40.01%	-59.53%	-20.95%
2010-7-7	1060.27	0.41%	19.94%	2.54%	-1.59%	83.73%	83.73%	-100.00%	-80.98%	-87.38%	-74.52%
2010-7-8	1070.25	0.31%	8.60%	2.49%	-1.63%	46.63%	46.63%	-100.00%	-84.62%	-89.70%	-79.58%
2010-7-9	1077.96	0.03%	6.35%	2.13%	-2.13%	28.17%	28.17%	861.54%	-92.46%	-94.93%	-90.01%
2010-7-12	1078.75	0.66%	40.99%	2.21%	-0.79%	81.82%	81.82%	-100.00%	-61.10%	-73.77%	-48.71%
2010-7-13	1095.34	-0.01%	0.03%	2.33%	-2.39%	-94.01%	-94.01%	2865.79%	-99.67%	-99.78%	-99.56%
2010-7-14	1095.17	0.05%	-2.76%	2.34%	-2.27%	-45.13%	-45.13%	1459.49%	-97.15%	-98.12%	-96.17%
2010-7-15	1096.48	-1.27%	-44.15%	-0.66%	-2.55%	-100.00%	-100.00%	-100.00%	-41.72%	-23.56%	-60.49%
2010-7-16	1064.88	0.26%	7.87%	2.49%	-1.84%	71.23%	71.23%	-100.00%	-80.28%	-86.53%	-74.34%
2010-7-19	1071.25	0.49%	22.55%	2.45%	-1.41%	103.28%	103.28%	-100.00%	-75.29%	-83.62%	-66.86%

2010-7-20	1083.48	-0.56%	-23.00%	1.21%	-2.54%	-100.00%	-100.00%	-100.00%	-79.74%	-72.63%	-86.67%
2010-7-21	1069.59	0.97%	52.96%	2.30%	-0.24%	187.36%	187.36%	-100.00%	-48.13%	-65.04%	-31.58%
2010-7-22	1093.67	0.36%	16.87%	2.23%	-1.59%	72.41%	72.41%	-100.00%	-76.62%	-84.35%	-68.95%
2010-7-23	1102.66	0.48%	24.64%	2.15%	-1.11%	136.09%	136.09%	-100.00%	-70.39%	-80.15%	-60.73%
2010-7-26	1115.01	-0.05%	0.35%	1.96%	-2.28%	-100.00%	-100.00%	380.00%	-97.61%	-96.89%	-98.37%
2010-7-27	1113.84	-0.30%	-13.31%	1.67%	-2.47%	-100.00%	-100.00%	-259.80%	-92.29%	-89.61%	-94.92%
2010-7-28	1106.13	-0.18%	-14.16%	1.87%	-2.38%	-100.00%	-100.00%	172.87%	-93.15%	-90.92%	-95.40%
2010-7-29	1101.53	0.00%	1.43%	2.12%	-2.31%	-47.76%	-47.76%	-594.55%	-96.84%	-97.91%	-95.73%
2010-7-30	1101.6	0.95%	56.92%	2.15%	-0.09%	81.82%	81.82%	-100.00%	-48.26%	-65.62%	-30.78%
2010-8-2	1125.86	-0.21%	-7.61%	1.52%	-2.15%	-100.00%	-100.00%	-29.23%	-90.15%	-87.03%	-93.35%
2010-8-3	1120.46	0.26%	44.53%	2.05%	-1.55%	105.88%	105.88%	-100.00%	-84.73%	-89.93%	-79.42%
2010-8-4	1127.24	-0.06%	-24.21%	2.54%	-2.78%	-90.99%	-90.99%	-133.37%	-98.67%	-99.12%	-98.22%
2010-8-5	1125.81	-0.16%	-14.22%	1.69%	-2.16%	-100.00%	-100.00%	185.22%	-92.82%	-90.51%	-95.18%
2010-8-6	1121.64	0.24%	15.17%	1.91%	-1.50%	63.65%	63.65%	-100.00%	-83.06%	-88.76%	-77.30%
2010-8-9	1127.79	-0.26%	-12.33%	1.54%	-2.23%	-100.00%	-100.00%	-230.75%	-91.55%	-88.66%	-94.40%
2010-8-10	1121.06	-1.24%	-49.34%	-0.74%	-2.14%	-100.00%	-100.00%	-100.00%	-34.94%	-13.19%	-56.66%
2010-8-11	1089.47	-0.23%	-11.31%	2.12%	-2.67%	-100.00%	-100.00%	25170.00%	-97.41%	-96.48%	-98.31%
2010-8-12	1083.61	-0.18%	-5.18%	2.23%	-2.72%	-100.00%	-100.00%	33900.00%	-98.62%	-98.15%	-99.09%
2010-8-13	1079.25	0.01%	-0.81%	2.41%	-2.38%	44.62%	44.62%	-1013.68%	-92.18%	-94.69%	-89.75%
2010-8-16	1079.38	0.53%	22.94%	2.37%	-1.23%	57.30%	57.30%	-100.00%	-68.72%	-78.84%	-58.90%
2010-8-17	1092.54	0.06%	-1.84%	2.21%	-2.14%	62.00%	62.00%	8.39%	-91.94%	-94.61%	-89.29%
2010-8-18	1094.16	-0.74%	-24.82%	0.66%	-2.75%	-100.00%	-100.00%	-100.00%	-72.53%	-63.63%	-81.56%
2010-8-19	1075.63	-0.16%	-13.34%	2.20%	-2.74%	-100.00%	-100.00%	-3480.00%	-94.17%	-92.34%	-96.05%
2010-8-20	1071.69	-0.18%	-9.90%	2.13%	-2.64%	-100.00%	-100.00%	-1358.67%	-95.11%	-93.51%	-96.72%
2010-8-23	1067.36	-0.63%	-23.25%	1.08%	-2.66%	-100.00%	-100.00%	-100.00%	-75.45%	-67.29%	-83.62%
2010-8-24	1051.87	0.14%	1.38%	2.66%	-2.36%	48.15%	48.15%	-100.00%	-90.83%	-93.88%	-87.77%
2010-8-25	1055.33	-0.34%	-12.55%	1.80%	-2.75%	-100.00%	-100.00%	-100.00%	-86.13%	-81.81%	-90.59%
2010-8-26	1047.22	0.71%	29.69%	2.59%	-1.06%	76.99%	76.99%	-100.00%	-65.86%	-77.26%	-54.44%
2010-8-27	1064.59	-0.64%	-24.53%	1.14%	-2.69%	-100.00%	-100.00%	-100.00%	-78.79%	-71.20%	-86.10%
2010-8-30	1048.92	0.02%	7.43%	2.43%	-2.53%	20.34%	20.34%	-206.59%	-92.32%	-94.85%	-89.83%
2010-8-31	1049.33	1.26%	60.05%	2.61%	0.55%	65.48%	65.48%	-100.00%	-36.97%	-56.48%	-18.77%
2010-9-1	1080.29	0.39%	16.85%	2.40%	-1.38%	75.00%	75.00%	-100.00%	-80.10%	-86.68%	-73.56%
2010-9-2	1090.1	0.57%	25.94%	2.24%	-0.91%	80.18%	80.18%	-100.00%	-70.11%	-80.14%	-60.01%
2010-9-3	1104.51	-0.50%	-16.66%	1.00%	-2.27%	-100.00%	-100.00%	-100.00%	-81.71%	-75.16%	-88.03%
2010-9-7	1091.84	0.28%	17.62%	2.19%	-1.59%	75.44%	75.44%	-100.00%	-82.23%	-88.12%	-76.37%
2010-9-8	1098.87	0.21%	10.28%	2.10%	-1.57%	61.29%	61.29%	-100.00%	-81.42%	-87.32%	-75.79%
2010-9-9	1104.18	0.21%	10.82%	2.02%	-1.51%	56.25%	56.25%	-100.00%	-80.27%	-86.52%	-74.32%
2010-9-10	1109.55	0.48%	33.28%	1.89%	-0.82%	42.86%	42.86%	-100.00%	-63.74%	-75.22%	-52.81%
2010-9-13	1121.9	-0.03%	0.41%	1.95%	-2.05%	-65.83%	-65.83%	2630.00%	-97.61%	-98.40%	-96.82%
2010-9-14	1121.1	0.15%	12.76%	2.03%	-1.74%	113.74%	113.74%	-100.00%	-89.29%	-92.88%	-85.66%
2010-9-15	1125.07	-0.02%	-1.21%	2.14%	-2.12%	-100.00%	-100.00%	-1115.41%	-99.30%	-99.06%	-99.53%
2010-9-16	1124.66	0.04%	-1.78%	2.00%	-1.92%	72.41%	72.41%	-100.00%	-88.72%	-92.29%	-85.32%
2010-9-17	1125.59	0.66%	45.70%	2.02%	-0.68%	57.80%	57.80%	-100.00%	-62.98%	-75.68%	-49.90%
2010-9-20	1142.71	-0.11%	-3.04%	1.88%	-2.16%	-100.00%	-100.00%	-1024.31%	-99.53%	-99.36%	-99.69%
2010-9-21	1139.78	-0.21%	-11.30%	1.86%	-2.37%	-100.00%	-100.00%	2753.33%	-98.53%	-97.99%	-99.04%

2010-9-22	1134.28	-0.36%	-16.61%	1.48%	-2.37%	-100.00%	-100.00%	-100.00%	-89.43%	-85.64%	-93.08%
2010-9-23	1124.83	0.91%	46.48%	2.11%	0.00%	56.25%	56.25%	-100.00%	-44.63%	-62.07%	-28.10%
2010-9-24	1148.67	-0.25%	-7.53%	1.56%	-2.20%	-100.00%	-100.00%	1300.00%	-93.84%	-91.66%	-95.95%
2010-9-27	1142.16	0.21%	9.00%	2.05%	-1.55%	75.44%	75.44%	-100.00%	-84.18%	-89.34%	-79.12%
2010-9-28	1147.7	-0.11%	-2.23%	1.90%	-2.25%	-100.00%	-100.00%	2754.31%	-99.44%	-99.25%	-99.63%
2010-9-29	1144.73	-0.13%	-4.38%	1.98%	-2.36%	-60.00%	-60.00%	-1287.50%	-97.64%	-98.40%	-96.91%
2010-9-30	1141.2	0.19%	3.15%	2.19%	-1.69%	55.28%	55.28%	-100.00%	-87.61%	-91.69%	-83.58%
2010-10-1	1146.24	-0.35%	-13.98%	1.28%	-2.13%	-100.00%	-100.00%	-100.00%	-83.14%	-77.52%	-88.76%
2010-10-4	1137.03	0.90%	52.16%	2.13%	-0.11%	86.97%	86.97%	-100.00%	-49.19%	-65.95%	-32.60%
2010-10-5	1160.75	-0.03%	-1.80%	1.93%	-2.10%	-100.00%	-100.00%	-2110.98%	-99.94%	-99.92%	-99.96%
2010-10-6	1159.97	-0.07%	0.66%	1.78%	-1.99%	9.57%	9.57%	676.00%	-93.45%	-95.52%	-91.48%
2010-10-7	1158.06	0.27%	8.68%	1.96%	-1.27%	71.82%	71.82%	-100.00%	-78.56%	-85.37%	-72.06%
2010-10-8	1165.15	0.01%	5.17%	1.86%	-1.93%	-87.42%	-87.42%	641.18%	-99.28%	-99.53%	-99.03%
2010-10-11	1165.32	0.17%	4.79%	1.94%	-1.54%	79.52%	79.52%	-43.51%	-89.45%	-92.97%	-85.91%
2010-10-12	1169.77	0.31%	24.74%	1.64%	-1.11%	77.76%	77.76%	-100.00%	-70.96%	-80.34%	-61.85%
2010-10-13	1178.1	-0.16%	-1.83%	1.61%	-2.05%	-100.00%	-100.00%	1030.08%	-97.32%	-96.38%	-98.23%
2010-10-14	1173.81	0.09%	-1.65%	1.86%	-1.54%	84.50%	84.50%	-100.00%	-86.56%	-90.75%	-82.64%
2010-10-15	1176.19	0.31%	26.20%	1.77%	-1.14%	91.26%	91.26%	-100.00%	-77.89%	-85.32%	-70.38%
2010-10-18	1184.71	-0.70%	-32.69%	0.43%	-2.13%	-100.00%	-100.00%	-100.00%	-68.56%	-57.18%	-79.47%
2010-10-19	1165.9	0.45%	28.28%	1.99%	-0.99%	86.12%	86.12%	-100.00%	-72.43%	-81.67%	-63.13%
2010-10-20	1178.17	0.08%	3.39%	1.77%	-1.68%	55.87%	55.87%	-100.00%	-88.53%	-92.28%	-84.87%
2010-10-21	1180.26	0.10%	9.77%	1.83%	-1.78%	18.46%	18.46%	448.57%	-93.26%	-95.59%	-90.83%
2010-10-22	1183.08	0.09%	8.44%	1.77%	-1.62%	36.25%	36.25%	-100.00%	-87.68%	-91.69%	-83.76%
2010-10-25	1185.62	0.00%	2.42%	1.90%	-1.99%	-75.98%	-75.98%	1869.03%	-98.63%	-99.10%	-98.16%
2010-10-26	1185.64	-0.12%	-7.71%	1.73%	-2.06%	-100.00%	-100.00%	-853.85%	-94.64%	-92.90%	-96.40%
2010-10-27	1182.45	0.05%	4.12%	1.84%	-1.89%	63.08%	63.08%	65.02%	-92.12%	-94.76%	-89.46%
2010-10-28	1183.78	-0.02%	1.54%	1.81%	-2.03%	21.87%	21.87%	480.00%	-93.31%	-95.52%	-91.13%
2010-10-29	1183.26	0.04%	6.46%	1.89%	-1.96%	53.30%	53.30%	567.69%	-91.23%	-94.14%	-88.33%
2010-11-1	1184.38	0.34%	23.39%	1.93%	-1.26%	74.24%	74.24%	-100.00%	-73.49%	-82.06%	-65.19%
2010-11-2	1193.57	0.16%	-1.33%	2.02%	-1.63%	78.12%	78.12%	-100.00%	-84.50%	-89.47%	-79.72%
2010-11-3	1197.96	0.83%	54.55%	1.79%	0.09%	94.17%	94.17%	-100.00%	-43.30%	-61.68%	-25.42%
2010-11-4	1221.06	0.17%	10.47%	1.67%	-1.42%	78.57%	78.57%	-100.00%	-86.57%	-91.15%	-81.90%
2010-11-5	1225.85	-0.09%	-7.18%	1.47%	-1.83%	-100.00%	-100.00%	426.01%	-95.86%	-94.56%	-97.20%
2010-11-8	1223.25	-0.35%	-19.56%	0.99%	-1.93%	-100.00%	-100.00%	-100.00%	-84.45%	-79.10%	-89.72%
2010-11-9	1213.4	0.19%	7.61%	1.63%	-1.29%	87.54%	87.54%	-100.00%	-80.22%	-86.66%	-73.93%
2010-11-10	1218.71	-0.18%	-11.89%	1.36%	-1.95%	-100.00%	-100.00%	1080.00%	-96.51%	-95.31%	-97.69%
2010-11-11	1213.54	-0.52%	-26.73%	0.62%	-1.94%	-100.00%	-100.00%	-100.00%	-74.41%	-65.53%	-83.11%
2010-11-12	1199.21	-0.05%	-2.17%	1.74%	-1.96%	-8.33%	-8.33%	-2068.75%	-94.17%	-96.05%	-92.34%
2010-11-15	1197.75	-0.71%	-35.51%	0.40%	-2.12%	-100.00%	-100.00%	-100.00%	-64.72%	-52.63%	-76.65%
2010-11-16	1178.34	0.01%	2.67%	1.97%	-2.09%	22.44%	22.44%	1616.52%	-93.03%	-95.34%	-90.75%
2010-11-17	1178.59	0.66%	34.36%	2.01%	-0.49%	51.84%	51.84%	-100.00%	-57.27%	-70.97%	-44.06%
2010-11-18	1196.69	0.11%	1.78%	1.93%	-1.62%	-100.00%	-100.00%	4630.00%	-99.37%	-99.18%	-99.57%
2010-11-19	1199.73	-0.07%	-3.56%	1.51%	-1.74%	17.56%	17.56%	112.06%	-93.21%	-95.36%	-91.16%
2010-11-22	1197.84	-0.62%	-30.67%	0.39%	-1.90%	-100.00%	-100.00%	-100.00%	-66.05%	-54.25%	-77.60%
2010-11-23	1180.73	0.64%	43.88%	1.88%	-0.42%	89.70%	89.70%	-100.00%	-59.39%	-72.97%	-45.76%

2010-11-24	1198.35	-0.33%	-16.86%	1.18%	-2.06%	-100.00%	-100.00%	-100.00%	-87.44%	-83.12%	-91.69%
2010-11-26	1189.4	-0.06%	2.53%	1.70%	-2.30%	1.36%	1.36%	5126.67%	-94.54%	-96.41%	-92.62%
2010-11-29	1187.76	-0.26%	-9.35%	1.52%	-2.25%	-100.00%	-100.00%	381.25%	-90.99%	-87.96%	-94.01%
2010-11-30	1180.55	0.93%	59.07%	2.14%	-0.20%	82.86%	82.86%	-100.00%	-50.97%	-67.84%	-33.53%
2010-12-1	1206.07	0.55%	35.98%	1.93%	-0.73%	91.47%	91.47%	-100.00%	-65.75%	-77.26%	-54.14%
2010-12-2	1221.53	0.11%	-1.75%	1.77%	-1.51%	65.26%	65.26%	38.10%	-89.46%	-92.93%	-86.03%
2010-12-3	1224.71	-0.06%	-3.70%	1.47%	-1.65%	-5.66%	-5.66%	-570.00%	-92.45%	-94.82%	-90.20%
2010-12-6	1223.12	0.02%	8.25%	1.53%	-1.52%	18.03%	18.03%	-660.90%	-90.86%	-93.81%	-88.02%
2010-12-7	1223.75	0.16%	8.41%	1.63%	-1.26%	91.97%	91.97%	-100.00%	-80.97%	-87.00%	-75.22%
2010-12-8	1228.28	0.17%	8.98%	1.57%	-1.24%	75.58%	75.58%	-100.00%	-81.14%	-87.22%	-75.27%
2010-12-9	1233	0.26%	23.07%	1.51%	-0.96%	80.62%	80.62%	-100.00%	-74.47%	-82.72%	-66.45%
2010-12-10	1240.4	0.00%	9.03%	1.64%	-1.71%	-83.94%	-83.94%	-40052.00%	-98.91%	-99.28%	-98.53%
2010-12-13	1240.46	0.04%	2.16%	1.79%	-1.71%	-52.86%	-52.86%	-371.81%	-96.47%	-97.65%	-95.27%
2010-12-14	1241.59	-0.22%	-12.70%	1.35%	-1.86%	-100.00%	-100.00%	-117.53%	-89.32%	-85.66%	-92.93%
2010-12-15	1235.23	0.27%	12.94%	1.80%	-1.11%	-34.33%	-34.33%	-100.00%	-81.97%	-87.94%	-76.05%
2010-12-16	1242.87	0.04%	-9.55%	1.65%	-1.59%	5.75%	5.75%	-160.43%	-91.15%	-94.02%	-88.36%
2010-12-17	1243.91	0.11%	6.73%	1.38%	-1.26%	51.52%	51.52%	-100.00%	-82.23%	-87.97%	-76.66%
2010-12-20	1247.08	0.26%	26.72%	1.42%	-0.89%	48.35%	48.35%	-100.00%	-74.93%	-83.19%	-66.76%
2010-12-21	1254.6	0.15%	8.30%	1.39%	-1.04%	56.25%	56.25%	-100.00%	-77.44%	-84.39%	-70.99%
2010-12-22	1258.84	-0.07%	-0.97%	1.28%	-1.55%	-30.96%	-30.96%	147.60%	-95.26%	-96.79%	-93.80%
2010-12-23	1256.77	0.03%	11.68%	1.43%	-1.49%	-0.39%	-0.39%	75.71%	-93.53%	-95.69%	-91.35%
2010-12-27	1257.54	0.03%	2.18%	1.56%	-1.51%	0.49%	0.49%	-465.96%	-91.64%	-94.36%	-88.99%
2010-12-28	1258.51	0.04%	1.08%	1.52%	-1.39%	57.92%	57.92%	4006.67%	-88.41%	-92.07%	-84.95%
2010-12-29	1259.78	-0.07%	-3.75%	1.43%	-1.56%	2.47%	2.47%	420.70%	-92.90%	-95.09%	-90.87%
2010-12-30	1257.88	-0.01%	5.11%	1.52%	-1.55%	-6.96%	-6.96%	893.68%	-93.59%	-95.65%	-91.60%
2010-12-31	1257.64	0.49%	30.41%	1.63%	-0.48%	66.27%	66.27%	-100.00%	-60.90%	-73.45%	-48.80%
2011-1-3	1271.87	-0.06%	-3.71%	1.47%	-1.74%	-93.23%	-93.23%	-8770.97%	-99.51%	-99.68%	-99.35%
2011-1-4	1270.2	0.22%	16.01%	1.55%	-1.13%	86.17%	86.17%	-100.00%	-83.84%	-89.35%	-78.19%
2011-1-5	1276.56	-0.09%	-3.84%	1.37%	-1.67%	-100.00%	-100.00%	-1697.04%	-97.13%	-96.17%	-98.08%
2011-1-6	1273.85	-0.08%	-7.57%	1.48%	-1.66%	-52.38%	-52.38%	3400.00%	-96.39%	-97.53%	-95.30%
2011-1-7	1271.5	-0.06%	-6.53%	1.51%	-1.63%	-100.00%	-100.00%	1172.73%	-99.38%	-99.16%	-99.59%
2011-1-10	1269.75	0.16%	8.18%	1.43%	-1.14%	50.70%	50.70%	-100.00%	-77.46%	-84.59%	-70.69%
2011-1-11	1274.48	0.39%	37.38%	1.34%	-0.58%	90.74%	90.74%	-100.00%	-60.40%	-73.11%	-48.16%
2011-1-12	1285.96	-0.07%	-5.44%	1.38%	-1.54%	-100.00%	-100.00%	1362.22%	-96.81%	-95.73%	-97.88%
2011-1-13	1283.76	0.32%	19.81%	1.40%	-0.68%	76.21%	76.21%	-100.00%	-66.67%	-77.19%	-56.69%
2011-1-14	1293.24	0.06%	15.32%	1.26%	-1.22%	77.22%	77.22%	-100.00%	-86.48%	-90.87%	-82.20%
2011-1-18	1295.02	-0.44%	-28.83%	0.49%	-1.44%	-100.00%	-100.00%	-100.00%	-65.71%	-54.11%	-77.23%
2011-1-19	1281.92	-0.06%	-6.77%	1.56%	-1.69%	-91.03%	-91.03%	3692.00%	-99.38%	-99.58%	-99.18%
2011-1-20	1280.26	0.10%	11.86%	1.58%	-1.48%	28.85%	28.85%	371.43%	-92.12%	-94.83%	-89.31%
2011-1-21	1283.35	0.25%	15.13%	1.52%	-1.00%	72.41%	72.41%	-100.00%	-74.81%	-82.94%	-66.94%
2011-1-24	1290.84	0.01%	-4.70%	1.57%	-1.54%	-59.21%	-59.21%	-768.50%	-97.14%	-98.09%	-96.20%
2011-1-25	1291.18	0.18%	12.37%	1.46%	-1.17%	49.02%	49.02%	-100.00%	-83.65%	-89.19%	-78.02%
2011-1-26	1296.63	0.10%	3.27%	1.40%	-1.25%	48.85%	48.85%	-226.27%	-88.32%	-92.20%	-84.46%
2011-1-27	1299.54	-0.78%	-37.44%	-0.24%	-1.70%	-100.00%	-100.00%	-100.00%	-50.91%	-33.18%	-67.93%
2011-1-28	1276.34	0.33%	20.26%	1.72%	-1.04%	61.29%	61.29%	-100.00%	-75.96%	-84.02%	-67.84%

2011-1-31	1286.12	0.72%	56.24%	1.59%	-0.11%	60.55%	60.55%	-100.00%	-48.88%	-66.36%	-30.94%
2011-2-1	1307.59	-0.12%	-9.66%	1.29%	-1.80%	-100.00%	-100.00%	588.05%	-97.66%	-96.91%	-98.42%
2011-2-2	1304.03	0.10%	2.92%	1.36%	-1.24%	51.11%	51.11%	-100.00%	-82.65%	-88.24%	-77.24%
2011-2-3	1307.1	0.13%	5.72%	1.35%	-1.21%	83.49%	83.49%	-100.00%	-85.08%	-90.09%	-80.04%
2011-2-4	1310.87	0.27%	34.45%	1.26%	-0.85%	149.55%	149.55%	-100.00%	-75.33%	-83.90%	-66.39%
2011-2-7	1319.05	0.18%	11.29%	1.23%	-0.96%	69.70%	69.70%	-100.00%	-75.13%	-83.17%	-67.31%
2011-2-8	1324.57	-0.12%	-2.73%	1.12%	-1.62%	-60.45%	-60.45%	318.73%	-97.63%	-98.40%	-96.87%
2011-2-9	1320.88	0.03%	-1.31%	1.36%	-1.34%	-30.74%	-30.74%	832.34%	-95.02%	-96.69%	-93.34%
2011-2-10	1321.87	0.24%	23.78%	1.27%	-0.87%	78.57%	78.57%	-100.00%	-75.47%	-83.73%	-67.12%
2011-2-11	1329.15	0.10%	10.79%	1.20%	-1.05%	70.11%	70.11%	-100.00%	-80.32%	-86.58%	-74.34%
2011-2-14	1332.32	-0.14%	-11.98%	1.14%	-1.57%	-100.00%	-100.00%	-2347.47%	-94.78%	-93.02%	-96.53%
2011-2-15	1328.01	0.27%	25.81%	1.32%	-0.78%	48.31%	48.31%	-100.00%	-71.13%	-80.51%	-61.97%
2011-2-16	1336.32	0.13%	11.93%	1.38%	-1.18%	67.36%	67.36%	-100.00%	-86.30%	-90.92%	-81.63%
2011-2-17	1340.43	0.08%	1.53%	1.41%	-1.33%	7.50%	7.50%	-2090.00%	-92.44%	-95.02%	-89.78%
2011-2-18	1343.01	-0.90%	-37.10%	-0.62%	-1.60%	-100.00%	-100.00%	-100.00%	-35.60%	-13.65%	-57.31%
2011-2-22	1315.44	-0.27%	-11.75%	1.27%	-1.96%	-100.00%	-100.00%	-100.00%	-84.88%	-80.04%	-89.82%
2011-2-23	1307.4	-0.04%	-8.52%	1.94%	-2.07%	-63.20%	-63.20%	3800.00%	-97.94%	-98.62%	-97.28%
2011-2-24	1306.1	0.46%	26.89%	1.86%	-0.95%	84.33%	84.33%	-100.00%	-70.99%	-80.84%	-60.96%
2011-2-25	1319.88	0.24%	22.73%	1.55%	-1.07%	65.09%	65.09%	-100.00%	-73.81%	-82.13%	-65.86%
2011-2-28	1327.22	-0.69%	-41.00%	0.22%	-1.71%	-100.00%	-100.00%	-100.00%	-58.10%	-42.90%	-72.66%
2011-3-1	1306.33	0.07%	8.51%	1.80%	-1.82%	23.17%	23.17%	892.73%	-93.22%	-95.54%	-90.84%
2011-3-2	1308.44	0.74%	49.17%	1.79%	-0.17%	62.89%	62.89%	-100.00%	-49.33%	-65.87%	-33.14%
2011-3-3	1330.97	-0.32%	-21.58%	0.95%	-1.76%	-100.00%	-100.00%	-100.00%	-80.40%	-73.98%	-86.87%
2011-3-4	1321.15	-0.36%	-15.91%	0.92%	-1.82%	-100.00%	-100.00%	-100.00%	-78.70%	-71.67%	-85.77%
2011-3-7	1310.13	0.39%	25.89%	1.92%	-1.07%	76.54%	76.54%	-100.00%	-76.77%	-84.64%	-68.78%
2011-3-8	1321.82	-0.06%	-6.22%	1.78%	-1.92%	-99.29%	-99.29%	1294.40%	-99.96%	-99.97%	-99.95%
2011-3-9	1320.02	-0.83%	-39.24%	-0.12%	-1.94%	-100.00%	-100.00%	-100.00%	-49.62%	-34.06%	-65.77%
2011-3-10	1295.11	0.31%	18.38%	2.05%	-1.49%	80.18%	80.18%	-100.00%	-83.14%	-88.94%	-77.15%
2011-3-11	1304.28	-0.26%	-16.22%	1.56%	-2.14%	-100.00%	-100.00%	456.00%	-93.06%	-90.52%	-95.47%
2011-3-14	1296.39	-0.49%	-19.74%	0.91%	-2.17%	-100.00%	-100.00%	-100.00%	-75.44%	-67.51%	-83.49%
2011-3-15	1281.87	-0.86%	-23.49%	0.34%	-2.48%	-100.00%	-100.00%	-100.00%	-61.42%	-48.96%	-74.08%
2011-3-16	1256.88	0.58%	17.15%	2.88%	-1.37%	56.60%	56.60%	-100.00%	-73.81%	-82.34%	-65.47%
2011-3-17	1273.72	0.19%	4.38%	2.39%	-2.02%	63.93%	63.93%	-100.00%	-85.90%	-90.52%	-81.34%
2011-3-18	1279.21	0.65%	28.88%	2.16%	-0.72%	87.97%	87.97%	-100.00%	-60.87%	-73.53%	-48.57%
2011-3-21	1298.38	-0.15%	-9.15%	1.74%	-2.11%	-100.00%	-100.00%	-1126.85%	-97.60%	-96.75%	-98.42%
2011-3-22	1293.77	0.13%	2.12%	1.83%	-1.56%	88.68%	88.68%	-100.00%	-85.30%	-90.03%	-80.73%
2011-3-23	1297.54	0.40%	27.47%	1.72%	-0.94%	63.09%	63.09%	-100.00%	-70.05%	-80.04%	-60.05%
2011-3-24	1309.66	0.14%	11.84%	1.56%	-1.30%	53.37%	53.37%	-100.00%	-80.90%	-86.96%	-75.13%
2011-3-25	1313.8	-0.12%	-6.97%	1.57%	-1.87%	-93.36%	-93.36%	536.48%	-99.58%	-99.71%	-99.45%
2011-3-28	1310.19	0.31%	20.60%	1.72%	-1.13%	78.57%	78.57%	-100.00%	-79.76%	-86.70%	-72.63%
2011-3-29	1319.44	0.29%	21.63%	1.49%	-0.94%	102.20%	102.20%	-100.00%	-70.67%	-80.10%	-61.56%
2011-3-30	1328.26	-0.08%	-5.07%	1.48%	-1.76%	-72.45%	-72.45%	-32533.33%	-98.11%	-98.73%	-97.50%
2011-3-31	1325.83	0.22%	11.96%	1.58%	-1.08%	80.51%	80.51%	-100.00%	-82.58%	-88.35%	-76.83%
2011-4-1	1332.41	0.01%	3.74%	1.42%	-1.50%	-7.84%	-7.84%	-1342.50%	-93.12%	-95.40%	-90.86%
2011-4-4	1332.87	-0.01%	-5.86%	1.45%	-1.53%	-7.77%	-7.77%	1093.53%	-93.79%	-95.81%	-91.80%

2011-4-5	1332.63	0.09%	7.75%	1.37%	-1.28%	71.07%	71.07%	-100.00%	-86.41%	-90.91%	-81.93%
2011-4-6	1335.54	-0.07%	-4.54%	1.29%	-1.57%	-100.00%	-100.00%	538.18%	-96.24%	-95.06%	-97.46%
2011-4-7	1333.51	-0.17%	-9.24%	1.18%	-1.73%	-100.00%	-100.00%	546.94%	-95.50%	-93.95%	-97.02%
2011-4-8	1328.17	-0.12%	-11.01%	1.38%	-1.76%	-100.00%	-100.00%	894.27%	-98.72%	-98.28%	-99.16%
2011-4-11	1324.46	-0.34%	-25.15%	0.93%	-1.85%	-100.00%	-100.00%	-100.00%	-86.35%	-81.51%	-91.04%
2011-4-12	1314.16	0.01%	-2.51%	1.41%	-1.57%	52.82%	52.82%	-0.24%	-89.88%	-93.20%	-86.62%
2011-4-13	1314.41	0.00%	-1.62%	1.34%	-1.50%	48.20%	48.20%	239.39%	-89.22%	-92.72%	-85.80%
2011-4-14	1314.52	0.17%	9.13%	1.31%	-1.00%	65.56%	65.56%	-100.00%	-75.75%	-83.43%	-68.43%
2011-4-15	1319.68	-0.48%	-30.75%	0.48%	-1.69%	-100.00%	-100.00%	-100.00%	-74.51%	-65.18%	-83.40%
2011-4-18	1305.14	0.25%	13.98%	1.49%	-1.06%	55.04%	55.04%	-100.00%	-81.36%	-87.80%	-74.70%
2011-4-19	1312.62	0.58%	74.91%	1.22%	-0.17%	106.61%	106.61%	-100.00%	-47.02%	-65.13%	-28.42%
2011-4-20	1330.36	0.23%	10.48%	1.39%	-0.81%	84.39%	84.39%	-100.00%	-79.82%	-86.47%	-73.24%
2011-4-21	1337.38	-0.07%	4.05%	1.14%	-1.50%	-91.07%	-91.07%	1483.33%	-99.30%	-99.53%	-99.06%
2011-4-25	1335.25	0.39%	36.38%	1.36%	-0.63%	68.67%	68.67%	-100.00%	-68.38%	-79.34%	-56.95%
2011-4-26	1347.24	0.27%	28.70%	1.23%	-0.85%	80.41%	80.41%	-100.00%	-72.45%	-81.87%	-62.80%
2011-4-27	1355.66	0.15%	10.65%	1.30%	-1.14%	64.71%	64.71%	-100.00%	-85.75%	-90.70%	-80.59%
2011-4-28	1360.48	0.10%	18.65%	1.24%	-1.19%	27.79%	27.79%	-1688.57%	-90.16%	-93.58%	-86.60%
2011-4-29	1363.61	-0.08%	-5.98%	1.25%	-1.42%	-58.24%	-58.24%	1050.43%	-96.76%	-97.78%	-95.80%
2011-5-2	1361.22	-0.15%	-11.63%	1.09%	-1.61%	-100.00%	-100.00%	543.40%	-91.58%	-88.94%	-94.30%
2011-5-3	1356.62	-0.30%	-20.42%	0.77%	-1.65%	-100.00%	-100.00%	-100.00%	-81.16%	-75.20%	-87.27%
2011-5-4	1347.32	-0.40%	-17.54%	0.62%	-1.75%	-100.00%	-100.00%	-100.00%	-76.49%	-68.94%	-84.18%
2011-5-5	1335.1	0.17%	5.92%	1.68%	-1.35%	92.31%	92.31%	-100.00%	-88.57%	-92.45%	-84.62%
2011-5-6	1340.2	0.20%	15.28%	1.54%	-1.34%	90.61%	90.61%	-100.00%	-86.02%	-90.94%	-80.81%
2011-5-9	1346.29	0.35%	27.39%	1.46%	-0.81%	62.04%	62.04%	-100.00%	-71.46%	-81.15%	-61.59%
2011-5-10	1357.16	-0.49%	-33.01%	0.37%	-1.58%	-100.00%	-100.00%	-100.00%	-67.42%	-56.41%	-78.36%
2011-5-11	1342.08	0.21%	17.49%	1.41%	-1.12%	96.08%	96.08%	-100.00%	-79.66%	-86.56%	-72.63%
2011-5-12	1348.65	-0.35%	-24.86%	0.77%	-1.69%	-100.00%	-100.00%	-100.00%	-82.18%	-75.90%	-88.29%
2011-5-13	1337.77	-0.27%	-12.09%	0.98%	-1.82%	-100.00%	-100.00%	-100.00%	-87.20%	-83.03%	-91.42%
2011-5-16	1329.47	-0.02%	-3.90%	1.48%	-1.72%	65.22%	65.22%	9.01%	-91.46%	-94.27%	-88.70%
2011-5-17	1328.98	0.38%	31.17%	1.45%	-0.79%	78.57%	78.57%	-100.00%	-65.38%	-76.85%	-53.99%
2011-5-18	1340.68	0.09%	0.42%	1.49%	-1.31%	26.87%	26.87%	522.22%	-91.25%	-94.19%	-88.28%
2011-5-19	1343.6	-0.34%	-20.71%	0.76%	-1.68%	-100.00%	-100.00%	-100.00%	-83.05%	-77.19%	-88.80%
2011-5-20	1333.27	-0.52%	-31.48%	0.46%	-1.79%	-100.00%	-100.00%	-100.00%	-70.53%	-60.43%	-80.49%
2011-5-23	1317.37	-0.04%	-3.12%	1.54%	-1.81%	-48.51%	-48.51%	306.88%	-97.19%	-98.14%	-96.23%
2011-5-24	1316.28	0.14%	5.52%	1.57%	-1.44%	57.75%	57.75%	-100.00%	-87.89%	-92.04%	-83.62%
2011-5-25	1320.47	0.17%	17.44%	1.50%	-1.31%	85.68%	85.68%	-100.00%	-86.66%	-91.30%	-81.82%
2011-5-26	1325.69	0.18%	11.84%	1.49%	-1.08%	87.79%	87.79%	-100.00%	-84.79%	-89.84%	-79.76%
2011-5-27	1331.1	0.46%	43.73%	1.41%	-0.46%	76.32%	76.32%	-100.00%	-61.86%	-74.73%	-48.82%
2011-5-31	1345.2	-1.00%	-55.80%	-0.91%	-1.46%	-100.00%	-100.00%	-100.00%	-20.36%	5.13%	-46.37%
2011-6-1	1314.55	-0.05%	-1.25%	1.51%	-1.79%	14.89%	14.89%	316.46%	-93.65%	-95.72%	-91.64%
2011-6-2	1312.94	-0.42%	-35.19%	0.85%	-1.88%	-100.00%	-100.00%	-100.00%	-78.57%	-71.11%	-85.87%
2011-6-3	1300.16	-0.47%	-25.17%	0.50%	-1.86%	-100.00%	-100.00%	-100.00%	-69.24%	-60.19%	-78.85%
2011-6-6	1286.17	-0.04%	-5.12%	1.71%	-1.90%	-100.00%	-100.00%	1325.98%	-99.87%	-99.83%	-99.91%
2011-6-7	1284.94	-0.18%	-13.61%	1.56%	-2.02%	-100.00%	-100.00%	-1138.05%	-99.05%	-98.71%	-99.39%
2011-6-8	1279.56	0.32%	24.06%	1.57%	-1.01%	89.19%	89.19%	-100.00%	-70.14%	-79.85%	-60.66%

2011-6-9	1289	-0.61%	-38.77%	0.46%	-1.93%	-100.00%	-100.00%	-100.00%	-68.96%	-57.81%	-79.69%
2011-6-10	1270.98	0.03%	10.60%	1.68%	-1.84%	-29.81%	-29.81%	1067.89%	-96.08%	-97.43%	-94.67%
2011-6-13	1271.83	0.54%	39.77%	1.80%	-0.61%	75.44%	75.44%	-100.00%	-62.98%	-75.27%	-50.76%
2011-6-14	1287.87	-0.76%	-37.61%	0.13%	-1.87%	-100.00%	-100.00%	-100.00%	-57.18%	-41.84%	-71.96%
2011-6-15	1265.42	0.08%	13.47%	2.00%	-1.88%	-6.73%	-6.73%	908.85%	-94.90%	-96.63%	-93.14%
2011-6-16	1267.64	0.13%	4.51%	2.10%	-1.78%	78.57%	78.57%	-100.00%	-88.31%	-92.13%	-84.57%
2011-6-17	1271.5	0.23%	7.55%	2.06%	-1.57%	37.85%	37.85%	-100.00%	-84.62%	-89.76%	-79.47%
2011-6-20	1278.36	0.58%	38.51%	1.81%	-0.56%	81.72%	81.72%	-100.00%	-59.35%	-72.61%	-46.37%
2011-6-21	1295.52	-0.28%	-22.69%	1.16%	-1.92%	-100.00%	-100.00%	-100.00%	-83.60%	-78.38%	-88.94%
2011-6-22	1287.14	-0.12%	-5.01%	1.57%	-2.00%	-100.00%	-100.00%	1118.91%	-96.85%	-95.81%	-97.89%
2011-6-23	1283.5	-0.51%	-25.48%	0.82%	-2.06%	-100.00%	-100.00%	-100.00%	-76.28%	-67.96%	-84.39%
2011-6-24	1268.45	0.40%	22.55%	1.92%	-1.07%	88.48%	88.48%	-100.00%	-71.38%	-80.71%	-62.24%
2011-6-27	1280.1	0.56%	40.48%	1.89%	-0.74%	54.19%	54.19%	-100.00%	-66.71%	-78.15%	-54.91%
2011-6-28	1296.67	0.36%	22.03%	1.74%	-0.92%	72.41%	72.41%	-100.00%	-73.38%	-82.13%	-64.74%
2011-6-29	1307.41	0.44%	28.66%	1.54%	-0.50%	58.08%	58.08%	-100.00%	-62.80%	-74.71%	-51.33%
2011-6-30	1320.64	0.62%	13.41%	1.42%	-0.09%	49.70%	49.70%	-146.48%	-50.04%	-92.17%	-84.02%
2011-7-1	1339.67	-0.06%	-4.35%	1.29%	-1.46%	-14.03%	-14.03%	-948.00%	-92.75%	-95.02%	-90.61%
2011-7-5	1337.88	0.04%	5.21%	1.35%	-1.36%	33.12%	33.12%	-224.37%	-89.60%	-93.02%	-86.23%
2011-7-6	1339.22	0.45%	43.95%	1.33%	-0.36%	92.31%	92.31%	-100.00%	-55.15%	-69.36%	-41.61%
2011-7-7	1353.22	-0.30%	-26.83%	0.92%	-1.58%	-100.00%	-100.00%	-100.00%	-84.56%	-78.84%	-89.98%
2011-7-8	1343.8	-0.79%	-39.74%	-0.20%	-1.64%	-100.00%	-100.00%	-100.00%	-49.01%	-30.13%	-66.89%
2011-7-11	1319.49	-0.19%	-10.92%	1.58%	-1.94%	-100.00%	-100.00%	-978.62%	-97.16%	-96.08%	-98.17%
2011-7-12	1313.64	0.13%	5.79%	1.75%	-1.48%	86.57%	86.57%	-100.00%	-84.57%	-89.56%	-79.72%
2011-7-13	1317.72	-0.29%	-17.24%	1.23%	-1.99%	-100.00%	-100.00%	-100.00%	-87.41%	-83.13%	-91.65%
2011-7-14	1308.87	0.24%	12.62%	1.75%	-1.17%	74.83%	74.83%	-100.00%	-77.35%	-84.53%	-70.51%
2011-7-15	1316.14	-0.35%	-17.16%	0.98%	-1.82%	-100.00%	-100.00%	-100.00%	-79.50%	-72.66%	-86.34%
2011-7-18	1305.44	0.70%	53.63%	1.89%	-0.45%	82.53%	82.53%	-100.00%	-58.13%	-72.55%	-43.21%
2011-7-19	1326.73	-0.03%	-0.36%	1.70%	-1.83%	-70.00%	-70.00%	1064.80%	-98.24%	-98.83%	-97.66%
2011-7-20	1325.84	0.58%	43.50%	1.77%	-0.53%	75.77%	75.77%	-100.00%	-61.58%	-74.61%	-48.33%
2011-7-21	1343.8	0.04%	0.17%	1.57%	-1.57%	69.49%	69.49%	-100.00%	-89.36%	-92.81%	-86.01%
2011-7-22	1345.02	-0.25%	-2.84%	1.08%	-1.74%	-100.00%	-100.00%	-100.00%	-83.43%	-78.22%	-88.79%
2011-7-25	1337.43	-0.18%	-14.59%	1.63%	-1.95%	-100.00%	-100.00%	986.40%	-94.01%	-91.86%	-96.08%
2011-7-26	1331.94	-0.89%	-41.48%	-0.11%	-2.08%	-100.00%	-100.00%	-100.00%	-51.75%	-35.96%	-67.69%
2011-7-27	1304.89	-0.14%	-6.32%	2.02%	-2.49%	-80.70%	-80.70%	-480.06%	-98.88%	-99.24%	-98.52%
2011-7-28	1300.67	-0.28%	-8.49%	1.59%	-2.39%	-100.00%	-100.00%	-100.00%	-87.09%	-83.03%	-91.27%
2011-7-29	1292.28	-0.18%	-18.77%	2.09%	-2.69%	-100.00%	-100.00%	1080.87%	-95.29%	-93.78%	-96.84%
2011-8-1	1286.94	-1.12%	-49.25%	-0.34%	-2.57%	-100.00%	-100.00%	-100.00%	-48.88%	-33.09%	-65.27%
2011-8-2	1254.05	0.22%	4.12%	2.25%	-1.94%	76.77%	76.77%	-100.00%	-83.52%	-88.99%	-78.07%
2011-8-3	1260.34	-2.13%	-56.70%	-2.70%	-2.41%	-100.00%	-100.00%	-100.00%	3.72%	35.28%	-29.28%
2011-8-4	1200.07	-0.02%	-4.31%	3.18%	-3.16%	-100.00%	-100.00%	-3020.00%	-99.19%	-98.93%	-99.46%
2011-8-5	1199.38	-2.99%	-61.96%	-3.52%	-3.38%	-100.00%	-100.00%	-100.00%	-1.34%	32.49%	-34.69%
2011-8-8	1119.46	2.01%	56.36%	4.34%	0.00%	70.32%	70.32%	-100.00%	-44.61%	-63.34%	-25.60%
2011-8-9	1172.53	-1.96%	-41.75%	-1.00%	-3.39%	-100.00%	-100.00%	-100.00%	-37.63%	-16.17%	-58.76%
2011-8-10	1120.76	1.97%	54.70%	4.56%	0.47%	65.09%	65.09%	-100.00%	-45.17%	-63.04%	-27.67%
2011-8-11	1172.64	0.23%	6.00%	3.57%	-3.20%	75.44%	75.44%	-100.00%	-90.00%	-93.39%	-86.56%

2011-8-12	1178.81	0.94%	23.66%	3.40%	-1.23%	74.56%	74.56%	-100.00%	-64.53%	-76.19%	-53.03%
2011-8-15	1204.49	-0.43%	-10.75%	2.11%	-3.30%	-100.00%	-100.00%	-100.00%	-90.06%	-86.74%	-93.37%
2011-8-16	1192.76	0.04%	-4.82%	3.06%	-2.92%	32.18%	32.18%	1380.00%	-94.82%	-96.53%	-93.12%
2011-8-17	1193.89	-1.98%	-40.97%	-1.47%	-3.12%	-100.00%	-100.00%	-100.00%	-30.22%	-6.18%	-53.87%
2011-8-18	1140.65	-0.66%	-22.15%	2.76%	-3.91%	-100.00%	-100.00%	-100.00%	-82.30%	-76.27%	-88.27%
2011-8-19	1123.53	0.01%	-2.82%	4.19%	-3.94%	25.42%	25.42%	2194.44%	-95.97%	-97.30%	-94.67%
2011-8-22	1123.82	1.46%	39.38%	4.02%	-0.57%	67.95%	67.95%	-100.00%	-54.13%	-69.20%	-39.27%
2011-8-23	1162.35	0.57%	21.92%	3.30%	-2.10%	77.66%	77.66%	-100.00%	-77.98%	-85.39%	-70.50%
2011-8-24	1177.6	-0.68%	-10.70%	1.78%	-3.47%	-100.00%	-100.00%	-100.00%	-79.90%	-73.30%	-86.54%
2011-8-25	1159.27	0.65%	14.28%	3.77%	-2.18%	65.56%	65.56%	-100.00%	-75.77%	-83.70%	-67.99%
2011-8-26	1176.8	1.21%	45.05%	3.39%	-0.48%	45.53%	45.53%	-100.00%	-55.84%	-70.41%	-41.43%
2011-8-29	1210.08	0.10%	2.30%	2.96%	-2.82%	36.09%	36.09%	134.08%	-95.99%	-97.37%	-94.58%
2011-8-30	1212.92	0.21%	13.17%	2.78%	-2.59%	139.40%	139.40%	-100.00%	-87.99%	-92.09%	-83.79%
2011-8-31	1218.89	-0.52%	-18.88%	1.89%	-3.20%	-100.00%	-100.00%	-100.00%	-85.51%	-80.64%	-90.37%