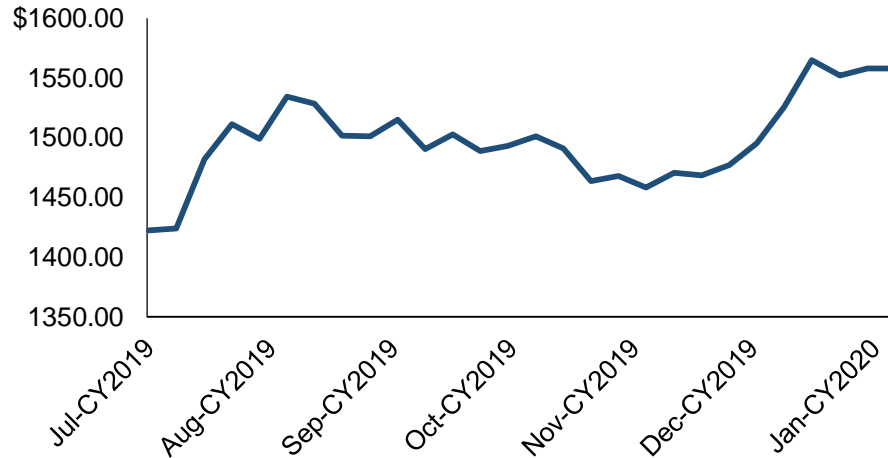


### Spot Gold



OTC Option GCG0 (Gold Forward)  
Underlying Price: \$1,570.00/troy oz.  
Trade Name: Long Call Option  
Expiration Date(s): March 20, CY2020  
Delta: 0.38  
Gamma: 0.01  
Theta: -0.40  
Vega: 2.00  
Rho: 0.65

### Metals Sector

Sector Size: \$142,857,142

# of Holdings: 0

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- I. Macroeconomic Overview
- II. Trade / Hedge
- III. Product Analysis
- IV. Technical Analysis
- V. Risk Analysis
- VI. Capital Allocation

# I. Macroeconomic Overview

## Macroeconomic Overview

### Macroeconomic Drivers

**Driver #1: U.S. Election Risk**

- The upcoming U.S. election represents the highest trade down risk for Healthcare, Financials and Information Technology are the Sectors under the greatest amount of risk of trading down following this result:
  - Information Technology (24.16%): Semiconductors (17.79%)
  - Healthcare (13.96%): Providers & Services (25.30%)
    - Single-Payer Healthcare
  - Financials (12.53%): Money Center Banks (41.77%)
- The S&P 500 reacted negatively to polls where more progressive candidates such as Elizabeth Warren and Bernie Sanders have taken the lead

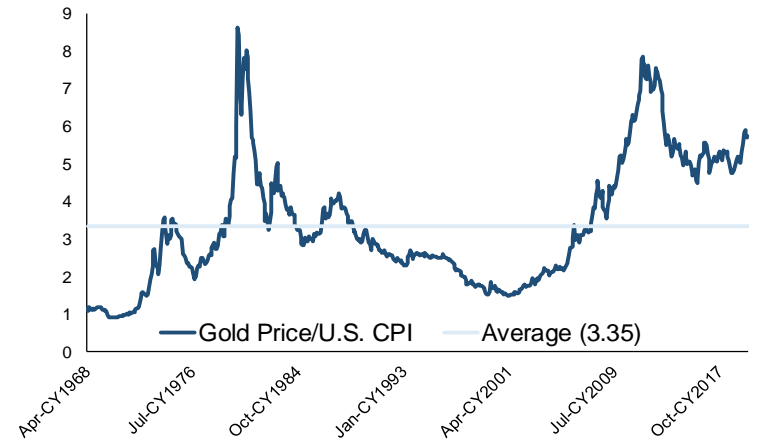
**Driver #2: Coronavirus Severity Spike**

- The Chinese government has taken increasing measures to restrict the release of information regarding the outbreak
  - The mayor of Wuhan admitted that rules imposed by Beijing limited what he could disclose about the threat of the pathogen
  - The government has been arresting those who post about it online and journalists that are reporting on the outbreak
- As of January 29 the Coronavirus surpassed 6,000 infections while SARS took 6 months to reach that figure
- The basic reproduction number of the infection is 3.80 and 75.00% of transmissions must be prevented by control measures for the spreading to stop
- According to medRxiv, estimated with a 95.00% confidence interval, only 5.10% of infections in Wuhan had been identified as of January 21
- Economic output will suffer due to travel restrictions, extended Lunar New Year holidays, temporary business shutdowns





**Driver #3: Phase 1 Trade Deal Renegotiation**

- Due to the unrealistic demands of the phase one trade deal, renegotiations are very likely
  - China will have difficulty meeting the promised energy purchases of U.S. energy exports (oil and gas)

### Gold Price V. U.S. CPI



### Market Pros & Cons

-  Progressive democratic candidates gaining political momentum
-  Coronavirus economic damage grows
-  Democratic candidates tending toward market status quo win early primaries
-  Successful containment of Coronavirus leading to subsiding investor fears

## II. Trade / Hedge

Trade Breakdown

Trade Breakdown

Price Target: \$1,590.00

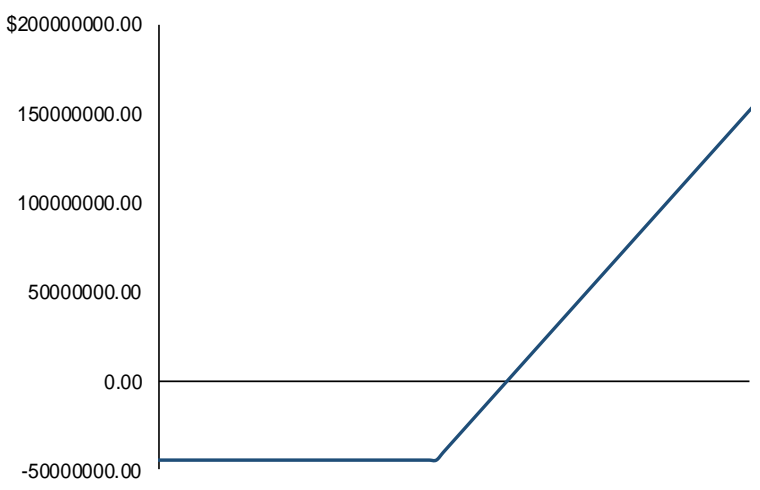
March 20, CY2020

Long Call Option GCGO OTM

Trade Breakdown

- Setup**
- Long 43,500 OTM Calls
    - **Strike** \$1,590.00 (\$10.30)
- Profit Potential**
- Max Profit = Theoretically Unlimited
- Risk Potential and Exit Strategy**
- Max Loss = \$44,805,000
    - Exit Point: Hold until expiration
- Breakeven Point**
- **Breakeven** = \$1,600.30 (1.93%)
- Time**
- Unfavorable time decay as the trade begins as time is required to move trade ITM
- Implied Volatility**
- Long Vega as higher volatility increases the chance that the call option ends ITM
- Other Notes**
- Although the current plan is to hold the contracts until expiration, the trade will be re-evaluated based on large news events pertaining to drivers

Long Call Payoff Graph



# III. Product Analysis

## Greeks and Theoretical Edge

### Greeks

	Price	Delta	Gamma	Theta	Vega	Rho
Call option	\$14.1579	0.3822	0.0071	(0.4049)	1.9962	0.6511

### Breakdown of Greeks

**Delta (Positive):** Our position will become more susceptible to price changes in the underlying as the underlying moves closer to being in the money.

**Gamma (Positive):** Our position is long gamma as the position includes all long positions. As the underlying moves closer to our strike price the gamma will accelerate.

**Theta (Negative):** The value of the long calls deteriorate over time. Less time gives the options a lower potential to end ITM.

**Vega (Positive):** Increases in implied volatility present a greater statistical chance of the long options ending ITM, so we are long vega.

**Rho (Positive):** Our options contracts have two-month terms making it especially susceptible to changes in interest rates, so our position has little exposure to changes in interest rates.

### Breakdown Theoretical Edge

#### *Long Call Option*

##### **Vega:**

- Higher implied volatility will benefit our trade as it increases the chance of the underlying moving past the breakeven point
- Vega is highest when the option is ATM, so Vega is highest at contract inception

##### **Theta:**

- The premiums of the long calls deteriorate as time passes due to a decrease in the likelihood that the trade will expire ITM. Theta is the most negative ATM for our position

##### **Rho:**

- Because of the length of our contract (two months), changes in interest rates can have a relatively large effect on our options premium. However, we do not expect changes in interest rates over our trade's term

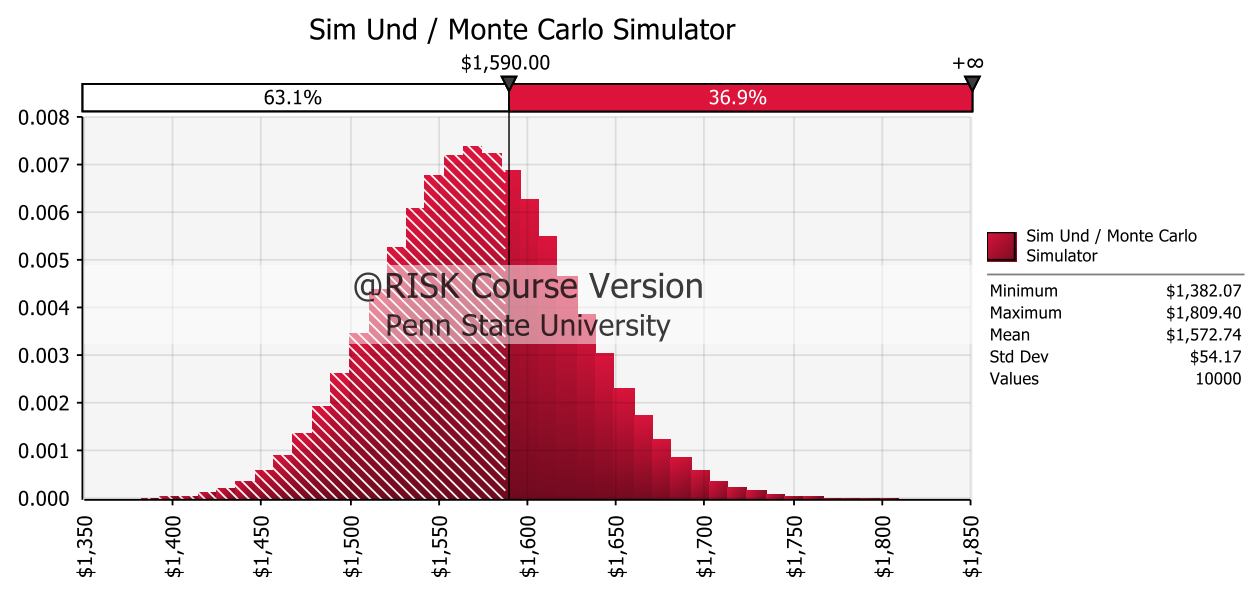
##### **Gamma:**

- Gamma is the highest ATM because that is when the change in delta is greatest. Our trade benefits from gamma, but time decay quickly erodes the effects of gamma on our position



# Probability Distributions

## Price Movement Probability



@RISK Course Version  
Penn State University

## Price Movement Probability

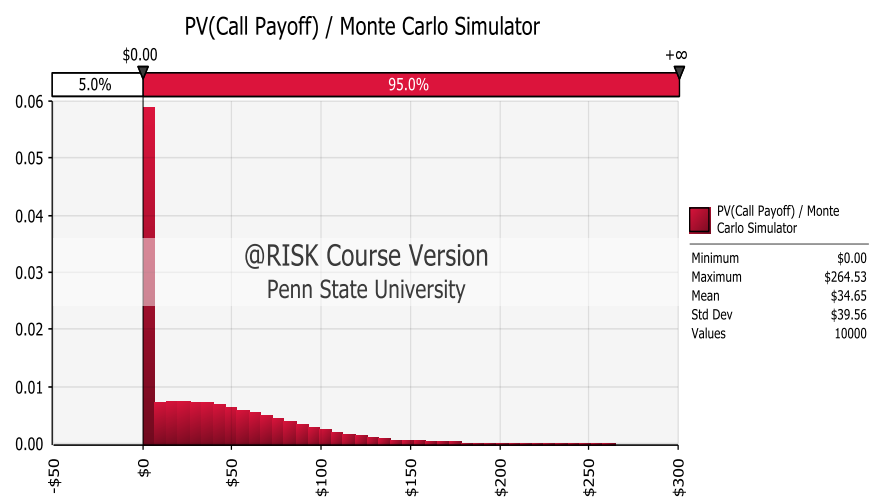
Both bounds of the confidence interval capture an ITM scenario.

The probability that our option will end ITM is 36.90%. This would mean that our underlying will expire in the range of \$1,590.00 or greater.

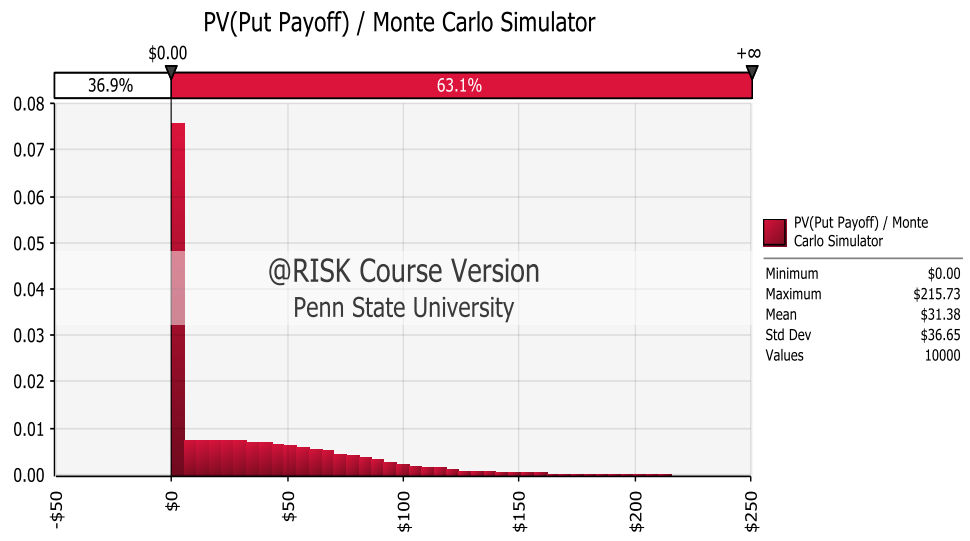
Probability Distributions

	PV Payoff	MV Valuation	MV Min	MV Max	MV STD	Iterations
Call	\$ 21.77	\$ 34.65	\$ -	\$264.53	\$ 39.56	10,000
Put	\$ -	\$ 11.95	\$ -	\$168.84	\$ 23.07	10,000

Call PV Payoff Diagram



Put PV Payoff Diagram



**Product Drivers**

**Product Drivers**

**Driver #1: Counter-Cyclical**

- Times of economic downturn often times lead to a greater demand for Gold in response
- This is best represented during the aftermath of the 2008 recession Gold prices reach all-time highs (~\$1.83 k)

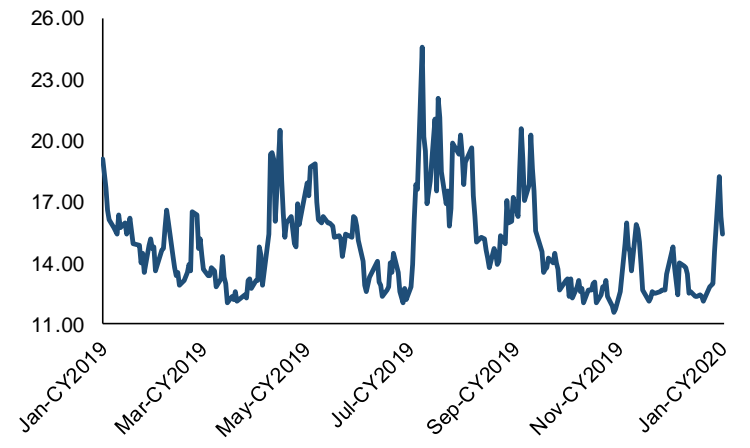
**Driver #2: Hedge Against Global Instability**

- Gold is a safe-haven liquid asset which makes it an effective investment in times of financial or political uncertainty
  - The Coronavirus's future potential damage is highly uncertain, causing investors to flood to the safe haven assets
  - Gold will benefit at the expense of other assets during uncertain periods of time
- After the WHO issued a heightened global health alert in mid-March of CY2020, spot gold jumped about 1.50%

**Driver #3: Limited Industrial Use**

- Should the industrial sector experience a pull back due to manufacturing shutdowns then gold will experience an upward price movement
  - The Chinese government has halted all travel in and out of Wuhan, a major manufacturing center for semiconductors in China
  - Toyota, the largest motor vehicle manufacturer, shut down its Japan manufacturing plant until Feb 9
- Demand of metals such as palladium, steel, copper, silver would decline during an industrial slowdown contrary to gold's industrial exposure

**CBOE Volatility Index (VIX)**

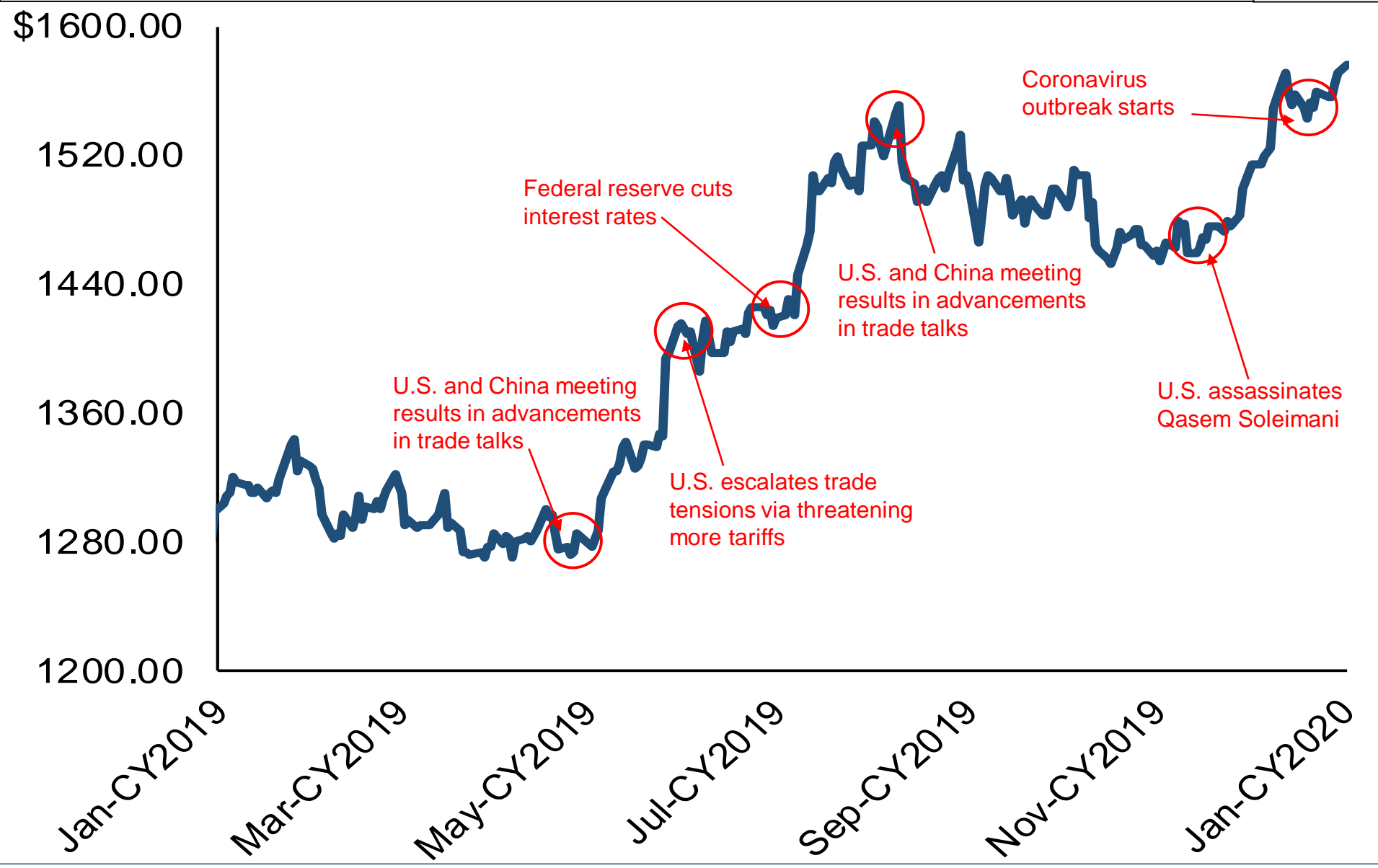


**Product Pros & Cons**

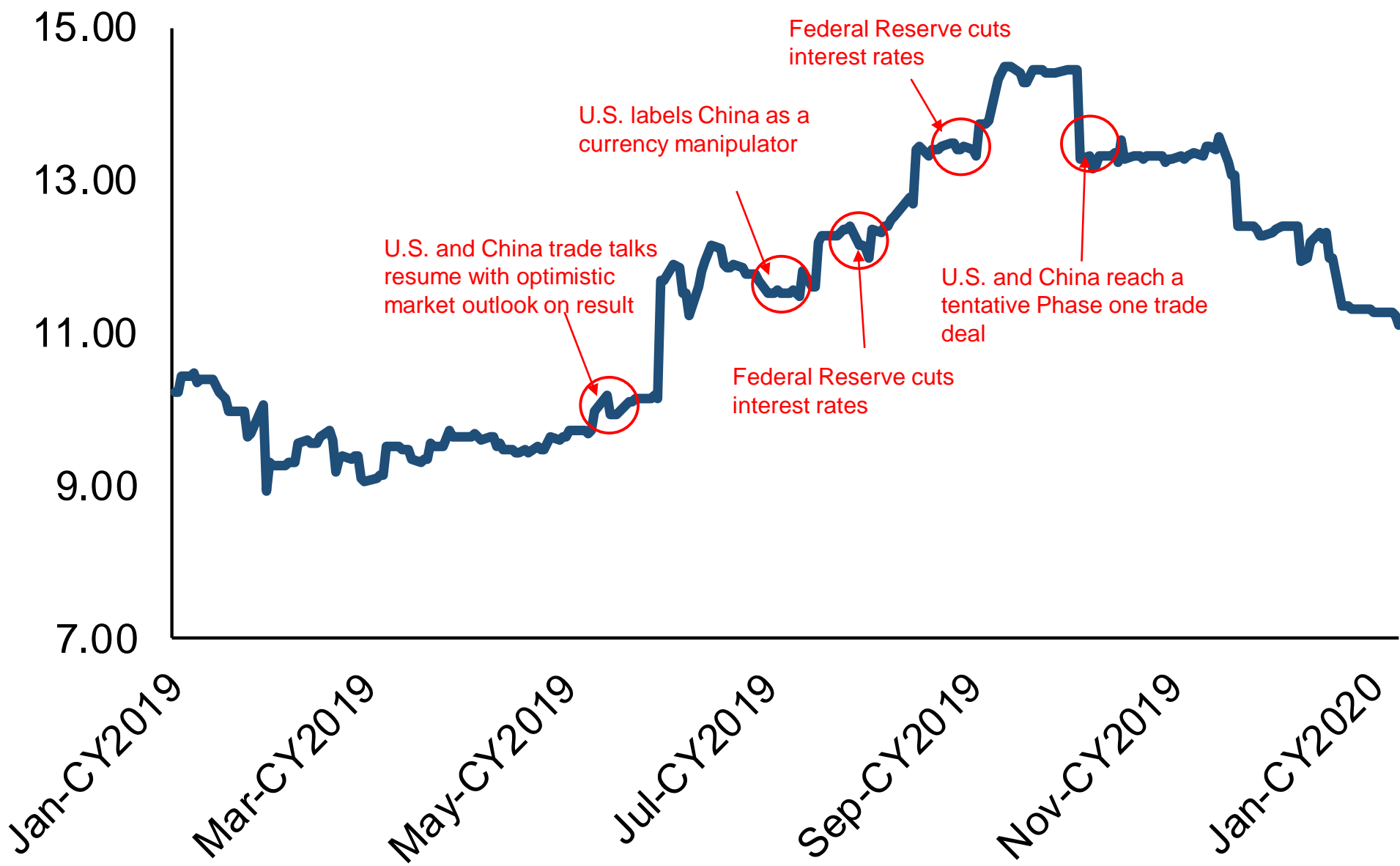
- + Gold prices will continue to increase as the disease continues to spread
- + Gold continues to trend up as prices have grown about 3.73% this year
- x Gold becomes too expensive and silver is used as an alternative
- x Market readjusts quicker than anticipated and gains are nullified close to expiration

# IV. Technical Analysis

## Technical Analysis



## Relative Value Analysis



# V. Risk Analysis

# Risk Analysis

## Major Risks

**Risk #1: Increased Momentum for a Conservative Democratic Candidate**

- Latest Fox News poll finds Joe Biden has 26.00% support and ABC News/Washington Post polls show 28.00% support
- One out of four polls from Suffolk University give Biden a 25.40% chance to win the Iowa caucus

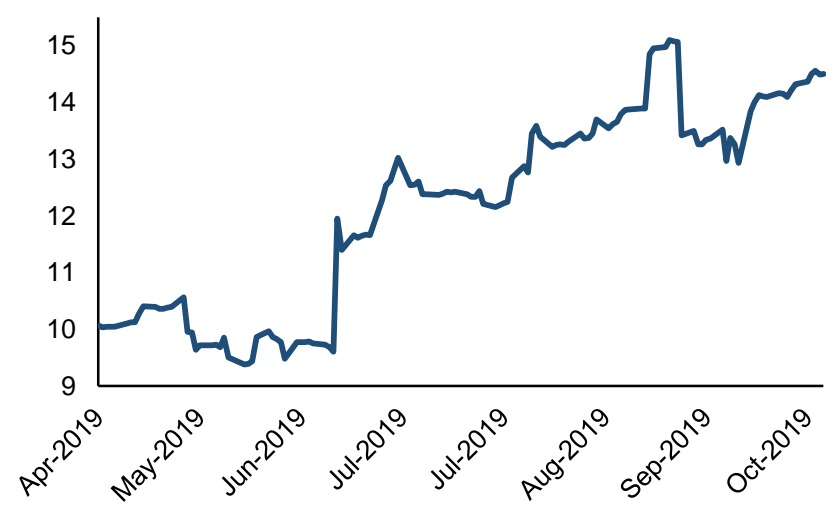
**Risk #2: Potential Containment of the Coronavirus**

- Ongoing research containing on the virus could uncover more successful containment methods that could dramatically limit the spreading of the virus.
  - Such discoveries would ease economic fears of ongoing supply chain issues within China and could result in a sell-off of safe haven assets like gold
- Measures are being implemented to restrain the spreading of the virus.
  - Two hospitals being built in the center of Wuhan by February 3-5, CY2020
  - If efforts to control the virus improve such as an extension in delaying education, closing of airports, and lockdown of cities

**Risk #3: Minimal Phase One Deal Impact**

- Minimal damage to the Chinese economy via the agreed to purchases in the phase one trade deal
- China's focus on rebuilding the economy becomes a demanding priority, therefore no immediate reaction is necessary

## GCGO Volatility



## Current Price Given Historical Average

Regression Equation: Gold Price = 5.65 (U.S. CPI) – 295.27

- Current CPI: 258.501
- Gold Price = 5.65 (258.501) – 295.27
- Gold Price = \$1,165/troy oz.
- If gold is a perfect inflation hedge, the price should be \$1,165/troy oz.



# VI. Capital Allocation

Risk Analysis

Sector Portfolio Overview

Rates Sector Portfolio	
Capital Allocated	142,857,142.00
Cash Available	142,857,142.00
PnL	0.00
% Return	0.00%

Associate and Analyst Overview

Capital Allocated	142,857,142.00
Cash Available	142,857,142.00
PnL	0.00
% Return	0.00%
Capital Allocated	142,857,142.00
Cash Available	142,857,142.00
PnL	0.00
% Return	0.00%

Physical Data

Options Book										
Product	Time Until Expiration	Purchase Price	Notional Amount	Short/Long	Positions	Purchase Date	Current Price	PnL Current	Margin	
GCGO Comdty	26	\$10.30	44,805,000	L	43,500	1/30/2020	\$17.00	\$0.00	\$0.00	