**Project A- Gold Historical Prices**

**There is a rise in mean prices of gold with each passing year and a sudden high change can be seen in the mean price after 2009 onwards, if we compare it with the early years like 2000,2001,2002 etc. There can be multiple reasons for the rise in prices of gold with each passing year.**

**Reasons can be infinite like Recession of 2009-2011, Dollar weakness, Trade wars, Civil wars, global financial crisis etc.**

**Social events do effect the economy of the country largely. One of the example is Civil war like Iraq War. Trade war is the other such example.**

**There is also a sudden dip in prices from 2013 to 2015. This is quiet unexpected as prices were rising from 2000 to 2012 and there was no dip in between. However, suddenly from 2013 to 2015 values came down for three consecutive years, which is unexpected when compared to previous year’s data. The reason could be better global market conditions, higher dollar values etc.**

**However, there is again a slight rise in the prices from 2016 to 2018. Few reasons for this price could be Geopolitical tensions in US and ongoing Brexit crisis of 2018.**

**Appendix**

#install.packages("readxl")

#install.packages("dplyr")

#install.packages("tidyverse")

library(readxl)

library(tidyverse)

#read the daily gold data

getwd()

gold\_data <- read\_excel("Gold Historical Prices.xlsx")

summary(gold\_data)#confirmed that there are no NAs. ara ta krataw ola ta data mou

gold\_data<-na.omit(gold\_data)

#format the dates correctly

gold\_data$Date <- as.Date(gold\_data$Date, format= "%d-%b-%y")

is.numeric(gold\_data$Price)

#Create subset according to the years from 2000 to 2018

gold\_data\_2000<-subset(gold\_data,Date>="2000-01-01" & Date<="2000-12-31")

gold\_data\_2001<-subset(gold\_data,Date>="2001-01-01" & Date<="2001-12-31")

gold\_data\_2002<-subset(gold\_data,Date>="2002-01-01" & Date<="2002-12-31")

gold\_data\_2003<-subset(gold\_data,Date>="2003-01-01" & Date<="2003-12-31")

gold\_data\_2004<-subset(gold\_data,Date>="2004-01-01" & Date<="2004-12-31")

gold\_data\_2005<-subset(gold\_data,Date>="2005-01-01" & Date<="2005-12-31")

gold\_data\_2006<-subset(gold\_data,Date>="2006-01-01" & Date<="2006-12-31")

gold\_data\_2007<-subset(gold\_data,Date>="2007-01-01" & Date<="2007-12-31")

gold\_data\_2008<-subset(gold\_data,Date>="2008-01-01" & Date<="2008-12-31")

gold\_data\_2009<-subset(gold\_data,Date>="2009-01-01" & Date<="2009-12-31")

gold\_data\_2010<-subset(gold\_data,Date>="2010-01-01" & Date<="2010-12-31")

gold\_data\_2011<-subset(gold\_data,Date>="2011-01-01" & Date<="2011-12-31")

gold\_data\_2012<-subset(gold\_data,Date>="2012-01-01" & Date<="2012-12-31")

gold\_data\_2013<-subset(gold\_data,Date>="2013-01-01" & Date<="2013-12-31")

gold\_data\_2014<-subset(gold\_data,Date>="2014-01-01" & Date<="2014-12-31")

gold\_data\_2015<-subset(gold\_data,Date>="2015-01-01" & Date<="2015-12-31")

gold\_data\_2016<-subset(gold\_data,Date>="2016-01-01" & Date<="2016-12-31")

gold\_data\_2017<-subset(gold\_data,Date>="2017-01-01" & Date<="2017-12-31")

gold\_data\_2018<-subset(gold\_data,Date>="2018-01-01" & Date<="2018-12-31")

#Taking out prices for each year to calculate Mean, SD and CI

gold\_data\_2000\_price<-gold\_data\_2000$Price

gold\_data\_2001\_price<-gold\_data\_2001$Price

gold\_data\_2002\_price<-gold\_data\_2002$Price

gold\_data\_2003\_price<-gold\_data\_2003$Price

gold\_data\_2004\_price<-gold\_data\_2004$Price

gold\_data\_2005\_price<-gold\_data\_2005$Price

gold\_data\_2006\_price<-gold\_data\_2006$Price

gold\_data\_2007\_price<-gold\_data\_2007$Price

gold\_data\_2008\_price<-gold\_data\_2008$Price

gold\_data\_2009\_price<-gold\_data\_2009$Price

gold\_data\_2010\_price<-gold\_data\_2010$Price

gold\_data\_2011\_price<-gold\_data\_2011$Price

gold\_data\_2012\_price<-gold\_data\_2012$Price

gold\_data\_2013\_price<-gold\_data\_2013$Price

gold\_data\_2014\_price<-gold\_data\_2014$Price

gold\_data\_2015\_price<-gold\_data\_2015$Price

gold\_data\_2016\_price<-gold\_data\_2016$Price

gold\_data\_2017\_price<-gold\_data\_2017$Price

gold\_data\_2018\_price<-gold\_data\_2018$Price

#calculate mean of all yearly categorised data

mean\_years<-c(mean(gold\_data\_2000\_price),mean(gold\_data\_2001\_price),mean(gold\_data\_2002\_price),mean(gold\_data\_2003\_price),mean(gold\_data\_2004\_price),mean(gold\_data\_2005\_price),mean(gold\_data\_2006\_price),mean(gold\_data\_2007\_price),mean(gold\_data\_2008\_price),mean(gold\_data\_2009\_price),mean(gold\_data\_2010\_price),mean(gold\_data\_2011\_price),mean(gold\_data\_2012\_price),mean(gold\_data\_2013\_price),mean(gold\_data\_2014\_price),mean(gold\_data\_2015\_price),mean(gold\_data\_2016\_price),mean(gold\_data\_2017\_price),mean(gold\_data\_2018\_price))

#calculate standard deviation of all yearly categorised data

standard\_deviation\_years<-c(sd(gold\_data\_2000\_price),sd(gold\_data\_2001\_price),sd(gold\_data\_2002\_price),sd(gold\_data\_2003\_price),sd(gold\_data\_2004\_price),sd(gold\_data\_2005\_price),sd(gold\_data\_2006\_price),sd(gold\_data\_2007\_price),sd(gold\_data\_2008\_price),sd(gold\_data\_2009\_price),sd(gold\_data\_2010\_price),sd(gold\_data\_2011\_price),sd(gold\_data\_2012\_price),sd(gold\_data\_2013\_price),sd(gold\_data\_2014\_price),sd(gold\_data\_2015\_price),sd(gold\_data\_2016\_price),sd(gold\_data\_2017\_price),sd(gold\_data\_2018\_price))

#print mean of all years

print(mean\_years)

#print standard devation of all years

print(standard\_deviation\_years)

#Confidence Interval Upper Limit

UpperLimit\_2000<-mean(gold\_data\_2000\_price)+(1.96)\*(sd(gold\_data\_2000\_price)/sqrt(dim(gold\_data\_2000)[1]))

UpperLimit\_2001<-mean(gold\_data\_2001\_price)+(1.96)\*(sd(gold\_data\_2001\_price)/sqrt(dim(gold\_data\_2001)[1]))

UpperLimit\_2002<-mean(gold\_data\_2002\_price)+(1.96)\*(sd(gold\_data\_2002\_price)/sqrt(dim(gold\_data\_2002)[1]))

UpperLimit\_2003<-mean(gold\_data\_2003\_price)+(1.96)\*(sd(gold\_data\_2003\_price)/sqrt(dim(gold\_data\_2003)[1]))

UpperLimit\_2004<-mean(gold\_data\_2004\_price)+(1.96)\*(sd(gold\_data\_2004\_price)/sqrt(dim(gold\_data\_2004)[1]))

UpperLimit\_2005<-mean(gold\_data\_2005\_price)+(1.96)\*(sd(gold\_data\_2005\_price)/sqrt(dim(gold\_data\_2005)[1]))

UpperLimit\_2006<-mean(gold\_data\_2006\_price)+(1.96)\*(sd(gold\_data\_2006\_price)/sqrt(dim(gold\_data\_2006)[1]))

UpperLimit\_2007<-mean(gold\_data\_2007\_price)+(1.96)\*(sd(gold\_data\_2007\_price)/sqrt(dim(gold\_data\_2007)[1]))

UpperLimit\_2008<-mean(gold\_data\_2008\_price)+(1.96)\*(sd(gold\_data\_2008\_price)/sqrt(dim(gold\_data\_2008)[1]))

UpperLimit\_2009<-mean(gold\_data\_2009\_price)+(1.96)\*(sd(gold\_data\_2009\_price)/sqrt(dim(gold\_data\_2009)[1]))

UpperLimit\_2010<-mean(gold\_data\_2010\_price)+(1.96)\*(sd(gold\_data\_2010\_price)/sqrt(dim(gold\_data\_2010)[1]))

UpperLimit\_2011<-mean(gold\_data\_2011\_price)+(1.96)\*(sd(gold\_data\_2011\_price)/sqrt(dim(gold\_data\_2011)[1]))

UpperLimit\_2012<-mean(gold\_data\_2012\_price)+(1.96)\*(sd(gold\_data\_2012\_price)/sqrt(dim(gold\_data\_2012)[1]))

UpperLimit\_2013<-mean(gold\_data\_2013\_price)+(1.96)\*(sd(gold\_data\_2013\_price)/sqrt(dim(gold\_data\_2013)[1]))

UpperLimit\_2014<-mean(gold\_data\_2014\_price)+(1.96)\*(sd(gold\_data\_2014\_price)/sqrt(dim(gold\_data\_2014)[1]))

UpperLimit\_2015<-mean(gold\_data\_2015\_price)+(1.96)\*(sd(gold\_data\_2015\_price)/sqrt(dim(gold\_data\_2015)[1]))

UpperLimit\_2016<-mean(gold\_data\_2016\_price)+(1.96)\*(sd(gold\_data\_2016\_price)/sqrt(dim(gold\_data\_2016)[1]))

UpperLimit\_2017<-mean(gold\_data\_2017\_price)+(1.96)\*(sd(gold\_data\_2017\_price)/sqrt(dim(gold\_data\_2017)[1]))

UpperLimit\_2018<-mean(gold\_data\_2018\_price)+(1.96)\*(sd(gold\_data\_2018\_price)/sqrt(dim(gold\_data\_2018)[1]))

#Confidence Interval Lower Limit

LowerLimit\_2000<-mean(gold\_data\_2000\_price)-(1.96)\*(sd(gold\_data\_2000\_price)/sqrt(dim(gold\_data\_2000)[1]))

LowerLimit\_2001<-mean(gold\_data\_2001\_price)-(1.96)\*(sd(gold\_data\_2001\_price)/sqrt(dim(gold\_data\_2001)[1]))

LowerLimit\_2002<-mean(gold\_data\_2002\_price)-(1.96)\*(sd(gold\_data\_2002\_price)/sqrt(dim(gold\_data\_2002)[1]))

LowerLimit\_2003<-mean(gold\_data\_2003\_price)-(1.96)\*(sd(gold\_data\_2003\_price)/sqrt(dim(gold\_data\_2003)[1]))

LowerLimit\_2004<-mean(gold\_data\_2004\_price)-(1.96)\*(sd(gold\_data\_2004\_price)/sqrt(dim(gold\_data\_2004)[1]))

LowerLimit\_2005<-mean(gold\_data\_2005\_price)-(1.96)\*(sd(gold\_data\_2005\_price)/sqrt(dim(gold\_data\_2005)[1]))

LowerLimit\_2006<-mean(gold\_data\_2006\_price)-(1.96)\*(sd(gold\_data\_2006\_price)/sqrt(dim(gold\_data\_2006)[1]))

LowerLimit\_2007<-mean(gold\_data\_2007\_price)-(1.96)\*(sd(gold\_data\_2007\_price)/sqrt(dim(gold\_data\_2007)[1]))

LowerLimit\_2008<-mean(gold\_data\_2008\_price)-(1.96)\*(sd(gold\_data\_2008\_price)/sqrt(dim(gold\_data\_2008)[1]))

LowerLimit\_2009<-mean(gold\_data\_2009\_price)-(1.96)\*(sd(gold\_data\_2009\_price)/sqrt(dim(gold\_data\_2009)[1]))

LowerLimit\_2010<-mean(gold\_data\_2010\_price)-(1.96)\*(sd(gold\_data\_2010\_price)/sqrt(dim(gold\_data\_2010)[1]))

LowerLimit\_2011<-mean(gold\_data\_2011\_price)-(1.96)\*(sd(gold\_data\_2011\_price)/sqrt(dim(gold\_data\_2011)[1]))

LowerLimit\_2012<-mean(gold\_data\_2012\_price)-(1.96)\*(sd(gold\_data\_2012\_price)/sqrt(dim(gold\_data\_2012)[1]))

LowerLimit\_2013<-mean(gold\_data\_2013\_price)-(1.96)\*(sd(gold\_data\_2013\_price)/sqrt(dim(gold\_data\_2013)[1]))

LowerLimit\_2014<-mean(gold\_data\_2014\_price)-(1.96)\*(sd(gold\_data\_2014\_price)/sqrt(dim(gold\_data\_2014)[1]))

LowerLimit\_2015<-mean(gold\_data\_2015\_price)-(1.96)\*(sd(gold\_data\_2015\_price)/sqrt(dim(gold\_data\_2015)[1]))

LowerLimit\_2016<-mean(gold\_data\_2016\_price)-(1.96)\*(sd(gold\_data\_2016\_price)/sqrt(dim(gold\_data\_2016)[1]))

LowerLimit\_2017<-mean(gold\_data\_2017\_price)-(1.96)\*(sd(gold\_data\_2017\_price)/sqrt(dim(gold\_data\_2017)[1]))

LowerLimit\_2018<-mean(gold\_data\_2018\_price)-(1.96)\*(sd(gold\_data\_2018\_price)/sqrt(dim(gold\_data\_2018)[1]))

#store upper and lower limits in vectors

UpperLimits\_2000\_2018<-c(UpperLimit\_2000,UpperLimit\_2001,UpperLimit\_2002,UpperLimit\_2003,UpperLimit\_2004,UpperLimit\_2005,UpperLimit\_2006,UpperLimit\_2007,UpperLimit\_2008,UpperLimit\_2009,UpperLimit\_2010,UpperLimit\_2011,UpperLimit\_2012,UpperLimit\_2013,UpperLimit\_2014,UpperLimit\_2015,UpperLimit\_2016,UpperLimit\_2017,UpperLimit\_2018)

LowerLimit\_2000\_2018<-c(LowerLimit\_2000,LowerLimit\_2001,LowerLimit\_2002,LowerLimit\_2003,LowerLimit\_2004,LowerLimit\_2005,LowerLimit\_2006,LowerLimit\_2007,LowerLimit\_2008,LowerLimit\_2009,LowerLimit\_2010,LowerLimit\_2011,LowerLimit\_2012,LowerLimit\_2013,LowerLimit\_2014,LowerLimit\_2015,LowerLimit\_2016,LowerLimit\_2017,LowerLimit\_2018)

#Data frame

df<-data.frame(Years=c("2000","2001","2002","2003","2004","2005","2006","2007","2008","2009","2010","2011","2012","2013","2014","2015","2016","2017","2018"), Mean=c(mean\_years),CI\_Upper\_Limit=UpperLimits\_2000\_2018,CI\_Lower\_Limit=LowerLimit\_2000\_2018)

print(df)

plot.default(df$Years,df$Mean)

getwd()

write.csv(df,"C:\\Users\\ditsaxen\\Desktop\\Personal\\ISB CBA\\Projects\\GoldPrices.csv",row.names=FALSE)