Python Codes

PART -1

Tulip Bubble

|  |
| --- |
| importmatplotlib.pyplotasplt importcsv import pandas aspd   df = pd.read\_csv("tulip.csv")  ax = plt.gca()  print(df["answer"].mean(), df["answer"].mean() + df["answer"].std() )  df.plot(x='date',y='mean',color='green',ax=ax) df.plot(x='date',y='std',color='blue',ax=ax) df.plot(x='date',y='answer',color='red',ax=ax)  plt.show() |

Japan Real Estate Bubble

|  |
| --- |
| importmatplotlib.pyplotasplt importcsv import pandas aspd   df = pd.read\_csv("Japan.csv")  ax = plt.gca() print(df)  df.plot(x='Year',y='mean',color='green',ax=ax) df.plot(x='Year',y='std',color='blue',ax=ax) df.plot(x='Year',y='answer',color='red',ax=ax)  plt.show() |

Us Housing Bubble

|  |
| --- |
| importmatplotlib.pyplotasplt frommatplotlibimport style importcsv  fromdatetimeimportdatetime import pandas aspd   style.use("ggplot")  df = pd.read\_csv("hso\_synopsis\_data.csv")  ax = plt.gca()  df["date"] = [datetime.strptime(date, '%d-%m-%Y').date() for date indf["date"]]  df.plot(x='date',y='mean',color='green',ax=ax) df.plot(x='date',y='std',color='blue',ax=ax) df.plot(x='date',y='price',color='red',ax=ax) plt.show() |

*\* used .mean() and .std() methods for calculating mean and standard deviation respectively.*

**MATLAB CODES**

**PART 3, SECTION-1**

**CONSUMPTION Vs YEAR**

clear

clc

closeall

year = 1929:1:1933

Con = [593.9 562.1 544.9 496.1 484.8]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,Con,'c-','LineWidth',3)

plot(year,Con,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Consumption (in billion $)')

gridon

title('Consumption vs Year')

legend('Consumption','Consumption(Data points)')

xticks([1929:1:1933])

*year =*

*1929 1930 1931 1932 1933*

*Con =*

*593.9000 562.1000 544.9000 496.1000 484.8000*

**GDP Vs YEAR**

clear

clc

closeall

year = 1929:1:1933

GDP = [790.9 719.7 674.0 584.3 577.3]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,GDP,'r-','LineWidth',3)

plot(year,GDP,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('GDP (in billion $)')

gridon

title('GDP vs Year')

legend('GDP','GDP(Data points)')

xticks([1929:1:1933])

*year =*

*1929 1930 1931 1932 1933*

*GDP =*

*790.9000 719.7000 674.0000 584.3000 577.3000*

**GOVT. PURCHASE Vs YEAR**

clear

clc

closeall

year = 1929:1:1933

gp = [105.4 116.2 121.2 117.1 112.8]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,gp,'r-','LineWidth',2)

plot(year,gp,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Government purchases (in billion $)')

gridon

title('Government purchase vs Year')

lgd=legend('Government purchases','Government purchases(Data

points)','Location','NorthEast')

lgd.FontSize=4

xticks([1929:1:1933])

*year =*

*1929 1930 1931 1932 1933*

*gp =*

*105.4000 116.2000 121.2000 117.1000 112.8000*

*lgd =*

*Legend (Government purchases, Government purchases(Dat…) with*

*properties:*

*String: {'Government purchases' 'Government purchases(Data*

*points)'}*

*Location: 'northeast'*

*Orientation: 'vertical'*

*FontSize: 9*

*Position: [0.3799 0.8210 0.5057 0.0797]*

*Units: 'normalized'*

*Use GET to show all properties*

*lgd =*

*Legend (Government purchases, Government purchases(Dat…) with*

*properties:*

*String: {'Government purchases' 'Government purchases(Data*

*points)'}*

*Location: 'northeast'*

*Orientation: 'vertical'*

*FontSize: 4*

*Position: [0.6095 0.8533 0.2761 0.0473]*

*Units: 'normalized'*

*Use GET to show all properties*

**INVESTMENT Vs YEAR**

clear

clc

closeall

year = 1929:1:1933

Inv = [92.4 59.8 37.6 9.9 16.4]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,Inv,'c-','LineWidth',3)

plot(year,Inv,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Investment purchases (in billion $)')

gridon

title('Investment vs Year')

legend('Investment purchases','Investment purchases(Data points)')

xticks([1929:1:1933])

*year =*

*1929 1930 1931 1932 1933*

*Inv =*

*92.4000 59.8000 37.6000 9.9000 16.4000*

**MONEY SUPPLY M2 Vs YEAR**

clear

clc

closeall

year = 1925:1:1933

ms = [42.2 43.7 44.7 46.4 46.8 45.7 36.1 32.2 31.1]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,ms,'y-','LineWidth',3)

plot(year,ms,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Money supply M2 (in billion $)')

gridon

title('Money supply vs Year')

lgd=legend('Money supply','Money supply(Data

points)','Location','NorthEast')

lgd.FontSize=4;

xticks([1925:1:1933])

set(gca,'Color','[0.8 0.8 0.8]');

*year =*

*Columns 1 through 6*

*1925 1926 1927 1928 1929*

*1930*

*Columns 7 through 9*

*1931 1932 1933*

*ms =*

*Columns 1 through 7*

*42.2000 43.7000 44.7000 46.4000 46.8000 45.7000 36.1000*

*Columns 8 through 9*

*32.2000 31.1000*

*lgd =*

1

*Legend (Money supply, Money supply(Data points)) with properties:*

*String: {'Money supply' 'Money supply(Data points)'}*

*Location: 'northeast'*

*Orientation: 'vertical'*

*FontSize: 9*

*Position: [0.4883 0.8210 0.3973 0.0797]*

*Units: 'normalized'*

*Use GET to show all properties*

**MONEY SUPPLY M1 Vs YEAR**

clear

clc

closeall

year = 1925:1:1933

ms = [27.4 27.8 27.9 28.4 26.6 25.8 24.1 21.1 19.9]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,ms,'c-','LineWidth',3)

plot(year,ms,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Money supply M1 (in billion $)')

gridon

title('Money supply vs Year')

lgd=legend('Money supply','Money supply(Data

points)','Location','NorthEast')

lgd.FontSize=5;

xticks([1925:1:1933])

*year =*

*Columns 1 through 6*

*1925 1926 1927 1928 1929*

*1930*

*Columns 7 through 9*

*1931 1932 1933*

*ms =*

*Columns 1 through 7*

*27.4000 27.8000 27.9000 28.4000 26.6000 25.8000 24.1000*

*Columns 8 through 9*

*21.1000 19.9000*

*lgd =*

*Legend (Money supply, Money supply(Data points)) with properties:*

1

*String: {'Money supply' 'Money supply(Data points)'}*

*Location: 'northeast'*

*Orientation: 'vertical'*

*FontSize: 9*

*Position: [0.4883 0.8210 0.3973 0.0797]*

*Units: 'normalized'*

*Use GET to show all properties*

**NOMINAL INTEREST RATE Vs YEAR**

clear

clc

closeall

year = 1925:1:1933

ms = [27.4 27.8 27.9 28.4 26.6 25.8 24.1 21.1 19.9]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,ms,'c-','LineWidth',3)

plot(year,ms,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Money supply M1 (in billion $)')

gridon

title('Money supply vs Year')

lgd=legend('Money supply','Money supply(Data

points)','Location','NorthEast')

lgd.FontSize=5;

xticks([1925:1:1933])

*year =*

*Columns 1 through 6*

*1925 1926 1927 1928 1929*

*1930*

*Columns 7 through 9*

*1931 1932 1933*

*ms =*

*Columns 1 through 7*

*27.4000 27.8000 27.9000 28.4000 26.6000 25.8000 24.1000*

*Columns 8 through 9*

*21.1000 19.9000*

*lgd =*

*Legend (Money supply, Money supply(Data points)) with properties:*

1

*String: {'Money supply' 'Money supply(Data points)'}*

*Location: 'northeast'*

*Orientation: 'vertical'*

*FontSize: 9*

*Position: [0.4883 0.8210 0.3973 0.0797]*

*Units: 'normalized'*

*Use GET to show all properties*

**REAL INTEREST RATE Vs YEAR**

clear

clc

closeall

year = 1925:1:1933

ms = [27.4 27.8 27.9 28.4 26.6 25.8 24.1 21.1 19.9]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,ms,'c-','LineWidth',3)

plot(year,ms,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('Money supply M1 (in billion $)')

gridon

title('Money supply vs Year')

lgd=legend('Money supply','Money supply(Data

points)','Location','NorthEast')

lgd.FontSize=5;

xticks([1925:1:1933])

*year =*

*Columns 1 through 6*

*1925 1926 1927 1928 1929*

*1930*

*Columns 7 through 9*

*1931 1932 1933*

*ms =*

*Columns 1 through 7*

*27.4000 27.8000 27.9000 28.4000 26.6000 25.8000 24.1000*

*Columns 8 through 9*

*21.1000 19.9000*

*lgd =*

*Legend (Money supply, Money supply(Data points)) with properties:*

1

*String: {'Money supply' 'Money supply(Data points)'}*

*Location: 'northeast'*

*Orientation: 'vertical'*

*FontSize: 9*

*Position: [0.4883 0.8210 0.3973 0.0797]*

*Units: 'normalized'*

*Use GET to show all properties*

**PART- 3, SECTION -2**

**NORTH AMERICA**

clear

clc

closeall

year = 1985:1:2016

covar = [2.21 2.46 3.50 3.96 3.86 1.76 1.96 1.94 1.85 1.90 1.70 1.82

2.00 2.10 1.86 2.00 1.78 2.05 1.90 1.75 1.60 1.62 2.43 4.23 3.25 1.66

1.94 1.96 2.15 1.82 1.96 2.15]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,covar,'r-','LineWidth',3)

plot(year,covar,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('#CoVaR')

gridon

title('NORTH AMERICA : #CoVaRvs Year')

xticks([1985:1:2016])

*year =*

*Columns 1 through 6*

*1985 1986 1987 1988 1989*

*1990*

*Columns 7 through 12*

*1991 1992 1993 1994 1995*

*1996*

*Columns 13 through 18*

*1997 1998 1999 2000 2001*

*2002*

*Columns 19 through 24*

*2003 2004 2005 2006 2007*

*2008*

*Columns 25 through 30*

*2009 2010 2011 2012 2013*

*2014*

*Columns 31 through 32*

*2015 2016*

*covar =*

*Columns 1 through 7*

*2.2100 2.4600 3.5000 3.9600 3.8600 1.7600 1.9600*

*Columns 8 through 14*

*1.9400 1.8500 1.9000 1.7000 1.8200 2.0000 2.1000*

*Columns 15 through 21*

*1.8600 2.0000 1.7800 2.0500 1.9000 1.7500 1.6000*

*Columns 22 through 28*

*1.6200 2.4300 4.2300 3.2500 1.6600 1.9400 1.9600*

*Columns 29 through 32*

*2.1500 1.8200 1.9600 2.1500*

**JAPAN**

clear

clc

closeall

year = 1987:1:2017

covar = [3.85 4.00 6.22 6.00 5.85 4.20 3.46 2.70 3.90 3.50 4.10 3.65

4.02 4.00 2.98 2.84 4.21 3.15 3.40 3.45 4.36 7.64 3.90 3.95 3.20 2.96

5.62 4.10 3.90 5.46 4.22]

figure

holdon %This allows multiple plots to be drawn on the axes

plot(year,covar,'g-','LineWidth',3)

plot(year,covar,'k^','LineWidth',3,'MarkerSize',8)

xlabel('Year')

ylabel('#CoVaR')

gridon

title('JAPAN : #CoVaRvs Year')

xticks([1987:1:2017])

*year =*

*Columns 1 through 6*

*1987 1988 1989 1990 1991*

*1992*

*Columns 7 through 12*

*1993 1994 1995 1996 1997*

*1998*

*Columns 13 through 18*

*1999 2000 2001 2002 2003*

*2004*

*Columns 19 through 24*

*2005 2006 2007 2008 2009*

*2010*

*Columns 25 through 30*

*2011 2012 2013 2014 2015*

*2016*

*Column 31*

*2017*

*covar =*

*Columns 1 through 7*

*3.8500 4.0000 6.2200 6.0000 5.8500 4.2000 3.4600*

*Columns 8 through 14*

*2.7000 3.9000 3.5000 4.1000 3.6500 4.0200 4.0000*

*Columns 15 through 21*

*2.9800 2.8400 4.2100 3.1500 3.4000 3.4500 4.3600*

*Columns 22 through 28*

*7.6400 3.9000 3.9500 3.2000 2.9600 5.6200 4.1000*

*Columns 29 through 31*

*3.9000 5.4600 4.2200*