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OPTION DATA

input_data = pd.read_csv("BANKNIFTY.csv")

input_data = input_data.dropna()

input_data["date"] = input_data["date"].astype('int')
input_data["expiry"] = input_data["expiry"].astype('int')

input_data["join_col"] = input_data["contract"]+input_data["date"].astype('str')
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SPOT PRICE DATA

eq_input_data

eq_input_data["join_col"] = eq_input_data["ticker"]+eq_input_data["date"].astype('str')
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input_result = pd.merge(input_data, eq_input_data, how="left", on="join_col")
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Pivot_Data

pivot_data.to_csv
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table = pd.read_csv()

table['ATM_Strike'] = round(table['spot_price']/100)*100
table['date']= pd.to_datetime(table['date'].astype('str'))
table['expiry']= pd.to_datetime(table['expiry'].astype('str'))

stock=table[table['contract']==select_contract]
stock.drop(['contract'],axis=1,inplace=True)
stock.columns=stock.columns.astype('str')

stock['month_year'] = pd.to_datetime(stock['date']).dt.to_period('M')
stock['day'] = pd.to_datetime(stock['date']).dt.strftime('%d')

stock[['expiry','month_year']]

stock['rank'] = stock['expiry'].rank(ascending = 1)
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Table1 = stock.groupby('month_year').first()

Table1 = stock.groupby('month_year').first()
Table1['month_year'] = pd.to_datetime(Table1['date']).dt.to_period('M')

Table3 = pd.DataFrame({"date": ["0"], "spot_price":0, "expiry": ["0"],
                        "type": ["0"], "month_year":0, "day": ["0"],"ATR":0})

Table5 = pd.DataFrame({"date": ["0"], "spot_price":0, "expiry": ["0"],
                        "type": ["0"], "month_year":0, "day": ["0"],"ATR":0})
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Backtesting LOOP

CE_OTM_Strike = []
PE_OTM_Strike = []
month_year = []

for x in range (0,71):
    e=Table1.month_year[x]
    d=Table1.expiry[x]
    a= float((Table1.ATM_Strike[x]))

    b = round((a +a*0.05)/100)*100
    c = round((a -a*0.05)/100)*100

    f1 = str(float(a))#ATM
    f2 = str(float(b))#OTM
    f3 = str(float(c))#OTM
    print(f" {x}, {e} ATM {a} CE_OTM {b} PE_OTM {c}")

    CE_OTM_Strike.append(b)
    PE_OTM_Strike.append(c)
    month_year.append(e)

    Table2 = pd.DataFrame({"date": stock["date"], "spot_price": stock["spot_price"], "expiry": stock["expiry"],
                            "type": stock["type"], "month_year": stock["month_year"], "day": stock["day"],
                            "ATR":stock["ATR"], "CE_OTM": stock[f2]})

    Table12 = pd.DataFrame({"date": stock["date"], "spot_price": stock["spot_price"], "expiry": stock["expiry"],
                            "type": stock["type"], "month_year": stock["month_year"], "day": stock["day"],
                            "ATR":stock["ATR"], "PE_OTM": stock[f3]})

    Table6= Table2.where((Table2.month_year == e) & (Table2.expiry == d) & (Table2.type == 'CE'))
    Table4= Table12.where((Table2.month_year == e) & (Table2.expiry == d) & (Table2.type == 'PE'))

    Table6 = Table6.dropna()
    Table4 = Table4.dropna()

    Table4['day_to_expiry'] = (Table4['expiry']-Table4["date"]).dt.days

    Table6.set_index("date", inplace = True)
    Table4.set_index("date", inplace = True)

    Table4['CE_OTM'] = Table6['CE_OTM']
    Table4['strangle']= -(Table6['CE_OTM']+Table4['PE_OTM'])
    Table4['P&L']=Table4['strangle'].diff().cumsum()

    Table3 = Table3.append(Table4)
    Table7 = Table4.groupby('day').last()
    Table5 = Table5.append(Table7)

    Table5.drop(Table5.index[0], inplace=True)
    Table5['Total_P&L']=Table5['P&L'].cumsum()
    Table5['Total_P&L']
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Portfolio Analysis

Calucutting

Max Drawdown
maximum daily drawdown

Shape Ratio
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Heatmap and chart

Headmap monthly P&L wise

Chart on difference AREA
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