1. Carga de fichero .csv .xls El fichero fao.csv y el fichero fao.xls incluyen un conjunto de registros correspondientes a los precios mensuales de los diferentes productos mencionados desde el mes de enero del año 1990 hasta julio del año 2023 Los decimales en el fichero .csv usan el "." como separador, mientras en el fichero .xls usan ",".

Debes cargar los registros correspondientes a los precios en un dataframe, de modo que:

• Se cargan todas las filas que tienen datos. La cabecera del fichero recoge el nombre de cada columna del dataframe.

• El tipo de datos de cada columna debe ser el más correcto, acorde a los datos.

• Debe calcular la media anual del precio de cada producto en un nuevo dataframe añadiendo un ID adicional de la forma ID_YYYY, siendo YYYY el año para cada producto. En el notebook incluye el código para realizar la carga correcta. ¿observas algún tipo de correlación entre los datos?

In [1]:
```
import pandas as pd
import csv
import xlwt
```

Empezamos a cargar los datos de dos maneras : CSV y XLS

In [2]:
```
import csv

# Abrir el archivo CSV
with open('fao.csv', encoding='latin1') as fichero_csv:
    # Crear un lector CSV
    lector = csv.reader(fichero_csv)

    # Leer las primeras dos filas (pueden ser encabezados previos o datos inicia
    for _ in range(2):
        next(lector)

    # Leer la tercera fila como cabecera
    cabecera = next(lector)

# Imprimir la cabecera
print(cabecera)
```

```
['Date', 'Food_Price_Index', 'Meat', 'Dairy', 'Cereals', 'Oils', 'Sugar', '', '',
'', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '',
'', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '',
'', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '', '']
```

Creamos un DataFrame de Pandas

In [3]:
```
# Especifica la ruta al archivo CSV
archivo_csv = 'fao.csv'

# Crea un DataFrame de pandas
```

```python
df = pd.read_csv(archivo_csv, encoding='latin1', skiprows=2)

# Muestra el DataFrame
print(df)
```

```
        Date  Food_Price_Index   Meat  Dairy  Cereals    Oils  Sugar  \
0    1990-01              64.1   73.4   53.5     64.1   44.59   87.9
1    1990-02              64.5   76.0   52.2     62.2   44.50   90.7
2    1990-03              63.8   77.8   41.4     61.3   45.75   95.1
3    1990-04              65.8   80.4   48.4     62.8   44.02   94.3
4    1990-05              64.4   81.0   39.2     62.0   45.50   90.4
..       ...               ...    ...    ...      ...     ...    ...
398  2023-03             127.0  114.7  126.8    138.6  131.80  127.0
399  2023-04             127.7  116.8  122.6    136.1  130.00  149.4
400  2023-05             124.2  118.1  117.8    129.3  118.70  157.2
401  2023-06             122.4  118.1  116.7    126.6  115.80  152.2
402  2023-07             123.9  117.8  116.3    125.9  129.80  146.3

     Unnamed: 7  Unnamed: 8  Unnamed: 9  ...  Unnamed: 56  Unnamed: 57  \
0           NaN         NaN         NaN  ...          NaN          NaN
1           NaN         NaN         NaN  ...          NaN          NaN
2           NaN         NaN         NaN  ...          NaN          NaN
3           NaN         NaN         NaN  ...          NaN          NaN
4           NaN         NaN         NaN  ...          NaN          NaN
..          ...         ...         ...  ...          ...          ...
398         NaN         NaN         NaN  ...          NaN          NaN
399         NaN         NaN         NaN  ...          NaN          NaN
400         NaN         NaN         NaN  ...          NaN          NaN
401         NaN         NaN         NaN  ...          NaN          NaN
402         NaN         NaN         NaN  ...          NaN          NaN

     Unnamed: 58  Unnamed: 59  Unnamed: 60  Unnamed: 61  Unnamed: 62  \
0            NaN          NaN          NaN          NaN          NaN
1            NaN          NaN          NaN          NaN          NaN
2            NaN          NaN          NaN          NaN          NaN
3            NaN          NaN          NaN          NaN          NaN
4            NaN          NaN          NaN          NaN          NaN
..           ...          ...          ...          ...          ...
398          NaN          NaN          NaN          NaN          NaN
399          NaN          NaN          NaN          NaN          NaN
400          NaN          NaN          NaN          NaN          NaN
401          NaN          NaN          NaN          NaN          NaN
402          NaN          NaN          NaN          NaN          NaN

     Unnamed: 63  Unnamed: 64  Unnamed: 65
0            NaN          NaN          NaN
1            NaN          NaN          NaN
2            NaN          NaN          NaN
3            NaN          NaN          NaN
4            NaN          NaN          NaN
..           ...          ...          ...
398          NaN          NaN          NaN
399          NaN          NaN          NaN
400          NaN          NaN          NaN
401          NaN          NaN          NaN
402          NaN          NaN          NaN

[403 rows x 66 columns]
```

In [4]:
```
import pandas as pd

# Especifica la ruta al archivo CSV
archivo_csv = 'fao.csv'

# Crea un DataFrame de pandas con todas las filas que tienen datos
df = pd.read_csv(archivo_csv, encoding='latin1', skiprows=2)

# Elimina columnas adicionales sin nombre
df = df.loc[:, ~df.columns.str.contains('^Unnamed')]
```

In [5]:
```
# Muestra el DataFrame original
print("DataFrame original:")
print(df.head())
```

```
DataFrame original:
      Date  Food_Price_Index  Meat  Dairy  Cereals   Oils  Sugar
0  1990-01              64.1  73.4   53.5     64.1  44.59   87.9
1  1990-02              64.5  76.0   52.2     62.2  44.50   90.7
2  1990-03              63.8  77.8   41.4     61.3  45.75   95.1
3  1990-04              65.8  80.4   48.4     62.8  44.02   94.3
4  1990-05              64.4  81.0   39.2     62.0  45.50   90.4
```

In [6]:
```
# Asegúrate de que la columna 'Date' sea de tipo datetime
df['Date'] = pd.to_datetime(df['Date'])

# Crea una nueva columna 'ID_YYYY' para el año de cada producto
df['ID_YYYY'] = df['Date'].dt.year.astype(str) + '_' + df.index.astype(str)
```

In [7]:
```
# Muestra el DataFrame con la nueva columna 'ID_YYYY'
print("\nDataFrame con columna 'ID_YYYY':")
print(df.head())
```

```
DataFrame con columna 'ID_YYYY':
        Date  Food_Price_Index  Meat  Dairy  Cereals   Oils  Sugar ID_YYYY
0 1990-01-01              64.1  73.4   53.5     64.1  44.59   87.9  1990_0
1 1990-02-01              64.5  76.0   52.2     62.2  44.50   90.7  1990_1
2 1990-03-01              63.8  77.8   41.4     61.3  45.75   95.1  1990_2
3 1990-04-01              65.8  80.4   48.4     62.8  44.02   94.3  1990_3
4 1990-05-01              64.4  81.0   39.2     62.0  45.50   90.4  1990_4
```

In [8]:
```
# Calcula la media anual del precio de cada producto
df_media_anual = df.groupby(['ID_YYYY']).mean()
```

In [9]:
```
# MEDIA ANUAL RESULTADOS
print("\nDataFrame con la media anual del precio de cada producto:")
print(df_media_anual.head())
```

```
DataFrame con la media anual del precio de cada producto:
                Date  Food_Price_Index  Meat  Dairy  Cereals   Oils  Sugar
ID_YYYY
1990_0   1990-01-01              64.1  73.4   53.5     64.1  44.59   87.9
1990_1   1990-02-01              64.5  76.0   52.2     62.2  44.50   90.7
1990_10  1990-11-01              61.9  86.2   39.4     52.4  48.30   62.3
1990_11  1990-12-01              61.9  83.7   45.1     52.6  49.60   60.3
1990_2   1990-03-01              63.8  77.8   41.4     61.3  45.75   95.1
```

In [10]:
```
# Calcula la media anual del precio de cada producto
df_media_anual = df.groupby(['ID_YYYY']).mean()
```

```
# Muestra el DataFrame con la media anual
print("\nDataFrame con la media anual del precio de cada producto:")
print(df_media_anual.head())
```

```
DataFrame con la media anual del precio de cada producto:
             Date  Food_Price_Index  Meat  Dairy  Cereals   Oils  Sugar
ID_YYYY
1990_0  1990-01-01              64.1  73.4   53.5     64.1  44.59   87.9
1990_1  1990-02-01              64.5  76.0   52.2     62.2  44.50   90.7
1990_10 1990-11-01              61.9  86.2   39.4     52.4  48.30   62.3
1990_11 1990-12-01              61.9  83.7   45.1     52.6  49.60   60.3
1990_2  1990-03-01              63.8  77.8   41.4     61.3  45.75   95.1
```

In [11]:
```
# Calcula la correlación entre las columnas del DataFrame
correlacion = df.corr()

# Muestra la matriz de correlación
print("Matriz de correlación:")
print(correlacion)

# Si solo deseas ver la correlación con una columna específica (por ejemplo, 'Fo
correlacion_con_food_price_index = df.corr()['Food_Price_Index']

# Muestra la correlación con 'Food_Price_Index'
print("\nCorrelación con 'Food_Price_Index':")
```

```
Matriz de correlación:
                     Date  Food_Price_Index      Meat     Dairy   Cereals  \
Date             1.000000          0.763873  0.694936  0.796997  0.734775
Food_Price_Index 0.763873          1.000000  0.897719  0.929014  0.981192
Meat             0.694936          0.897719  1.000000  0.782505  0.839100
Dairy            0.796997          0.929014  0.782505  1.000000  0.909603
Cereals          0.734775          0.981192  0.839100  0.909603  1.000000
Oils             0.690770          0.944180  0.759215  0.854228  0.926735
Sugar            0.556257          0.802173  0.749047  0.668368  0.744974
ID_YYYY          0.755147          0.410140  0.194008  0.560608  0.422251

                     Oils     Sugar   ID_YYYY
Date             0.690770  0.556257  0.755147
Food_Price_Index 0.944180  0.802173  0.410140
Meat             0.759215  0.749047  0.194008
Dairy            0.854228  0.668368  0.560608
Cereals          0.926735  0.744974  0.422251
Oils             1.000000  0.722343  0.416362
Sugar            0.722343  1.000000  0.243337
ID_YYYY          0.416362  0.243337  1.000000

Correlación con 'Food_Price_Index':
```

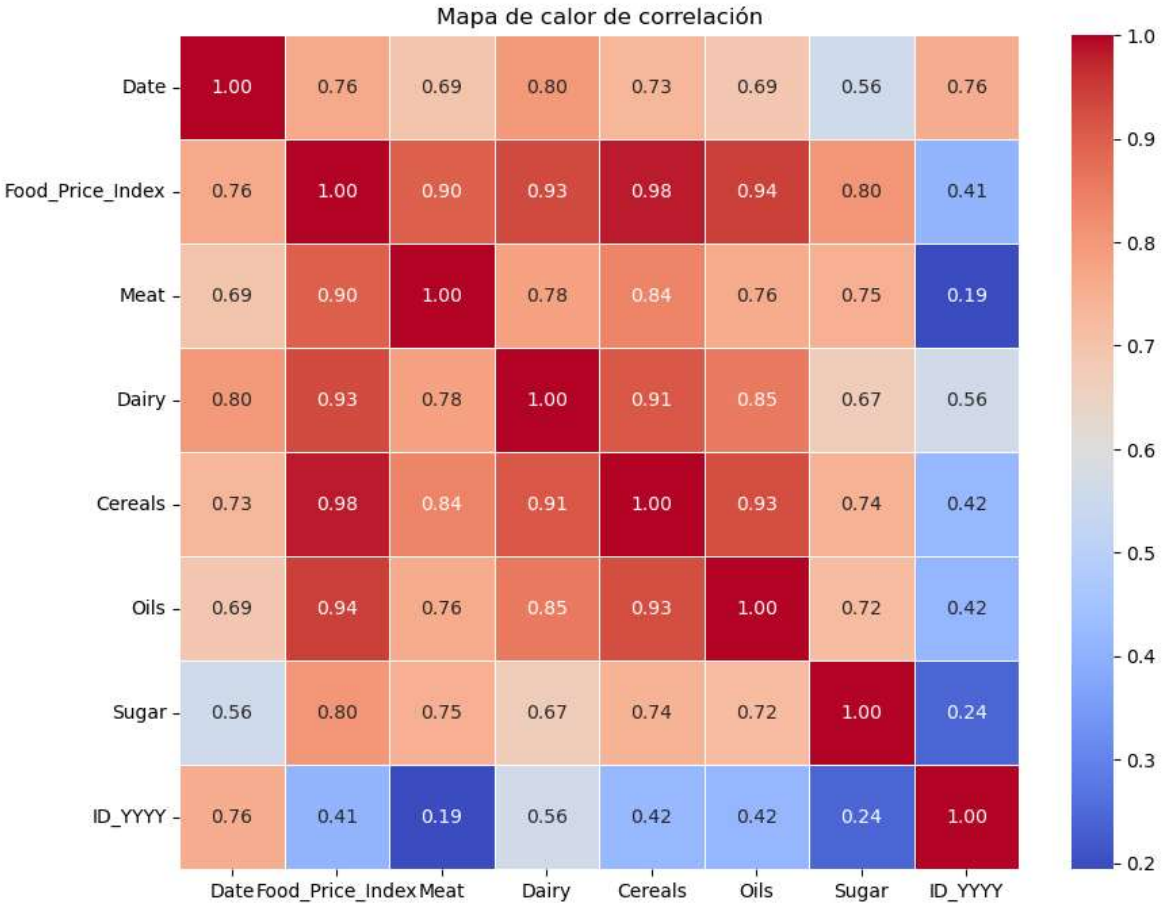
Para interpretar la correlacio graficamente me he hecho con elpip install seaborn para representarlo con Mapa de Calor, NOTA: Servida ayuda por ChatGPT

In [12]:
```
import seaborn as sns
import matplotlib.pyplot as plt

# Calcula la correlación entre las columnas del DataFrame
correlacion = df.corr()

# Crea un mapa de calor
plt.figure(figsize=(10, 8))
```

```
sns.heatmap(correlacion, annot=True, cmap='coolwarm', fmt='.2f', linewidths=0.5)
plt.title('Mapa de calor de correlación')
plt.show()
```



La correlación con otras variables, como 'Meat', 'Dairy', 'Cereals', 'Oils', y 'Sugar', es bastante alta, especialmente con 'Cereals' y 'Oils'. Esto sugiere una fuerte relación lineal positiva entre el índice de precios de los alimentos y estas categorías específicas de alimentos.

La correlación con otras variables, como 'Meat', 'Dairy', 'Cereals', 'Oils', y 'Sugar', es bastante alta, especialmente con 'Cereals' y 'Oils'. Esto sugiere una fuerte relación lineal positiva entre el índice de precios de los alimentos y estas categorías específicas de alimentos.

AHORA CON XLS

instalar pip install xlrd para abrir XLS

In [13]:
```
import pandas as pd

# Especifica la ruta al archivo Excel
archivo_excel = 'padinpresafao.xlsx'
```

pip install openpyxl

In [14]:
```
# Lee las columnas del archivo Excel sin cargar los datos
columnas_excel = pd.read_excel(archivo_excel, sheet_name='Indices_Monthly_Real',
```

In [15]:
```
# Muestra las columnas
print("Columnas del archivo Excel:")
print(columnas_excel)
```

```
Columnas del archivo Excel:
Index([1990-01-01 00:00:00,    77.6276304143571,   88.79702716282455,
         64.74874473966906,   77.62221601837265,    53.9594811195994,
        106.34872983101246],
      dtype='object')
```

In [16]:
```
# Crea un DataFrame de pandas con datos de la hoja 'Indices_Monthly_Real'
df = pd.read_excel(archivo_excel, sheet_name='Indices_Monthly_Real')

# Muestra el DataFrame
print(df)
```

```
          DATE  Food_Price_Index  Meat_Price_Index  Dairy_Price_Index  \
0          NaT               NaN               NaN                NaN
1   1990-01-01         77.627630         88.797027          64.748745
2   1990-02-01         78.000947         91.921703          63.194383
3   1990-03-01         77.194362         94.159745          50.062011
4   1990-04-01         79.590160         97.350032          58.605874
..         ...               ...               ...                ...
399 2023-03-01        122.143563        110.300392         121.935100
400 2023-04-01        122.834058        112.364211         117.873093
401 2023-05-01        119.400700        113.593066         113.265805
402 2023-06-01        117.715018        113.609584         112.256166
403 2023-07-01        119.193331        113.262411         111.808133

     Cereals_Price_Index  Oils_Price_Index  Sugar_ Price_Index
0                    NaN               NaN                NaN
1              77.622216         53.959481          106.348730
2              75.300796         53.854003          109.718936
3              74.135998         55.360591          115.036373
4              76.024917         53.268974          114.137651
..                   ...               ...                ...
399           133.252084        126.743387          122.135135
400           130.930790        125.053977          143.681568
401           124.324199        114.140627          151.196154
402           121.757567        111.358605          146.334654
403           121.097298        124.838550          140.690499

[404 rows x 7 columns]
```

In [17]:
```
# Carga los datos del archivo Excel en un DataFrame
df = pd.read_excel(archivo_excel, sheet_name='Indices_Monthly_Real', skiprows=0)

# Muestra el DataFrame
print(df)
```

```
          DATE  Food_Price_Index  Meat_Price_Index  Dairy_Price_Index  \
0          NaT               NaN               NaN                NaN
1   1990-01-01         77.627630         88.797027          64.748745
2   1990-02-01         78.000947         91.921703          63.194383
3   1990-03-01         77.194362         94.159745          50.062011
4   1990-04-01         79.590160         97.350032          58.605874
..         ...               ...               ...                ...
399 2023-03-01        122.143563        110.300392         121.935100
400 2023-04-01        122.834058        112.364211         117.873093
401 2023-05-01        119.400700        113.593066         113.265805
402 2023-06-01        117.715018        113.609584         112.256166
403 2023-07-01        119.193331        113.262411         111.808133

     Cereals_Price_Index  Oils_Price_Index  Sugar_ Price_Index
0                    NaN               NaN                NaN
1              77.622216         53.959481          106.348730
2              75.300796         53.854003          109.718936
3              74.135998         55.360591          115.036373
4              76.024917         53.268974          114.137651
..                   ...               ...                ...
399           133.252084        126.743387          122.135135
400           130.930790        125.053977          143.681568
401           124.324199        114.140627          151.196154
402           121.757567        111.358605          146.334654
403           121.097298        124.838550          140.690499

[404 rows x 7 columns]
```

Eliminamos la linea vacia con index 0 , la que esta debajo de titulo columna

In [18]:
```
import pandas as pd

# Carga los datos del archivo Excel en un DataFrame, omitiendo la primera fila
df = pd.read_excel(archivo_excel, sheet_name='Indices_Monthly_Real', header=None
```

Agregamos nombres a las columnas de la hoja 3 de archivo_excel

In [19]:
```
column_names = ['Date', 'Food_Price_Index', 'Meat_Price_Index', 'Dairy_Price_Inc
df.columns = column_names
```

verificamos que esta bien montado el dataframe

In [20]:
```
# Muestra el DataFrame
print(df)
```

```
          Date  Food_Price_Index  Meat_Price_Index  Dairy_Price_Index  \
0   1990-01-01         77.627630         88.797027          64.748745
1   1990-02-01         78.000947         91.921703          63.194383
2   1990-03-01         77.194362         94.159745          50.062011
3   1990-04-01         79.590160         97.350032          58.605874
4   1990-05-01         77.910563         98.018607          47.426859
..         ...               ...               ...                ...
398 2023-03-01        122.143563        110.300392         121.935100
399 2023-04-01        122.834058        112.364211         117.873093
400 2023-05-01        119.400700        113.593066         113.265805
401 2023-06-01        117.715018        113.609584         112.256166
402 2023-07-01        119.193331        113.262411         111.808133

     Cereals_Price_Index  Oils_Price_Index  Sugar_Price_Index
0              77.622216         53.959481         106.348730
1              75.300796         53.854003         109.718936
2              74.135998         55.360591         115.036373
3              76.024917         53.268974         114.137651
4              75.010894         55.063124         109.344469
..                   ...               ...                ...
398           133.252084        126.743387         122.135135
399           130.930790        125.053977         143.681568
400           124.324199        114.140627         151.196154
401           121.757567        111.358605         146.334654
402           121.097298        124.838550         140.690499

[403 rows x 7 columns]
```

In [21]:
```
df['Date'] = pd.to_datetime(df['Date'])
df.iloc[:, 1:] = df.iloc[:, 1:].round(2)
```

In [22]:
```
# Muestra el DataFrame
print(df)
```

```
          Date  Food_Price_Index  Meat_Price_Index  Dairy_Price_Index  \
0   1990-01-01             77.63             88.80              64.75
1   1990-02-01             78.00             91.92              63.19
2   1990-03-01             77.19             94.16              50.06
3   1990-04-01             79.59             97.35              58.61
4   1990-05-01             77.91             98.02              47.43
..         ...               ...               ...                ...
398 2023-03-01            122.14            110.30             121.94
399 2023-04-01            122.83            112.36             117.87
400 2023-05-01            119.40            113.59             113.27
401 2023-06-01            117.72            113.61             112.26
402 2023-07-01            119.19            113.26             111.81

     Cereals_Price_Index  Oils_Price_Index  Sugar_Price_Index
0                  77.62             53.96             106.35
1                  75.30             53.85             109.72
2                  74.14             55.36             115.04
3                  76.02             53.27             114.14
4                  75.01             55.06             109.34
..                   ...               ...                ...
398               133.25            126.74             122.14
399               130.93            125.05             143.68
400               124.32            114.14             151.20
401               121.76            111.36             146.33
402               121.10            124.84             140.69

[403 rows x 7 columns]
```

In [23]:

```python
import pandas as pd

# Especifica la ruta al archivo Excel
archivo_excel = 'padinpresafao.xlsx'  # Reemplaza con la ruta real de tu archivo

# Carga los datos del archivo Excel en un DataFrame, omitiendo la primera fila
df = pd.read_excel(archivo_excel, sheet_name='Indices_Monthly_Real', header=None

# Agrega nombres a las columnas
column_names = ['Date', 'Food_Price_Index', 'Meat_Price_Index', 'Dairy_Price_Inc
df.columns = column_names

# Muestra el DataFrame
print(df)
```

```
          Date  Food_Price_Index  Meat_Price_Index  Dairy_Price_Index  \
0   1990-01-01         77.627630         88.797027          64.748745
1   1990-02-01         78.000947         91.921703          63.194383
2   1990-03-01         77.194362         94.159745          50.062011
3   1990-04-01         79.590160         97.350032          58.605874
4   1990-05-01         77.910563         98.018607          47.426859
..         ...               ...               ...                ...
398 2023-03-01        122.143563        110.300392         121.935100
399 2023-04-01        122.834058        112.364211         117.873093
400 2023-05-01        119.400700        113.593066         113.265805
401 2023-06-01        117.715018        113.609584         112.256166
402 2023-07-01        119.193331        113.262411         111.808133

     Cereals_Price_Index  Oils_Price_Index  Sugar_Price_Index
0              77.622216         53.959481         106.348730
1              75.300796         53.854003         109.718936
2              74.135998         55.360591         115.036373
3              76.024917         53.268974         114.137651
4              75.010894         55.063124         109.344469
..                   ...               ...                ...
398           133.252084        126.743387         122.135135
399           130.930790        125.053977         143.681568
400           124.324199        114.140627         151.196154
401           121.757567        111.358605         146.334654
402           121.097298        124.838550         140.690499

[403 rows x 7 columns]
```

In [24]:
```python
import pandas as pd

# Supongamos que tu DataFrame se llama df
# Convierte la columna 'Date' a tipo datetime
df['Date'] = pd.to_datetime(df['Date'])

# Convierte las demás columnas a tipo numérico
numeric_columns = ['Food_Price_Index', 'Meat_Price_Index', 'Dairy_Price_Index',
df[numeric_columns] = df[numeric_columns].apply(pd.to_numeric, errors='coerce')

# Muestra la información actualizada sobre el DataFrame
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 403 entries, 0 to 402
Data columns (total 7 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   Date                 403 non-null    datetime64[ns]
 1   Food_Price_Index     403 non-null    float64
 2   Meat_Price_Index     403 non-null    float64
 3   Dairy_Price_Index    403 non-null    float64
 4   Cereals_Price_Index  403 non-null    float64
 5   Oils_Price_Index     403 non-null    float64
 6   Sugar_Price_Index    403 non-null    float64
dtypes: datetime64[ns](1), float64(6)
memory usage: 22.2 KB
```

In [25]:
```python
# Muestra el DataFrame
print(df)
```

```
          Date  Food_Price_Index  Meat_Price_Index  Dairy_Price_Index  \
0   1990-01-01         77.627630         88.797027          64.748745
1   1990-02-01         78.000947         91.921703          63.194383
2   1990-03-01         77.194362         94.159745          50.062011
3   1990-04-01         79.590160         97.350032          58.605874
4   1990-05-01         77.910563         98.018607          47.426859
..         ...               ...               ...                ...
398 2023-03-01        122.143563        110.300392         121.935100
399 2023-04-01        122.834058        112.364211         117.873093
400 2023-05-01        119.400700        113.593066         113.265805
401 2023-06-01        117.715018        113.609584         112.256166
402 2023-07-01        119.193331        113.262411         111.808133

     Cereals_Price_Index  Oils_Price_Index  Sugar_Price_Index
0              77.622216         53.959481         106.348730
1              75.300796         53.854003         109.718936
2              74.135998         55.360591         115.036373
3              76.024917         53.268974         114.137651
4              75.010894         55.063124         109.344469
..                   ...               ...                ...
398           133.252084        126.743387         122.135135
399           130.930790        125.053977         143.681568
400           124.324199        114.140627         151.196154
401           121.757567        111.358605         146.334654
402           121.097298        124.838550         140.690499

[403 rows x 7 columns]
```

In [26]:

```python
# Crea una nueva columna 'ID_YYYY' para el año de cada producto
df['ID_YYYY'] = df['Date'].dt.year

# Calcula la media anual del precio de cada producto
df_media_anual = df.groupby(['ID_YYYY']).mean()

# Muestra el nuevo DataFrame con la media anual
print(df_media_anual)
```

ID_YYYY	Date	Food_Price_Index	Meat_Price_Index
1990	1990-06-16 12:00:00.000000000	76.258216	98.680344
1991	1991-06-16 12:00:00.000000000	75.805676	98.482114
1992	1992-06-16 08:00:00.000000000	76.658137	92.939991
1993	1993-06-16 12:00:00.000000000	71.795337	85.849373
1994	1994-06-16 12:00:00.000000000	79.985917	90.015506
1995	1995-06-16 12:00:00.000000000	83.401894	92.124173
1996	1996-06-16 08:00:00.000000000	86.142104	92.969130
1997	1997-06-16 12:00:00.000000000	82.214188	91.829277
1998	1998-06-16 12:00:00.000000000	78.728758	80.093022
1999	1999-06-16 12:00:00.000000000	68.489556	76.699664
2000	2000-06-16 08:00:00.000000000	67.059820	75.828585
2001	2001-06-16 12:00:00.000000000	71.811902	80.660335
2002	2002-06-16 12:00:00.000000000	70.225184	72.933199
2003	2003-06-16 12:00:00.000000000	72.623180	73.320792
2004	2004-06-16 08:00:00.000000000	77.136082	79.502874
2005	2005-06-16 12:00:00.000000000	76.860779	81.871738
2006	2006-06-16 12:00:00.000000000	80.731573	78.462067
2007	2007-06-16 12:00:00.000000000	98.816024	80.587139
2008	2008-06-16 08:00:00.000000000	114.328409	87.720772
2009	2009-06-16 12:00:00.000000000	95.069817	84.243285
2010	2010-06-16 12:00:00.000000000	106.796273	91.047427
2011	2011-06-16 12:00:00.000000000	118.832658	94.922408
2012	2012-06-16 08:00:00.000000000	111.497380	95.273985
2013	2013-06-16 12:00:00.000000000	109.510425	96.779063
2014	2014-06-16 12:00:00.000000000	106.317080	103.745865
2015	2015-06-16 12:00:00.000000000	95.120644	98.887943
2016	2016-06-16 08:00:00.000000000	97.806359	96.845293
2017	2017-06-16 14:00:00.000000000	100.807798	100.519022
2018	2018-06-16 22:00:00.000000000	94.213040	93.207948
2019	2019-06-16 16:00:00.000000000	95.649945	100.567634
2020	2020-06-16 08:00:00.000000000	99.180189	96.563352
2021	2021-06-16 12:00:00.000000000	125.075926	107.161635
2022	2022-06-16 12:00:00.000000000	140.553208	116.213194
2023	2023-04-01 06:51:25.714285824	121.621711	111.282832

ID_YYYY	Dairy_Price_Index	Cereals_Price_Index	Oils_Price_Index
1990	51.579629	70.287439	55.026992
1991	55.526158	70.676036	59.859303
1992	65.707631	73.088803	63.537907
1993	56.347229	68.403377	62.547913
1994	56.662541	74.008495	85.874993
1995	68.272294	77.112969	87.029628
1996	68.371701	92.822781	77.598555
1997	69.221382	77.446682	82.306452
1998	67.911589	71.719753	102.136657
1999	59.976201	65.946190	72.285125
2000	68.491322	64.657498	53.939579
2001	79.546993	67.736993	55.502830
2002	60.940517	73.468108	72.898223
2003	68.465501	74.621951	78.703021
2004	82.190309	75.309863	81.911139
2005	88.077745	69.319780	73.463156
2006	81.276967	79.246540	78.486366
2007	128.324380	105.792715	112.509529
2008	128.752892	133.914425	137.252551
2009	94.804720	100.804013	97.938711
2010	111.953936	107.552120	122.010090

2011	117.036249	128.088998	140.994074
2012	101.346051	124.710627	125.535018
2013	128.455810	117.702115	108.940382
2014	120.345458	107.046903	102.238845
2015	89.087348	98.010146	91.945606
2016	87.936718	93.958842	105.805648
2017	111.079992	93.569227	104.804837
2018	105.366355	99.031550	86.202287
2019	103.406045	97.158464	83.717151
2020	102.922211	104.220505	100.507993
2021	118.495544	130.473056	163.996004
2022	139.290816	151.327007	183.726982
2023	118.703383	130.615862	123.977620

ID_YYYY	Sugar_Price_Index
1990	94.016271
1991	67.765144
1992	67.195786
1993	71.893875
1994	89.550451
1995	89.469274
1996	82.097267
1997	81.958381
1998	67.237794
1999	48.166360
2000	63.647412
2001	69.860854
2002	56.358629
2003	55.108414
2004	52.181387
2005	69.809343
2006	101.681251
2007	65.388209
2008	77.050729
2009	116.398671
2010	131.788768
2011	144.977272
2012	121.007640
2013	99.781607
2014	97.228517
2015	85.035039
2016	118.765837
2017	101.928092
2018	76.027257
2019	79.066342
2020	80.380004
2021	108.767494
2022	111.985530
2023	133.819460

In [27]:
```
import pandas as pd


# Asegúrate de que la columna 'Date' sea de tipo datetime
df_media_anual['Date'] = pd.to_datetime(df_media_anual['Date'])

# Agrega un ID correlativo a la columna 'ID_YYYY'
df_media_anual['ID_YYYY'] = df_media_anual.groupby(df_media_anual['Date'].dt.yea
```

```python
# Combina 'ID_YYYY' y 'Date' para formar el nuevo formato
df_media_anual['Date'] = 'ID_' + df_media_anual['ID_YYYY'].astype(str) + '_' + d

# Elimina la columna temporal 'ID_YYYY' si no la necesitas
df_media_anual.drop('ID_YYYY', axis=1, inplace=True)

# Muestra el DataFrame resultante
print(df_media_anual)
```

ID_YYYY	Date	Food_Price_Index	Meat_Price_Index	Dairy_Price_Index
1990	ID_1_1990	76.258216	98.680344	51.579629
1991	ID_1_1991	75.805676	98.482114	55.526158
1992	ID_1_1992	76.658137	92.939991	65.707631
1993	ID_1_1993	71.795337	85.849373	56.347229
1994	ID_1_1994	79.985917	90.015506	56.662541
1995	ID_1_1995	83.401894	92.124173	68.272294
1996	ID_1_1996	86.142104	92.969130	68.371701
1997	ID_1_1997	82.214188	91.829277	69.221382
1998	ID_1_1998	78.728758	80.093022	67.911589
1999	ID_1_1999	68.489556	76.699664	59.976201
2000	ID_1_2000	67.059820	75.828585	68.491322
2001	ID_1_2001	71.811902	80.660335	79.546993
2002	ID_1_2002	70.225184	72.933199	60.940517
2003	ID_1_2003	72.623180	73.320792	68.465501
2004	ID_1_2004	77.136082	79.502874	82.190309
2005	ID_1_2005	76.860779	81.871738	88.077745
2006	ID_1_2006	80.731573	78.462067	81.276967
2007	ID_1_2007	98.816024	80.587139	128.324380
2008	ID_1_2008	114.328409	87.720772	128.752892
2009	ID_1_2009	95.069817	84.243285	94.804720
2010	ID_1_2010	106.796273	91.047427	111.953936
2011	ID_1_2011	118.832658	94.922408	117.036249
2012	ID_1_2012	111.497380	95.273985	101.346051
2013	ID_1_2013	109.510425	96.779063	128.455810
2014	ID_1_2014	106.317080	103.745865	120.345458
2015	ID_1_2015	95.120644	98.887943	89.087348
2016	ID_1_2016	97.806359	96.845293	87.936718
2017	ID_1_2017	100.807798	100.519022	111.079992
2018	ID_1_2018	94.213040	93.207948	105.366355
2019	ID_1_2019	95.649945	100.567634	103.406045
2020	ID_1_2020	99.180189	96.563352	102.922211
2021	ID_1_2021	125.075926	107.161635	118.495544
2022	ID_1_2022	140.553208	116.213194	139.290816
2023	ID_1_2023	121.621711	111.282832	118.703383

ID_YYYY	Cereals_Price_Index	Oils_Price_Index	Sugar_Price_Index
1990	70.287439	55.026992	94.016271
1991	70.676036	59.859303	67.765144
1992	73.088803	63.537907	67.195786
1993	68.403377	62.547913	71.893875
1994	74.008495	85.874993	89.550451
1995	77.112969	87.029628	89.469274
1996	92.822781	77.598555	82.097267
1997	77.446682	82.306452	81.958381
1998	71.719753	102.136657	67.237794
1999	65.946190	72.285125	48.166360
2000	64.657498	53.939579	63.647412
2001	67.736993	55.502830	69.860854
2002	73.468108	72.898223	56.358629
2003	74.621951	78.703021	55.108414
2004	75.309863	81.911139	52.181387
2005	69.319780	73.463156	69.809343
2006	79.246540	78.486366	101.681251
2007	105.792715	112.509529	65.388209
2008	133.914425	137.252551	77.050729
2009	100.804013	97.938711	116.398671
2010	107.552120	122.010090	131.788768

2011	128.088998	140.994074	144.977272
2012	124.710627	125.535018	121.007640
2013	117.702115	108.940382	99.781607
2014	107.046903	102.238845	97.228517
2015	98.010146	91.945606	85.035039
2016	93.958842	105.805648	118.765837
2017	93.569227	104.804837	101.928092
2018	99.031550	86.202287	76.027257
2019	97.158464	83.717151	79.066342
2020	104.220505	100.507993	80.380004
2021	130.473056	163.996004	108.767494
2022	151.327007	183.726982	111.985530
2023	130.615862	123.977620	133.819460