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

In [12]:
```
df = pd.read_csv("FAOSTAT_data_en_3-25-2025.csv")
df
```

Out[12]:

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Note
0	TCL	Crops and livestock products	4	Afghanistan	5608	Import quantity	2112.00	Buffalo	2014	2014	An	1	X	Figure from international organizations	Estimated data using trading partner databas
1	TCL	Crops and livestock products	4	Afghanistan	5622	Import value	2112.00	Buffalo	2014	2014	1000 USD	0	X	Figure from international organizations	Estimated data using trading partner databas
2	TCL	Crops and livestock products	4	Afghanistan	5908	Export quantity	2121.01	Camels	2014	2014	An	628	X	Figure from international organizations	Estimated data using trading partner databas
3	TCL	Crops and livestock products	4	Afghanistan	5922	Export value	2121.01	Camels	2014	2014	1000 USD	389	X	Figure from international organizations	Estimated data using trading partner databas
4	TCL	Crops and livestock products	4	Afghanistan	5908	Export quantity	2121.01	Camels	2016	2016	An	100	X	Figure from international organizations	Estimated data using trading partner databas
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Not
42950	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2152.00	Turkeys	2011	2011	1000 USD	0	E	Estimated value	NaN
42951	TCL	Crops and livestock products	716	Zimbabwe	5909	Export quantity	2152.00	Turkeys	2012	2012	1000 An	0	E	Estimated value	NaN
42952	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2152.00	Turkeys	2012	2012	1000 USD	0	E	Estimated value	NaN
42953	TCL	Crops and livestock products	716	Zimbabwe	5909	Export quantity	2152.00	Turkeys	2013	2013	1000 An	0	E	Estimated value	NaN
42954	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2152.00	Turkeys	2013	2013	1000 USD	0	E	Estimated value	NaN

42955 rows × 15 columns

In [14]:
```
df.head(3)
```

Out[14]:

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Note
0	TCL	Crops and livestock products	4	Afghanistan	5608	Import quantity	2112.00	Buffalo	2014	2014	An	1	X	Figure from international organizations	Estimated data using trading partners database
1	TCL	Crops and livestock products	4	Afghanistan	5622	Import value	2112.00	Buffalo	2014	2014	1000 USD	0	X	Figure from international organizations	Estimated data using trading partners database
2	TCL	Crops and livestock products	4	Afghanistan	5908	Export quantity	2121.01	Camels	2014	2014	An	628	X	Figure from international organizations	Estimated data using trading partners database

In [16]:
```
df.tail(3)
```

Out[16]:

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Note
42952	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2152.0	Turkeys	2012	2012	1000 USD	0	E	Estimated value	NaN
42953	TCL	Crops and livestock products	716	Zimbabwe	5909	Export quantity	2152.0	Turkeys	2013	2013	1000 An	0	E	Estimated value	NaN
42954	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2152.0	Turkeys	2013	2013	1000 USD	0	E	Estimated value	NaN

In [20]:
```
df.sample(7)
```

Out[20]:

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Note
10863	TCL	Crops and livestock products	203	Czechia	5922	Export value	2152.0	Turkeys	2015	2015	1000 USD	21929	A	Official figure	NaN
37217	TCL	Crops and livestock products	756	Switzerland	5908	Export quantity	2112.0	Buffalo	2014	2014	An	1	A	Official figure	NaN
12017	TCL	Crops and livestock products	218	Ecuador	5909	Export quantity	2191.0	Rabbits and hares	2013	2013	1000 An	0	E	Estimated value	NaN
6910	TCL	Crops and livestock products	124	Canada	5922	Export value	2140.0	Swine / pigs	2016	2016	1000 USD	329820	A	Official figure	NaN
15765	TCL	Crops and livestock products	300	Greece	5922	Export value	2131.0	Horses	2014	2014	1000 USD	267	A	Official figure	NaN
29624	TCL	Crops and livestock products	591	Panama	5608	Import quantity	2122.0	Sheep	2012	2012	An	0	X	Figure from international organizations	Estimated data using trading partners database
33835	TCL	Crops and livestock products	686	Senegal	5908	Export quantity	2122.0	Sheep	2010	2010	An	0	E	Estimated value	NaN

In [24]:
```
df.describe()
```

Out[24]:

	Area Code (M49)	Element Code	Item Code (CPC)	Year Code	Year	Value
count	42955.000000	42955.000000	42955.000000	42955.000000	42955.000000	4.295500e+04
mean	433.511070	5744.056804	2143.056875	2013.195530	2013.195530	3.628702e+04
std	253.971107	148.630929	26.956087	2.243545	2.243545	3.514313e+05
min	4.000000	5608.000000	2111.000000	2010.000000	2010.000000	0.000000e+00
25%	208.000000	5609.000000	2123.000000	2011.000000	2011.000000	0.000000e+00
50%	422.000000	5622.000000	2133.000000	2013.000000	2013.000000	5.700000e+01
75%	662.000000	5909.000000	2152.000000	2015.000000	2015.000000	1.814500e+03
max	894.000000	5922.000000	2199.200000	2017.000000	2017.000000	1.554260e+07

In [30]:
```
df["Item"].unique()
```

Out[30]:
```
array(['Buffalo', 'Camels', 'Cattle', 'Chickens', 'Goats', 'Horses',
       'Other live animals non food, n.e.c.',
       'Other live animals, n.e.c.', 'Sheep', 'Swine / pigs', 'Turkeys',
       'Asses', 'Ducks', 'Geese', 'Mules and hinnies', 'Other camelids',
       'Rabbits and hares', 'Other rodents'], dtype=object)
```

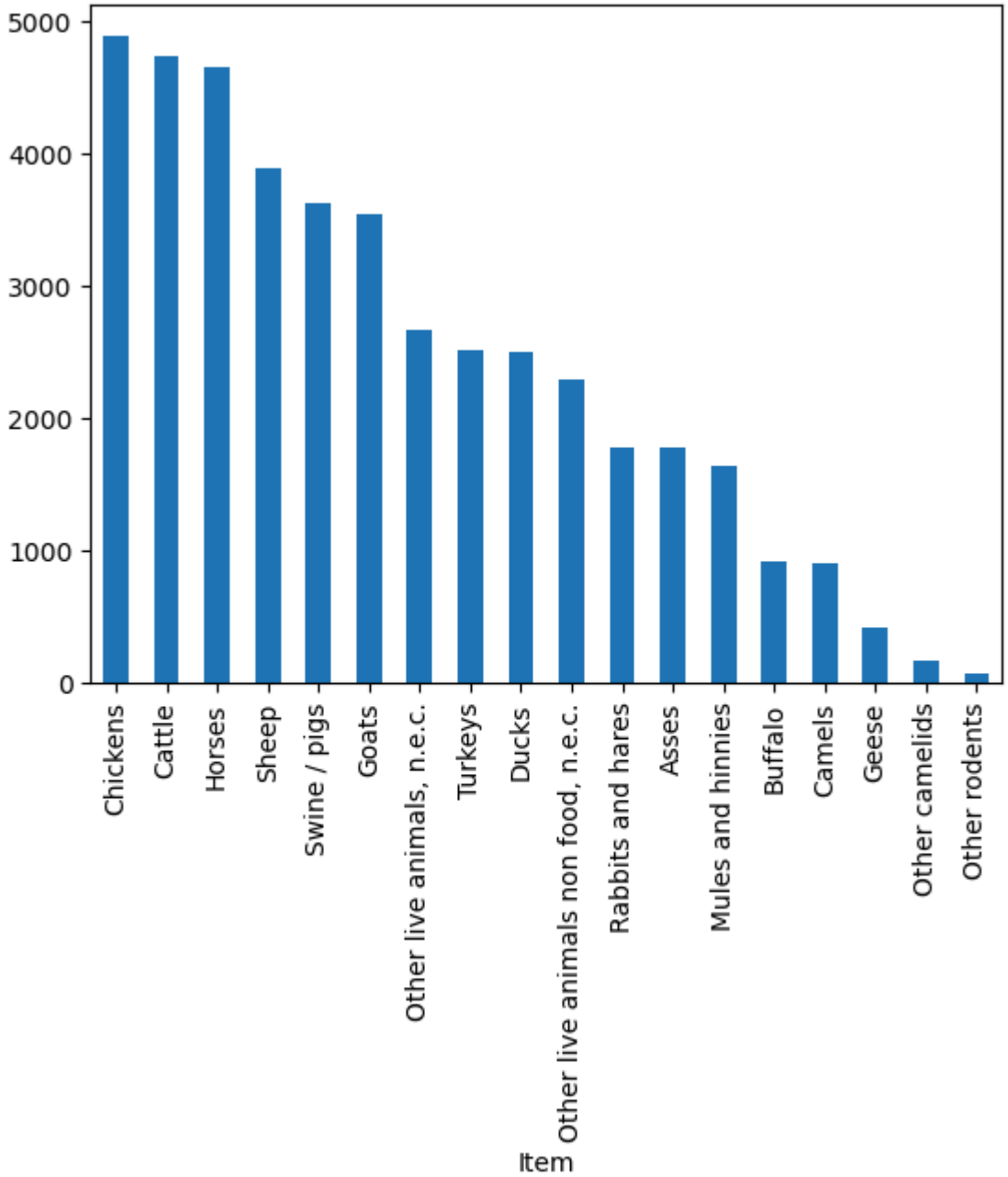
In [34]:
```
counts_animal = df["Item"].value_counts()
```

In [36]:
```
counts_animal
```

Out[36]:
```
Item
Chickens                              4882
Cattle                                4729
Horses                                4646
Sheep                                 3887
Swine / pigs                          3630
Goats                                 3540
Other live animals, n.e.c.            2665
Turkeys                               2509
Ducks                                 2498
Other live animals non food, n.e.c.   2290
Rabbits and hares                     1780
Asses                                 1776
Mules and hinnies                     1645
Buffalo                                914
Camels                                 902
Geese                                  422
Other camelids                         166
Other rodents                           74
Name: count, dtype: int64
```

In [40]:
```
counts_animal.plot.bar()
```

Out[40]:
```
<Axes: xlabel='Item'>
```


5000
4000
3000
2000
1000
0
Chickens
Cattle
Horses
Sheep
Swine / pigs
Goats
Other live animals, n.e.c.
Turkeys
Ducks
Other live animals non food, n.e.c.
Rabbits and hares
Asses
Mules and hinnies
Buffalo
Camels
Geese
Other camelids
Other rodents
Item

In [66]:
```
pivot = df.pivot_table(index=["Area", "Year"], columns=["Element"], values="Value")
pivot
```

Out[66]:

Area	Year	Element	Export quantity	Export value	Import quantity	Import value
Afghanistan	**2010**		0.000000	0.000000	1474.666667	1191.000000
	2011		0.000000	0.000000	1594.000000	2142.000000
	2012		0.000000	0.000000	2817.666667	1474.000000
	2013		0.000000	0.000000	30923.333333	7942.333333
	2014		565.000000	182.250000	20200.200000	5769.000000
...	**...**		...	...	...	...
Zimbabwe	**2013**		94.909091	166.769231	710.600000	550.454545
	2014		513.000000	742.500000	1495.666667	967.571429
	2015		752.666667	973.000000	921.500000	1180.428571
	2016		227.000000	614.000000	452.857143	639.375000
	2017		142.666667	557.750000	387.000000	444.500000

1541 rows × 4 columns

In [50]:
```
pivot.to_excel("pivot.xlsx")
```

In [68]:
```
chicken_filter = df["Item"] == "Chickens"
chicken_filter.value_counts()
```

Out[68]:
```
Item
False    38073
True      4882
Name: count, dtype: int64
```

In [70]:
```
chickens = df[chicken_filter]
chickens["Item"].unique()
```

Out[70]:
```
array(['Chickens'], dtype=object)
```

In [72]:
```
chickens["Unit"].value_counts()
```

Out[72]:
```
Unit
1000 An     2441
1000 USD    2441
Name: count, dtype: int64
```

In [74]:
```
chickens["Value Extended"] = chickens["Value"] * 1000
```

```
C:\Users\bocci\AppData\Local\Temp\ipykernel_17596\1464814218.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  chickens["Value Extended"] = chickens["Value"] * 1000
```

In [76]:
```
chickens
```

Out[76]:

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Note	Ex
26	TCL	Crops and livestock products	4	Afghanistan	5609	Import quantity	2151.0	Chickens	2010	2010	1000 An	3892	A	Official figure	NaN	3
27	TCL	Crops and livestock products	4	Afghanistan	5622	Import value	2151.0	Chickens	2010	2010	1000 USD	3350	A	Official figure	NaN	3
28	TCL	Crops and livestock products	4	Afghanistan	5909	Export quantity	2151.0	Chickens	2010	2010	1000 An	0	E	Estimated value	NaN	
29	TCL	Crops and livestock products	4	Afghanistan	5922	Export value	2151.0	Chickens	2010	2010	1000 USD	0	E	Estimated value	NaN	
30	TCL	Crops and livestock products	4	Afghanistan	5609	Import quantity	2151.0	Chickens	2011	2011	1000 An	4720	A	Official figure	NaN	4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
42775	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2151.0	Chickens	2016	2016	1000 USD	1924	A	Official figure	NaN	1
42776	TCL	Crops and livestock products	716	Zimbabwe	5609	Import quantity	2151.0	Chickens	2017	2017	1000 An	403	A	Official figure	NaN	

	Domain Code	Domain	Area Code (M49)	Area	Element Code	Element	Item Code (CPC)	Item	Year Code	Year	Unit	Value	Flag	Flag Description	Note	Ex
42777	TCL	Crops and livestock products	716	Zimbabwe	5622	Import value	2151.0	Chickens	2017	2017	1000 USD	2064	A	Official figure	NaN	2
42778	TCL	Crops and livestock products	716	Zimbabwe	5909	Export quantity	2151.0	Chickens	2017	2017	1000 An	211	A	Official figure	NaN	
42779	TCL	Crops and livestock products	716	Zimbabwe	5922	Export value	2151.0	Chickens	2017	2017	1000 USD	653	A	Official figure	NaN	

4882 rows × 16 columns

In [82]:
```
chickens[ ["Element", "Value", "Unit", "Value Extended"] ]
```

Out[82]:

	Element	Value	Unit	Value Extended
26	Import quantity	3892	1000 An	3892000
27	Import value	3350	1000 USD	3350000
28	Export quantity	0	1000 An	0
29	Export value	0	1000 USD	0
30	Import quantity	4720	1000 An	4720000
...	...	...	...	...
42775	Export value	1924	1000 USD	1924000
42776	Import quantity	403	1000 An	403000
42777	Import value	2064	1000 USD	2064000
42778	Export quantity	211	1000 An	211000
42779	Export value	653	1000 USD	653000

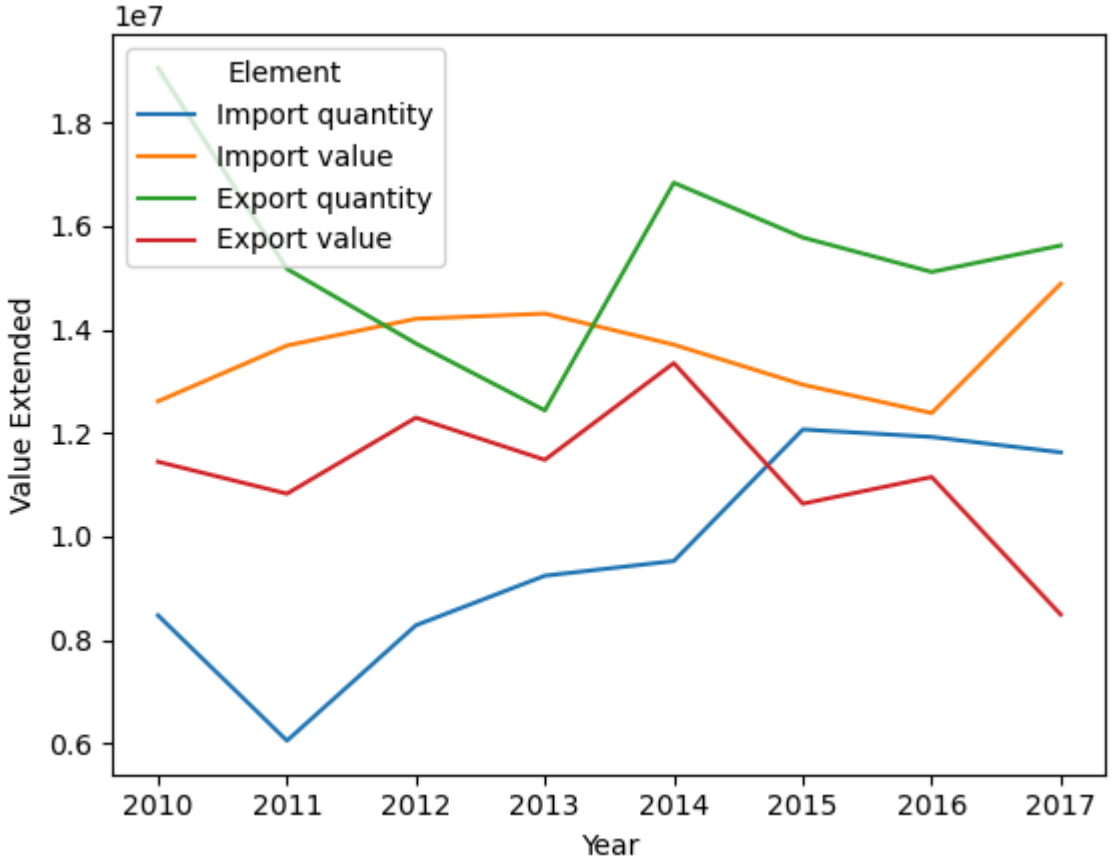
4882 rows × 4 columns

In [84]:
```
chickens.to_csv("chickens.csv")
```

In [91]:
```
#chickens_italy_filter = chickens["Area"] == "Italy"
chick_italy = chickens[chickens["Area"] == "Italy"]
```

In [101…
```
sns.lineplot(data=chick_italy, x="Year", y="Value Extended", hue= "Element")
```

Out[101…
```
<Axes: xlabel='Year', ylabel='Value Extended'>
```


1e7
Element
Import quantity
Import value
Export quantity
Export value
Value Extended
1.8
1.6
1.4
1.2
1.0
0.8
0.6
2010
2011
2012
2013
2014
2015
2016
2017
Year

In [ ]: