life_expectancy_gdp

July 23, 2025

[10]:
```
from matplotlib import pyplot as plt

import pandas as pd

import seaborn as sns

%matplotlib inline

df = pd.read_csv('all_data.csv')

print(df.head())

df.shape

print(df.Country.unique())

print(df.Year.unique())

df = df.rename({"Life expectancy at birth (years)":"LEABY"}, axis = "columns")

df.head()
```

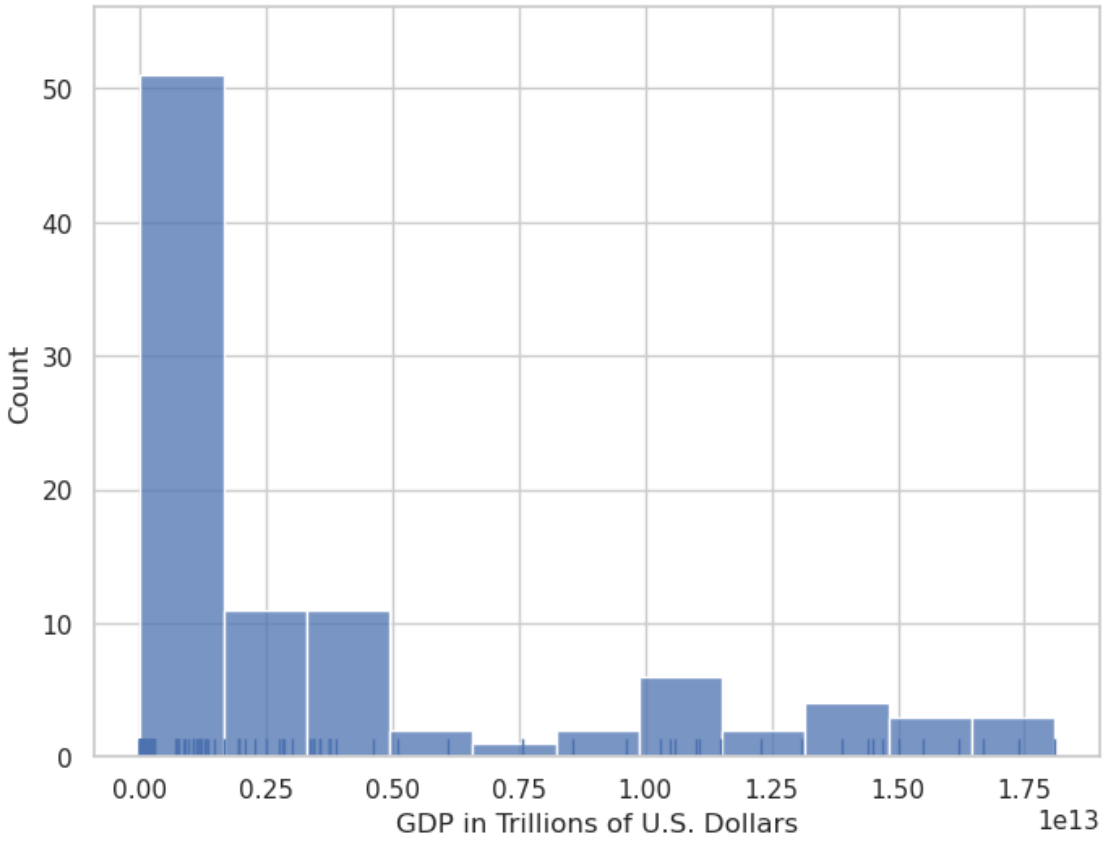
```
  Country  Year  Life expectancy at birth (years)          GDP
0   Chile  2000                              77.3  7.786093e+10
1   Chile  2001                              77.3  7.097992e+10
2   Chile  2002                              77.8  6.973681e+10
3   Chile  2003                              77.9  7.564346e+10
4   Chile  2004                              78.0  9.921039e+10
['Chile' 'China' 'Germany' 'Mexico' 'United States of America' 'Zimbabwe']
[2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
 2014 2015]
```

[10]:

	Country	Year	LEABY	GDP
0	Chile	2000	77.3	7.786093e+10
1	Chile	2001	77.3	7.097992e+10
2	Chile	2002	77.8	6.973681e+10
3	Chile	2003	77.9	7.564346e+10

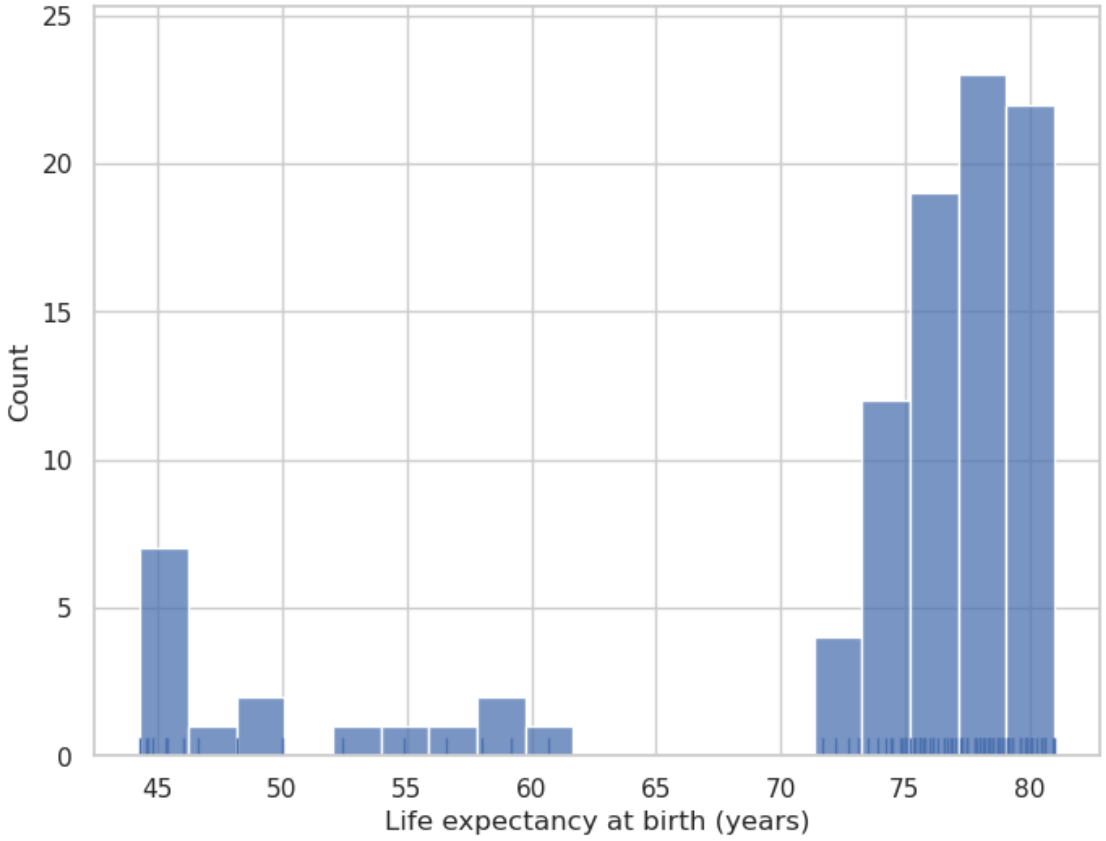
```
4   Chile  2004   78.0  9.921039e+10
```

[15]:
```
import matplotlib.pyplot as plt
import seaborn as sns

plt.figure(figsize=(8,6))

sns.histplot(df.GDP, kde=False)
sns.rugplot(df.GDP)

plt.xlabel("GDP in Trillions of U.S. Dollars")
plt.show()
```



[17]:
```
import warnings

leaby_clean = df.LEABY.replace([np.inf, -np.inf], np.nan).dropna()

warnings.filterwarnings("ignore", message="use_inf_as_na option is deprecated")

plt.figure(figsize=(8,6))
```

```
sns.histplot(leaby_clean, kde=False)

sns.rugplot(leaby_clean)

plt.xlabel("Life expectancy at birth (years)")

plt.show()
```



[18]:
```
dfMeans = df.drop("Year", axis = 1).groupby("Country").mean().reset_index()
```

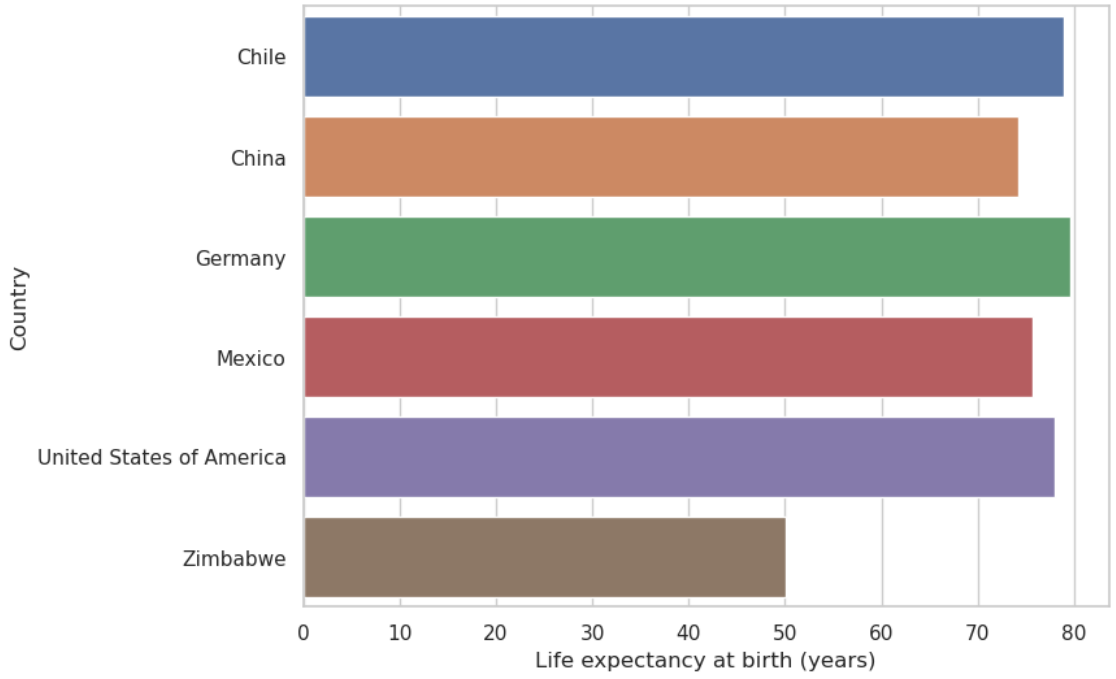
[19]:
```
dfMeans
```

[19]:

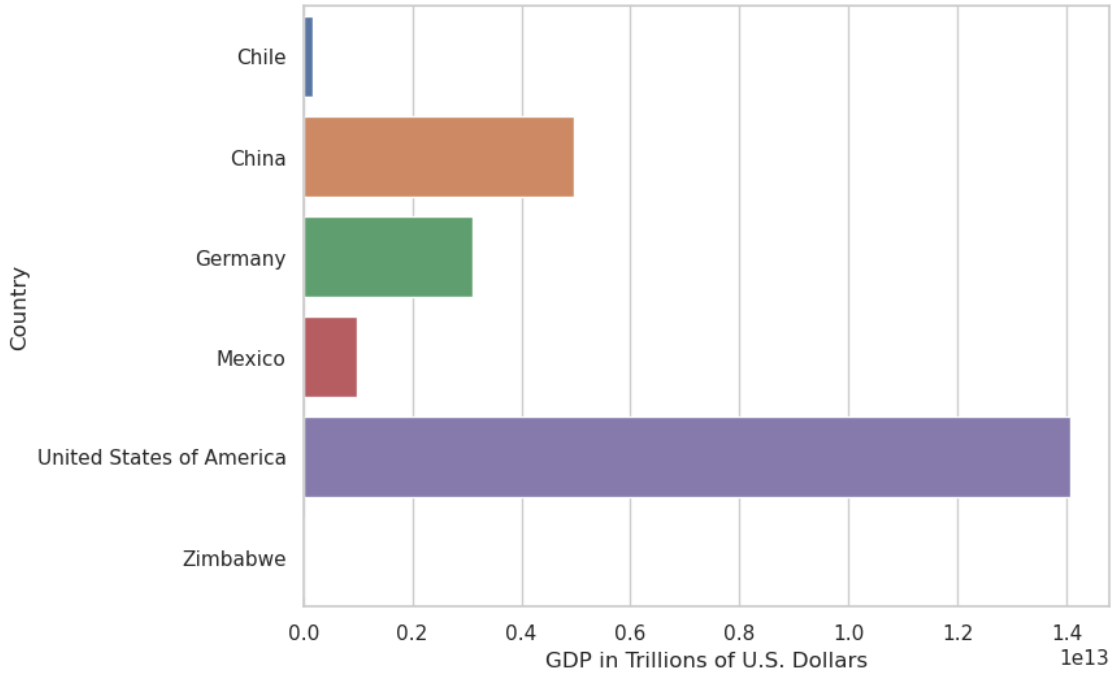
	Country	LEABY	GDP
0	Chile	78.94375	1.697888e+11
1	China	74.26250	4.957714e+12
2	Germany	79.65625	3.094776e+12
3	Mexico	75.71875	9.766506e+11

```
4  United States of America  78.06250  1.407500e+13
5                  Zimbabwe  50.09375  9.062580e+09
```

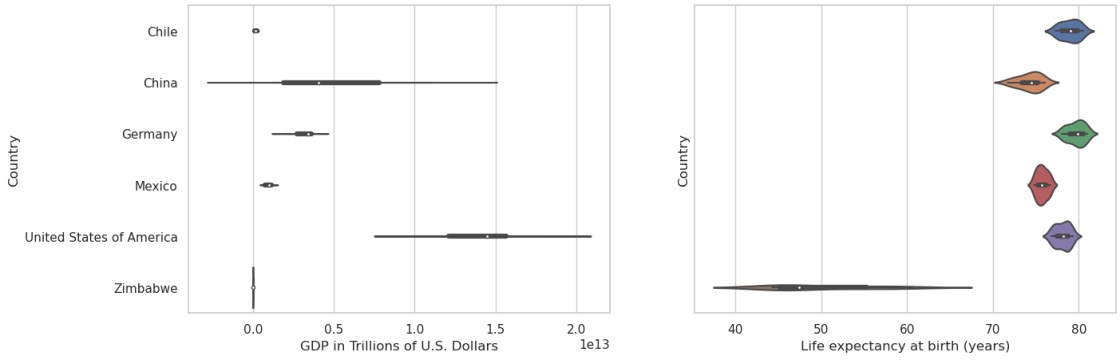
[20]:
```
plt.figure(figsize=(8,6))

sns.barplot(x="LEABY", y="Country", data=dfMeans)

plt.xlabel("Life expectancy at birth (years)");
```



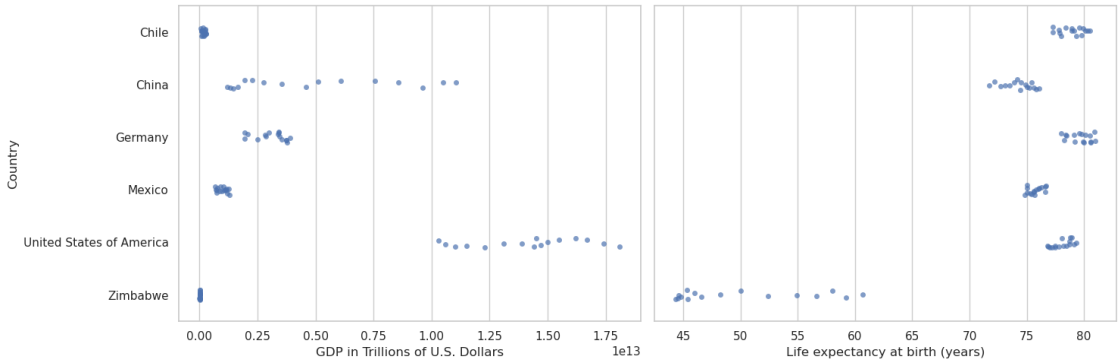
[21]:
```
plt.figure(figsize=(8,6))

sns.barplot(x="GDP", y="Country", data=dfMeans)

plt.xlabel("GDP in Trillions of U.S. Dollars");
```



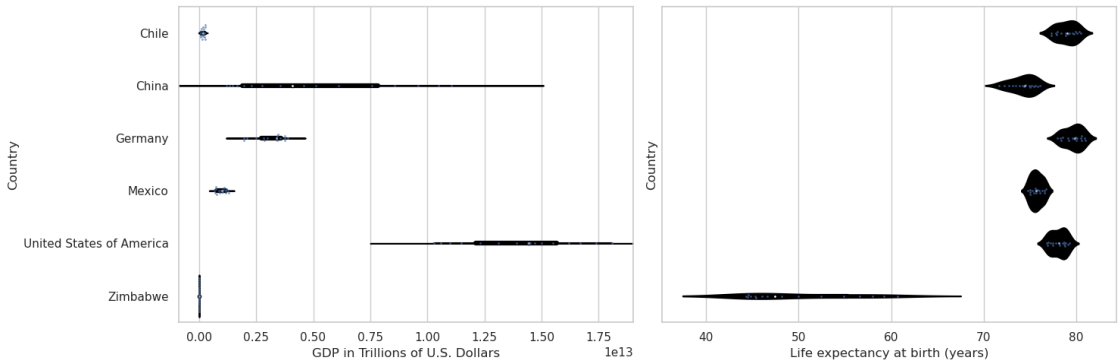
[22]:
```
fig, axes = plt.subplots(1, 2, sharey=True, figsize=(15, 5))

axes[0] = sns.violinplot(ax=axes[0], x=df.GDP, y=df.Country)

axes[0].set_xlabel("GDP in Trillions of U.S. Dollars")

axes[1] = sns.violinplot(ax=axes[1], x=df.LEABY, y=df.Country)

axes[1].set_xlabel("Life expectancy at birth (years)");
```



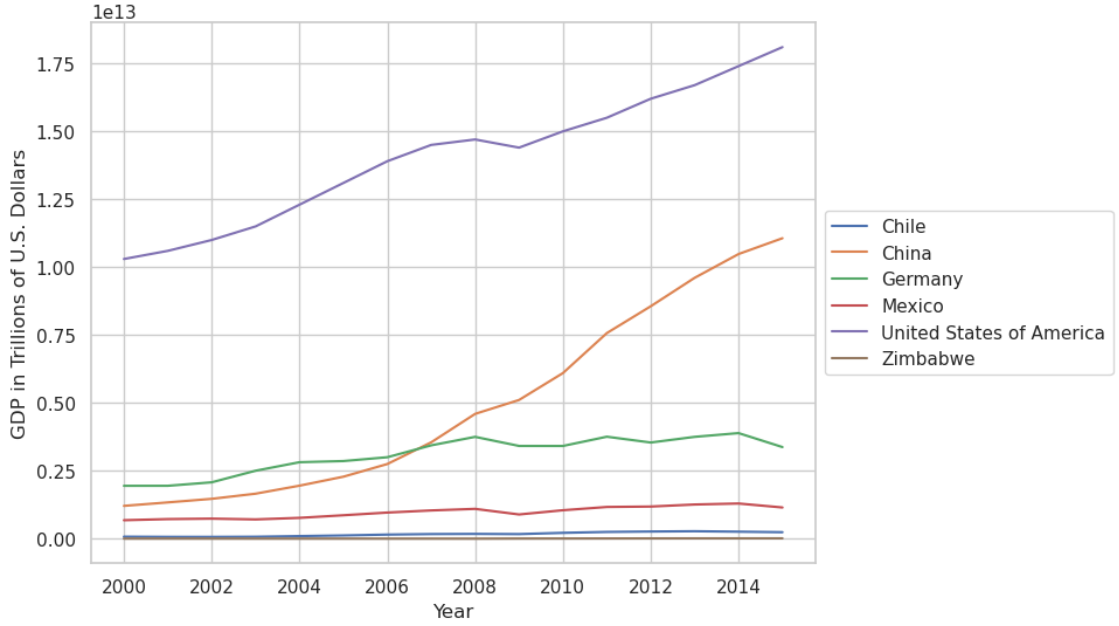
[27]:
```
fig, axes = plt.subplots(1, 2, sharey=True, figsize=(15, 5))

sns.stripplot(ax=axes[0], x=df.GDP, y=df.Country, jitter=True, size=5, alpha=0.
↪7)
axes[0].set_xlabel("GDP in Trillions of U.S. Dollars")

sns.stripplot(ax=axes[1], x=df.LEABY, y=df.Country, jitter=True, size=5,␣
↪alpha=0.7)
axes[1].set_xlabel("Life expectancy at birth (years)")

plt.tight_layout()
plt.show()
```



[31]:
```
fig, axes = plt.subplots(1, 2, sharey=True, figsize=(15, 5))

sns.violinplot(ax=axes[0], x=df.GDP, y=df.Country, color="black")
sns.swarmplot(ax=axes[0], x=df.GDP, y=df.Country, size=2, alpha=0.7)
axes[0].set_xlabel("GDP in Trillions of U.S. Dollars")

sns.violinplot(ax=axes[1], x=df.LEABY, y=df.Country, color="black")
sns.swarmplot(ax=axes[1], x=df.LEABY, y=df.Country, size=2, alpha=0.7)
axes[1].set_xlabel("Life expectancy at birth (years)")

plt.tight_layout()
plt.show()
```

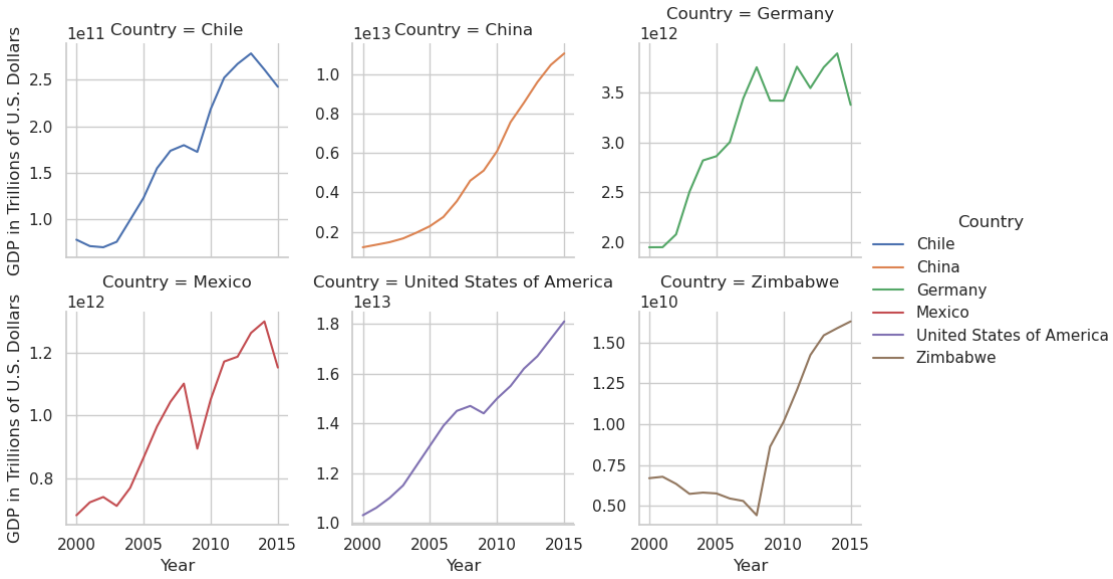


[32]:
```
plt.figure(figsize=(8,6))
sns.lineplot(x=df.Year, y=df.GDP, hue=df.Country)
plt.legend(loc='center left', bbox_to_anchor=(1, 0.5), ncol=1)
plt.ylabel("GDP in Trillions of U.S. Dollars");
```

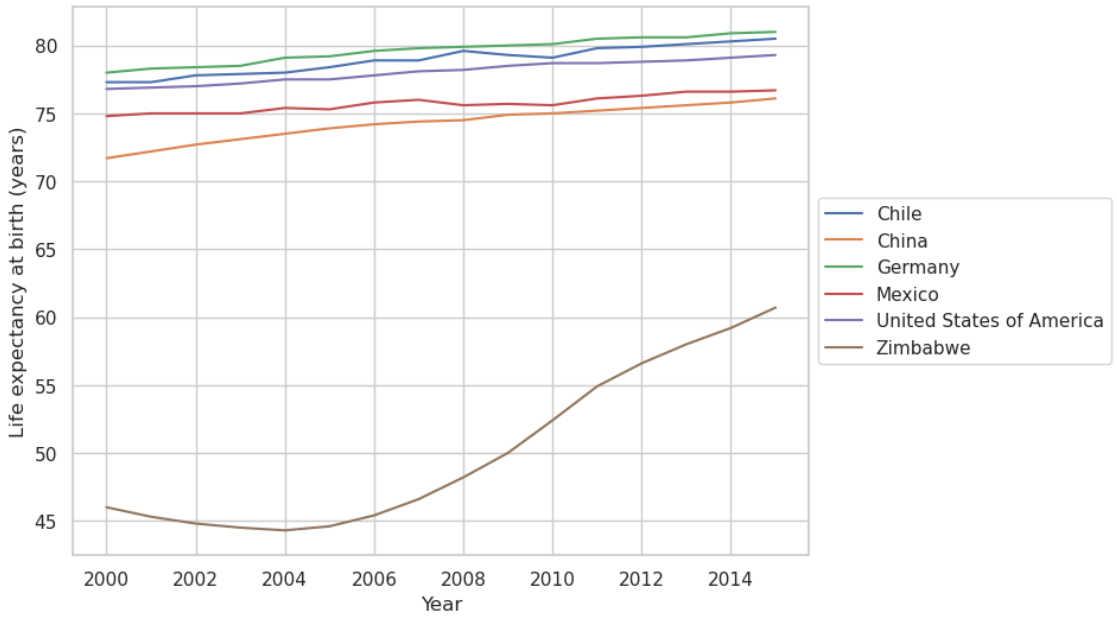


[33]:
```
graphGDP = sns.FacetGrid(df, col="Country", col_wrap=3,

                         hue = "Country", sharey = False)

graphGDP = (graphGDP.map(sns.lineplot,"Year","GDP")

          .add_legend()
```

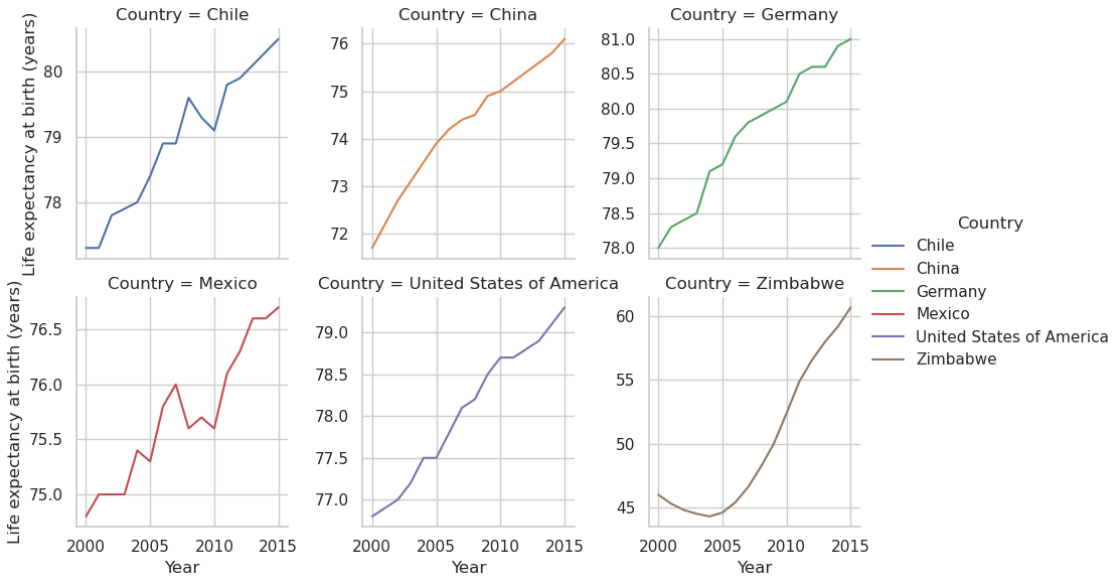
```
        .set_axis_labels("Year","GDP in Trillions of U.S. Dollars"))

graphGDP;
```



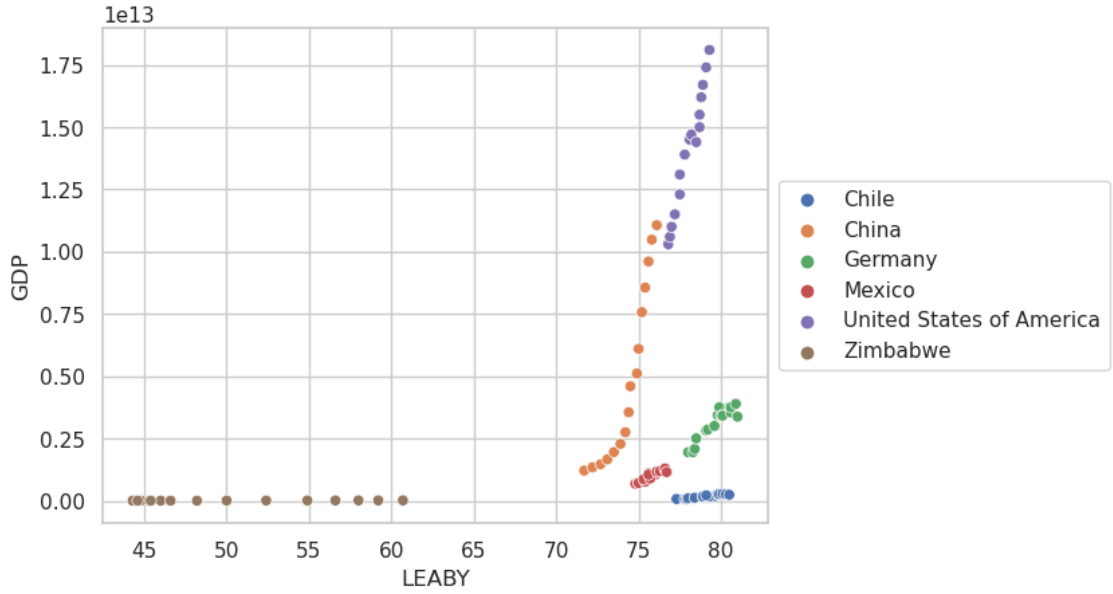
[34]:
```
plt.figure(figsize=(8,6))

sns.lineplot(x=df.Year, y=df.LEABY, hue=df.Country)

plt.legend(loc='center left', bbox_to_anchor=(1, 0.5), ncol=1)

plt.ylabel("Life expectancy at birth (years)");
```



[35]:
```
graphLEABY = sns.FacetGrid(df, col="Country", col_wrap=3,
                           hue = "Country", sharey = False)
graphLEABY = (graphLEABY.map(sns.lineplot,"Year","LEABY")
          .add_legend()
          .set_axis_labels("Year","Life expectancy at birth (years)"))
graphLEABY;
```

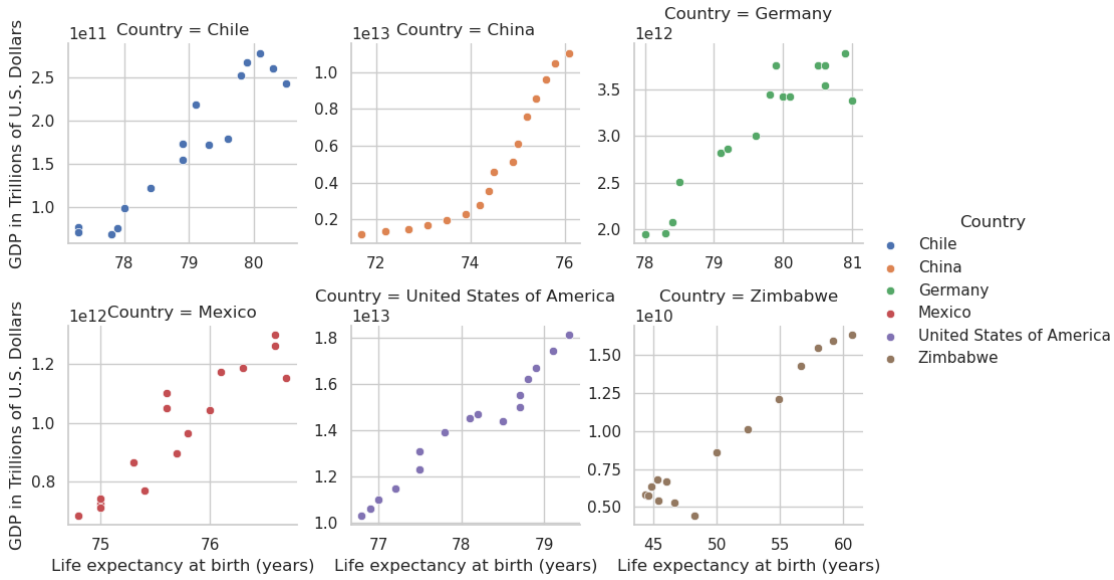


[36]:
```
sns.scatterplot(x=df.LEABY, y=df.GDP, hue=df.Country).legend(loc='center left',␣
↪bbox_to_anchor=(1, 0.5), ncol=1);
```



[37]:
```
graph = sns.FacetGrid(df, col="Country", col_wrap=3,
                      hue = "Country", sharey = False, sharex = False)
```

```
graph = (graph.map(sns.scatterplot,"LEABY", "GDP")

         .add_legend()

         .set_axis_labels("Life expectancy at birth (years)", "GDP in Trillions␣
 ↪of U.S. Dollars"));
```



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