45_Cyprus

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1 How have communications and computer services evolved relative to each other as shares of service exports and service imports in Cyprus between 1976 and 2024?

1.1 Abstract

Using World Bank World Development Indicators (WDI), this study examines the evolution of communications and computer services in Cyprus between 1976 and 2024. The analysis compares two key indicators: communications, computer, etc., as a share of service exports (% of total service exports) and as a share of service imports (% of total service imports). At the start of the period, exports significantly exceeded imports, almost fivefold, but over time, exports declined sharply until 2017. After 2017, exports rebounded considerably but did not return to their original level, whereas imports increased steadily throughout the entire period, eventually surpassing the initial export value. These trends highlight the shifting balance between service exports and imports in Cyprus — reflecting structural economic adjustments, global demand fluctuations, and changing domestic capabilities in the communications and computing sector.

1.2 1. Question

How have communications and computer services evolved relative to each other as shares of service exports and service imports in Cyprus between 1976 and 2024?

- **Service exports proxy**: Communications, computer, etc., (% of service exports, BoP)
- **Service imports proxy**: Communications, computer, etc., (% of service imports, BoP)

1.3 2. Data

- **Source**: World Bank World Development Indicators (WDI)
- **Indicators**:
  - Communications, computer, etc., (% of service exports, BoP)
  - Communications, computer, etc., (% of service imports, BoP)
- **Coverage**: Cyprus, 1976–2024
- **Notes**: National-level data only

1.4 3. Method

1. Filtered dataset for Cyprus and selected the two communications and computer service indicators.
2. **Extracted relevant columns**: Year, Indicator Name, and Value.

3. Pivoted the dataset to enable a side-by-side chronological comparison of exports and imports shares.
4. Produced a dual-line time series plot to visualise long-term trends, divergences, and relative magnitudes between exports and imports of communications and computer services.

(Analysis is descriptive; no causal inference applied.)

1.5 4. Results

- **Communications, computer, etc., (% of service exports)**: Initially very high relative to imports, then declined sharply until 2017, before rebounding significantly but remaining below the initial level.
- **Communications, computer, etc., (% of service imports)**: Increased steadily throughout the entire period, eventually surpassing the original export share.
- **Comparison**: Exports and imports followed contrasting trajectories: exports fell dramatically before partially recovering, while imports grew consistently and exceeded early export levels. This divergence indicates a structural shift in Cyprus's service trade, reflecting both increased domestic demand for communications and computer services and changing competitive advantages in the export market.

(Figure 1. Cyprus: Communications and Computer Services, Exports vs. Imports, 1976–2024)

(Table 1. Pivoted dataset summary)

1.6 5. Interpretation

- The decline in exports until 2017 suggests challenges in maintaining international competitiveness, possibly due to global market pressures, technological changes, or shifting demand patterns.
- The subsequent rebound indicates recovery and adaptation within the sector, but the failure to return to original levels shows persistent structural constraints.
- The steady rise in imports points to growing domestic reliance on foreign communications and computer services, highlighting increasing consumption and potential gaps in domestic provision.
- The divergence between export and import trajectories underscores the need for policies that support both the expansion of domestic capabilities and the enhancement of export competitiveness in high-tech service sectors.

1.7 6. Limitations

- National aggregates may mask sectoral or firm-level differences in service trade performance.
- WDI data are based on BoP estimates and may carry uncertainty, particularly in earlier years.
- The analysis is descriptive and does not identify causal factors such as policy interventions, global technological shifts, or changes in domestic ICT infrastructure.

1.8 7. Next Steps / Extensions

- Examine trade balances by sub-sector within communications and computer services to identify sources of export weakness and import dependence.

- Analyse correlations with macroeconomic indicators such as GDP growth, ICT investment, and foreign direct investment in high-tech services.
- Compare Cyprus's export-import dynamics with other Mediterranean or EU economies to contextualise regional trends.
- Conduct time-series decomposition to separate long-term structural trends from short-term fluctuations and identify critical turning points in service trade dynamics.

[1]:
```
# How have communications and computer services evolved relative to each other␣
↪as shares of service exports and service imports in Cyprus between 1976 and␣
↪2024?

import pandas as pd
import matplotlib.pyplot as plt
import os

# Folders
data_raw_folder = "data_raw/"
data_clean_folder = "data_clean/"
figures_folder = "figures/"

# Load CSV
filename = "economy-and-growth_cyp_filtered.csv"  # Filtered dataset with only␣
↪relevant rows
df = pd.read_csv(os.path.join(data_raw_folder, filename))

# Keep only needed columns
df = df[["Year", "Indicator Name", "Value"]]

# Convert Year and Value to numeric, drop invalid rows
df["Year"] = pd.to_numeric(df["Year"], errors="coerce")
df["Value"] = pd.to_numeric(df["Value"], errors="coerce")
df = df.dropna(subset=["Year", "Value"])

# Pivot indicators into separate columns
df_pivot = df.pivot(index="Year", columns="Indicator Name", values="Value").
↪reset_index()
df_pivot = df_pivot.sort_values("Year")

print("Pivoted Cyrpus dataset:")
display(df_pivot)

# Interpolate missing values for smooth plotting (optional)
df_plot = df_pivot.interpolate(method='linear')

# Plot the indicators
plt.figure(figsize=(10,6))
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```
plt.plot(df_plot["Year"], df_plot["Communications, computer, etc. (% of service␣
 ↪imports, BoP)"],
         marker='o', linestyle='-', label="Communications, computer, etc. (% of␣
 ↪service imports, BoP)")
plt.plot(df_plot["Year"], df_plot["Communications, computer, etc. (% of service␣
 ↪exports, BoP)"],
         marker='o', linestyle='-', label="Communications, computer, etc. (% of␣
 ↪service exports, BoP)")

plt.title("Cyprus: Imports vs Exports of communications, computer, etc. (%)␣
 ↪(1976-2024)")
plt.xlabel("Year")
plt.ylabel("Percentage")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.savefig(os.path.join(figures_folder,␣
 ↪"cyprus_imports_vs_exports_of_communications_computer_etc.png"))
plt.show()

# Save cleaned CSV
df_pivot.to_csv(os.path.join(data_clean_folder,␣
 ↪"cyprus_imports_vs_exports_of_communications_computer_etc"), index=False)
```

Pivoted Cyrpus dataset:

Indicator Name	Year
0	1976
1	1977
2	1978
3	1979
4	1980
5	1981
6	1982
7	1983
8	1984
9	1985
10	1986
11	1987
12	1988
13	1989
14	1990
15	1991
16	1992
17	1993
18	1994
19	1995
20	1996

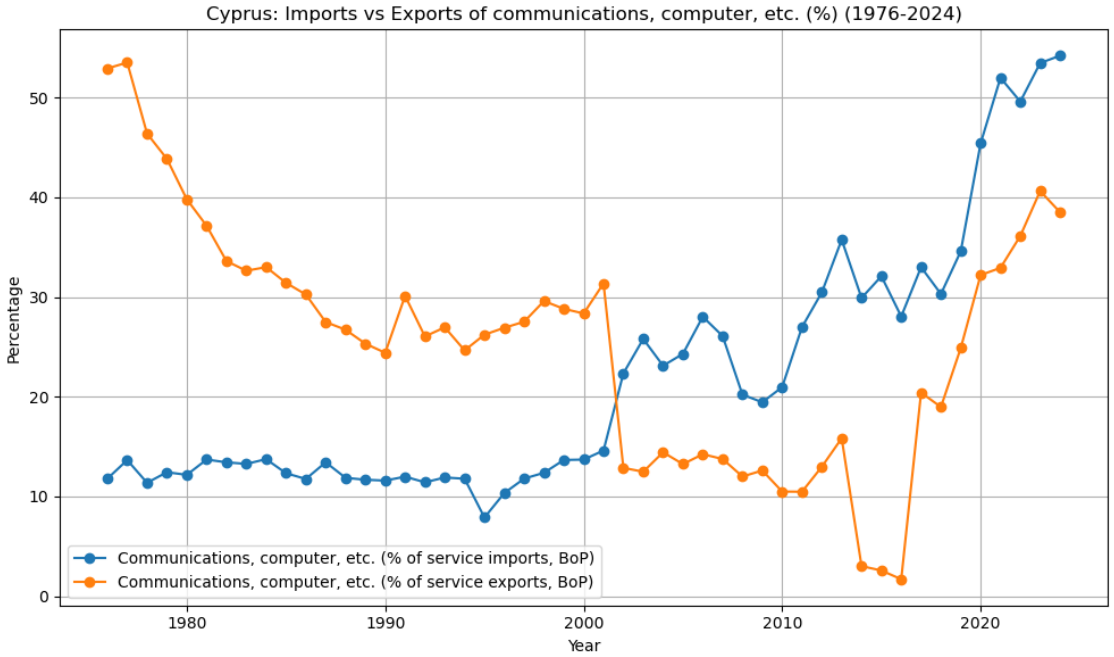
21	1997
22	1998
23	1999
24	2000
25	2001
26	2002
27	2003
28	2004
29	2005
30	2006
31	2007
32	2008
33	2009
34	2010
35	2011
36	2012
37	2013
38	2014
39	2015
40	2016
41	2017
42	2018
43	2019
44	2020
45	2021
46	2022
47	2023
48	2024

Indicator Name	Communications, computer, etc. (% of service exports, BoP) \
0	52.908587
1	53.499407
2	46.376812
3	43.844985
4	39.800118
5	37.133844
6	33.600583
7	32.627119
8	32.994186
9	31.417201
10	30.248818
11	27.489064
12	26.719296
13	25.318511
14	24.406189
15	30.110145
16	26.043229
17	26.956522

18	24.648806
19	26.222106
20	26.914604
21	27.518399
22	29.595208
23	28.810079
24	28.349131
25	31.365478
26	12.870163
27	12.483813
28	14.429581
29	13.250012
30	14.239515
31	13.760864
32	12.004407
33	12.607722
34	10.498245
35	10.479527
36	12.985751
37	15.839713
38	3.020623
39	2.584813
40	1.709343
41	20.416640
42	18.971286
43	24.887930
44	32.199333
45	32.917980
46	36.116405
47	40.619896
48	38.500858

Indicator Name	Communications, computer, etc. (% of service imports, BoP)
0	11.790393
1	13.651877
2	11.374408
3	12.437811
4	12.169312
5	13.703382
6	13.428571
7	13.267327
8	13.744344
9	12.337662
10	11.758302
11	13.430726
12	11.875267
13	11.681736
14	11.597020

15	11.990549
16	11.424258
17	11.905388
18	11.784115
19	7.896952
20	10.347455
21	11.794516
22	12.379110
23	13.663203
24	13.702240
25	14.610835
26	22.345774
27	25.792127
28	23.110312
29	24.301713
30	28.019262
31	26.086456
32	20.212578
33	19.447480
34	20.965128
35	26.984603
36	30.464180
37	35.740390
38	29.903764
39	32.081759
40	28.042113
41	32.989014
42	30.299541
43	34.582713
44	45.394542
45	51.969446
46	49.587736
47	53.445754
48	54.187699


Cyprus: Imports vs Exports of communications, computer, etc. (%) (1976-2024)
Percentage
Year
0
10
20
30
40
50
1980
1990
2000
2010
2020
Communications, computer, etc. (% of service imports, BoP)
Communications, computer, etc. (% of service exports, BoP)

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