11_Azerbaijan

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1 How has the relationship between short-term debt (% of total reserves) and the share of the urban population living in slums evolved in Azerbaijan between 2000 and 2012?

1.1 Abstract

Using World Bank World Development Indicators (WDI), this study examines the relationship between short-term debt (% of total reserves) and the share of the urban population living in slums in Azerbaijan between 2000 and 2012. During this period, the slum population declined dramatically—by about 50%—indicating substantial improvements in urban living conditions. Short-term debt, by contrast, showed only a slight overall decrease but with pronounced peaks and troughs across the years, reflecting volatility in external financial dependence. The results suggest that while Azerbaijan made significant social progress in reducing urban slum prevalence, its external financial position remained vulnerable to short-term fluctuations. This divergence underscores the complex interplay between social development and macroeconomic stability.

1.2 1. Question

How has the relationship between short-term debt (% of total reserves) and the share of the urban population living in slums evolved in Azerbaijan between 2000 and 2012?

- **Slum proxy**: Population living in slums (% of urban population)
- **Debt proxy**: Short-term debt (% of total reserves)

1.3 2. Data

- **Source**: World Bank World Development Indicators (WDI)
- **Indicators**:
  - Population living in slums (% of urban population)
  - Short-term debt (% of total reserves)
- **Coverage**: Azerbaijan, 2000–2012
- **Notes**: National-level data only

1.4 3. Method

1. Filtered dataset for Azerbaijan.
2. **Selected relevant columns**: Year, Indicator Name, Value.
3. Pivoted indicators into separate columns and sorted by year.
4. Produced a dual-axis line graph comparing slum prevalence and short-term debt trends.

(Analysis is descriptive; no causal inference applied.)

1.5 4. Results

- **Slum prevalence**: Declined sharply by about 50% between 2000 and 2012, suggesting substantial social and urban progress.
- **Short-term debt**: Decreased only slightly overall, but with notable peaks and troughs, indicating volatility in financial exposure.
- **Comparison**: Social indicators improved steadily, while financial stability fluctuated, highlighting a decoupled trajectory.

(Figure 1. Short-Term Debt vs Slum Population in Azerbaijan, 2000–2012)

(Table 1. Pivoted dataset)

1.6 5. Interpretation

- Azerbaijan experienced significant success in reducing slum prevalence, consistent with improvements in urban development, infrastructure, and living standards.
- Short-term debt patterns suggest persistent macroeconomic vulnerability, despite social gains.
- The divergence highlights that progress in social outcomes does not automatically coincide with financial stability, underscoring the importance of integrated policy approaches.

1.7 6. Limitations

- Analysis is limited to two indicators; other determinants (e.g., FDI inflows, governance quality, urbanization pace) are excluded.
- National-level data may obscure regional variation in slum reduction or debt exposure.
- Descriptive scope only; causality between debt dynamics and slum reduction cannot be inferred.

1.8 7. Next Steps / Extensions

- Disaggregate slum data (if available) by urban regions to assess uneven progress.
- Examine additional financial indicators (e.g., external debt service, reserves adequacy) for a fuller picture of macroeconomic vulnerability.
- Compare Azerbaijan's trajectory with neighboring countries in the Caucasus to assess whether similar patterns emerge.
- Apply econometric analysis to explore whether financial volatility directly constrains social development outcomes.

[1]:
```
# How has the relationship between short-term debt (% of total reserves) and␣
↪the share of the urban population living in slums evolved in Azerbaijan␣
↪between 2000 and 2012?

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 = "azerbaijan_combined.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 Azerbaijan dataset:")
display(df_pivot)

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

# Plot the two indicators
plt.figure(figsize=(10,6))
plt.plot(df_plot["Year"], df_plot["Short-term debt (% of total reserves)"],
         marker='o', linestyle='-', label="Short-term debt (% of total␣
 ↪reserves)")
plt.plot(df_plot["Year"], df_plot["Population living in slums (% of urban␣
 ↪population)"],
         marker='o', linestyle='-', label="Population living in slums (% of␣
 ↪urban population)")

plt.title("Azerbaijan: Short-Term Debt vs Population Living in Slums (%)␣
 ↪(2000-2012)")
plt.xlabel("Year")
plt.ylabel("Percentage")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.savefig(os.path.join(figures_folder,␣
 ↪"azerbaijan_short_term_debt_vs_slum_population.png"))
```

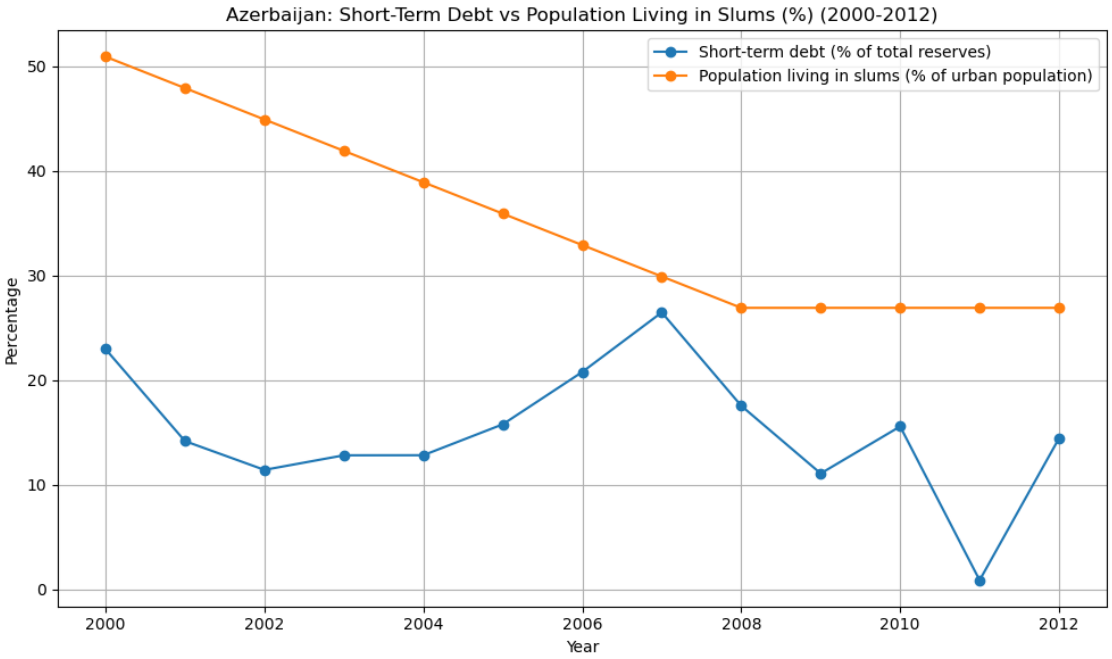
```
plt.show()

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

Pivoted Azerbaijan dataset:

Indicator Name	Year	Population living in slums (% of urban population)
0	2000	50.94000
1	2001	NaN
2	2002	44.93667
3	2003	NaN
4	2004	38.93333
5	2005	NaN
6	2006	32.93000
7	2007	NaN
8	2008	26.92667
9	2009	NaN
10	2010	26.92667
11	2011	NaN
12	2012	26.92667

Indicator Name	Short-term debt (% of total reserves)
0	22.985394
1	14.187990
2	11.434175
3	12.829459
4	12.836203
5	15.792910
6	20.796897
7	26.491214
8	17.565455
9	11.092778
10	15.587310
11	0.885737
12	14.463643


Azerbaijan: Short-Term Debt vs Population Living in Slums (%) (2000-2012)
Short-term debt (% of total reserves)
Population living in slums (% of urban population)
Percentage
Year
0
10
20
30
40
50
2000
2002
2004
2006
2008
2010
2012