# CREDIT CYCLES IN COUNTRIES IN SUB-SAHARAN AFRICA
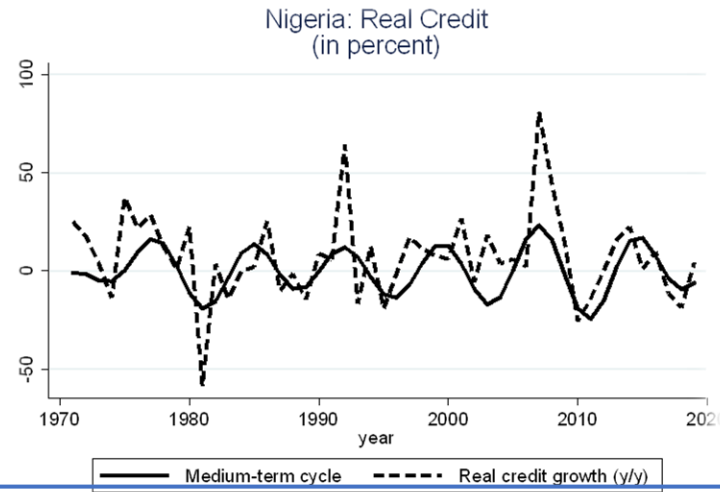
AHMED ROSTOM

LEILA AGHABARARI
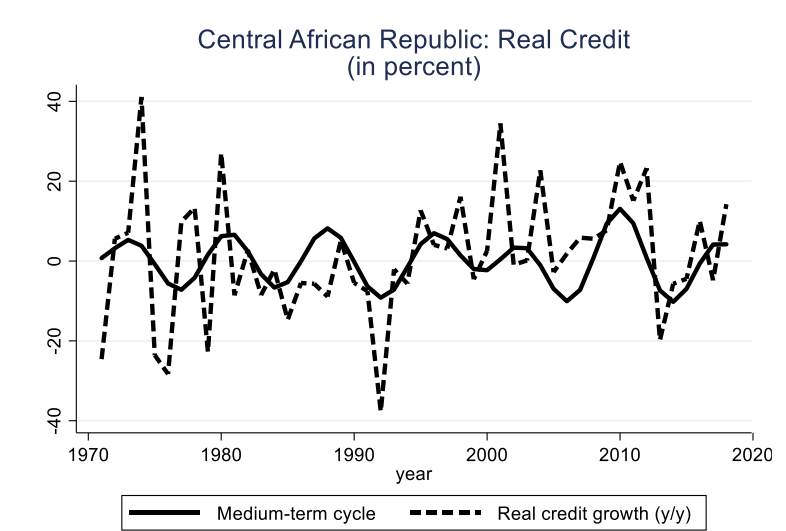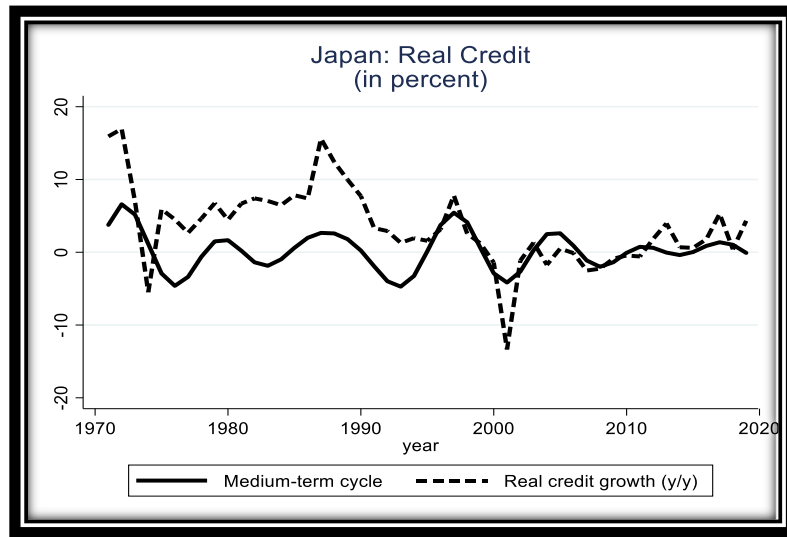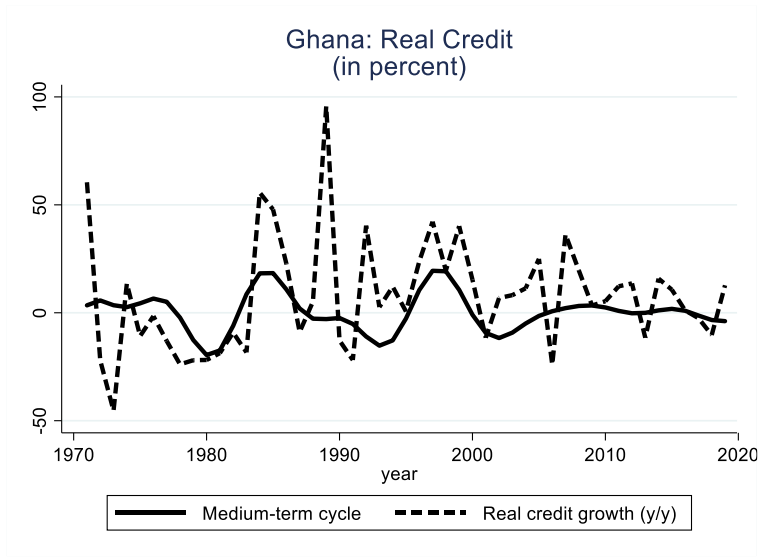
# Medium-term Cycle vs Real Credit Growth

# Motivation

Growing research topic in MENA and Advanced countries

Schularick and Taylor (2012), Jorda et al. (2013, 2011 a, and 2011 b) → deeper recession following credit-intensive booms

Claessens et al. (2009, 2012)→ recessions that are linked to credit crunches are relatively deeper and more prolonged

Drehmann et al. (2012) → financial cycle peaks are related to the financial crisis and that after the changes in monetary policies and financial liberalization the length and amplitude of financial cycles incremented

Aghabarari and Rostom (2020) → credit cycles in MENA region are different from credit cycles in advanced countries

Not much work done in SSA region

# Data

- Real credit to the private sector by domestic deposit-taking institutions

- Real Private Sector Credit Growth

- Source: WDI from 1970–2019
  - **Resources-rich countries (oil):** Angola, Cameroon, Chad, Congo, Republic of, Cote d`Ivoire, Equatorial Guinea, Gabon, Nigeria, Sudan
  - **Resources-rich countries (non-oil):** Botswana, Congo, Dem. Rep., Ghana, Guinea, Liberia, Mali, Mauritania, Mozambique, Namibia, Sierra Leone, Tanzania, Zambia
  - **Non-resource-rich countries:** Mauritius, Cape Verde, Uganda, Burkina Faso, Malawi, Rwanda, Lesotho, Ethiopia, Central African Republic
  - **Advanced:** Japan, UK, the USA.

# Methodology

Credit cycles: recurring patterns over time in the growth rate of credit

Credit growth accelerates and decelerates in regular intervals that alternate over time

Spectral analysis: Frequency Based Band Pass Christiano–Fitzgerald (2003) filter to extract medium-term cyclical component

The 'ideal' band pass filter can be used to isolate the component of a time series that lies within a particular band of frequencies

Applying BP to the data let us focus on variation within a particular frequency range

BIS: 8-20 year component

Our paper: 6-15 year component due to data constraints

# Spectral Density Function of Real Credit



Japan: Spactral Density Function of Real Credit

Nigeria: Spactral Density Function of Real Credit

Ghana: Spectral Density Function of Real Credit

Central African Republic: Spectral Density Function of Real Credit
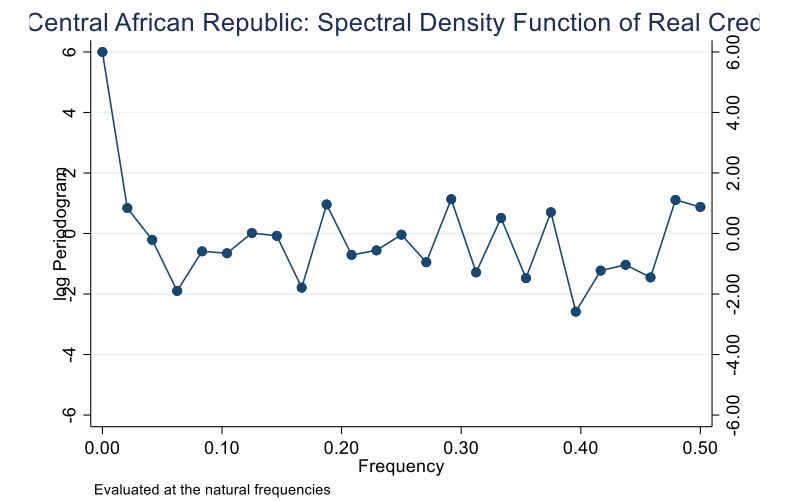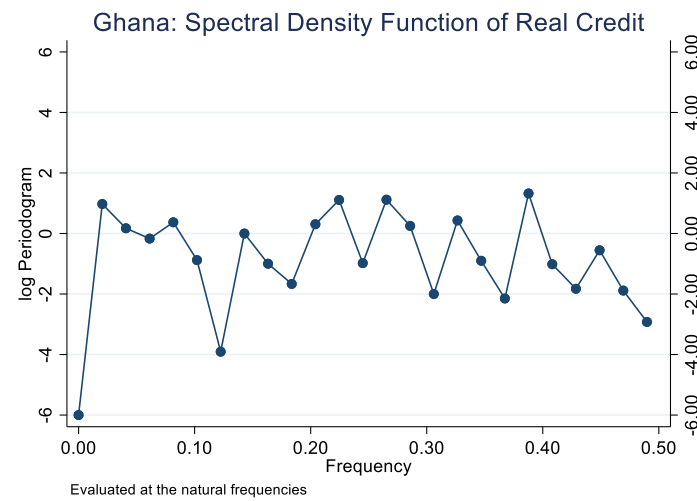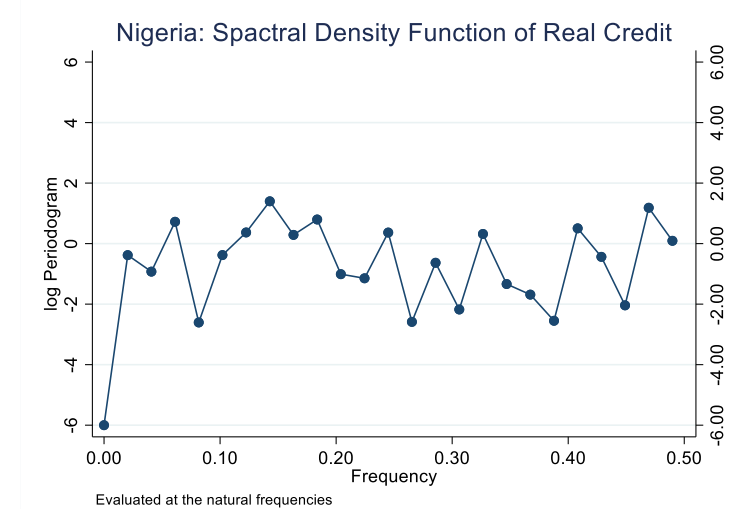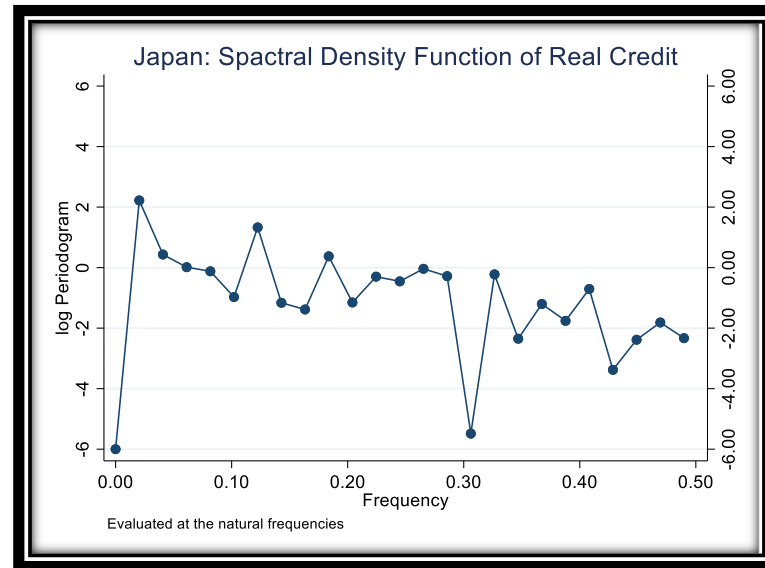
# Spectral Density Function of Filtered Series
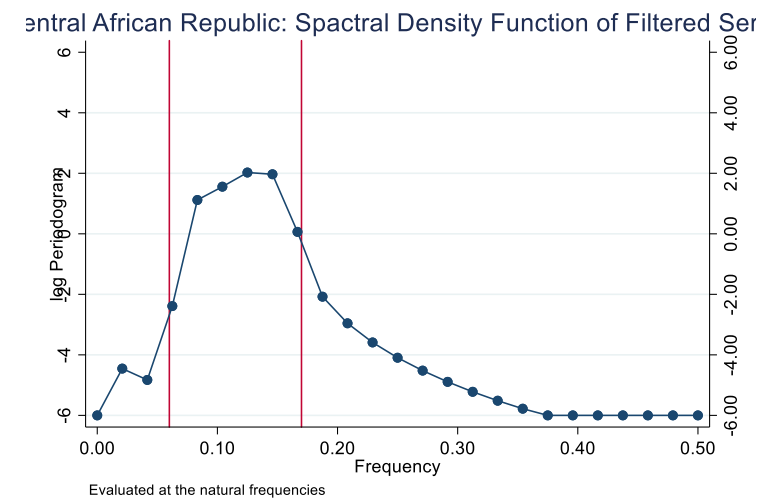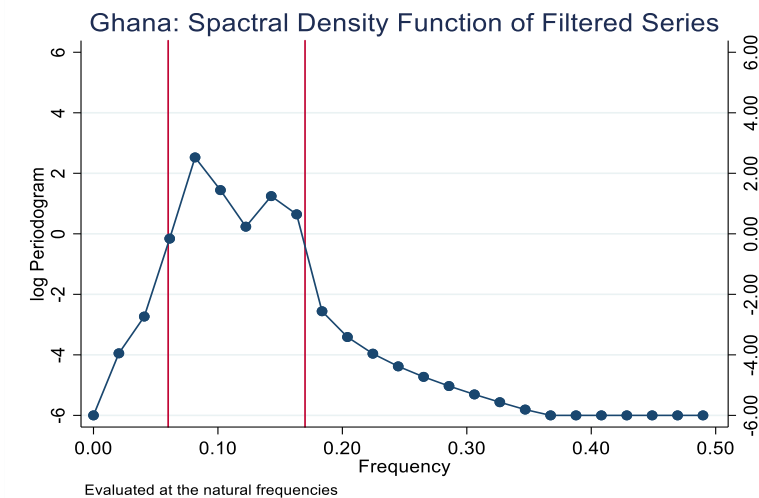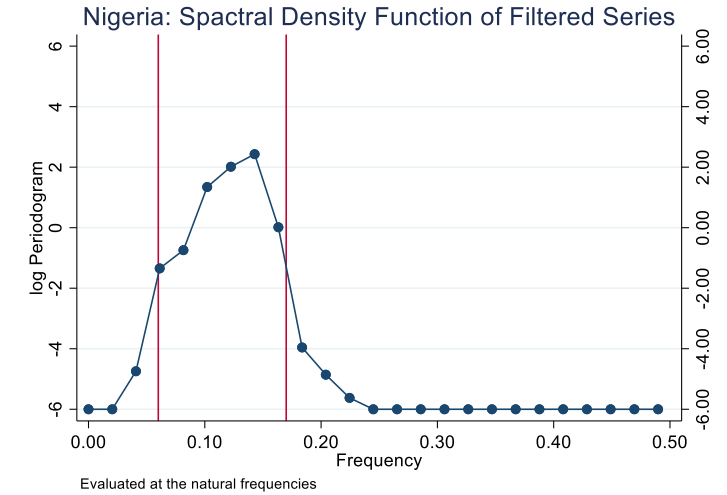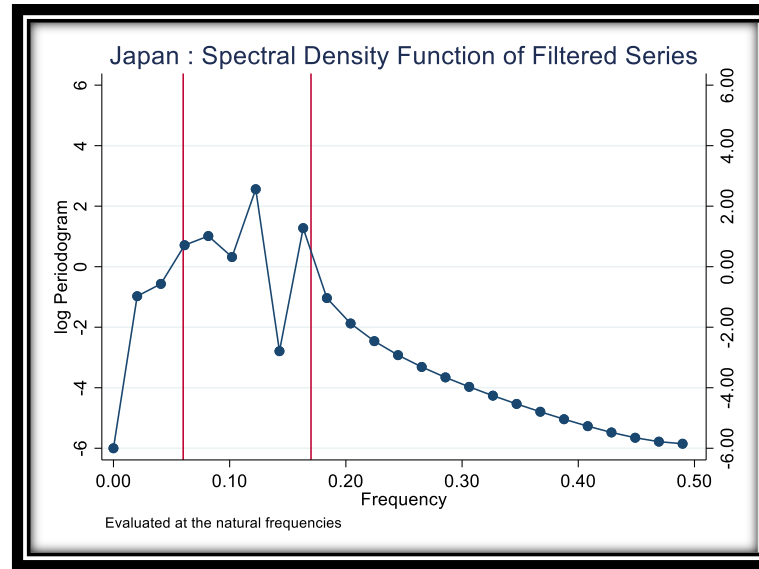
# Three main questions:

- ✓ **Check 1—Medium-term Cycle Peaks Associated With Recessions in SSA?**

- ✓ **Check 2—Medium-term Cycle Accounts for Most of the Fluctuations in Real Credit?**

- ✓ **Check 3 —Credit Cycles are Synchronized Across Countries.**

# Check 1—Medium-term Cycle Peaks Associated With Recessions in SSA?

# Regressions

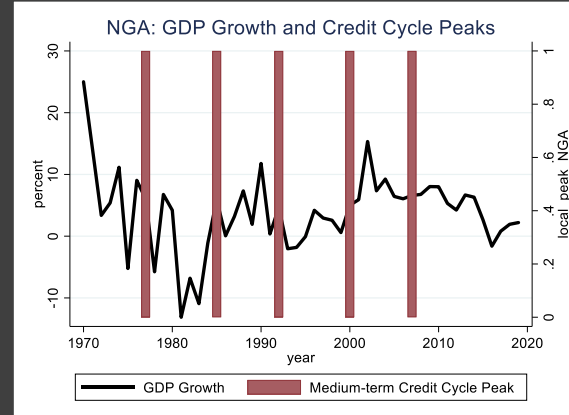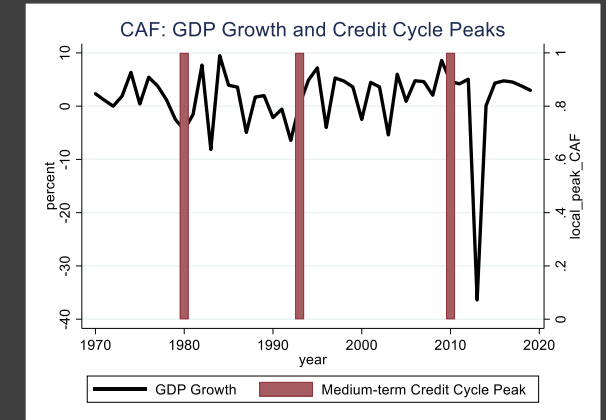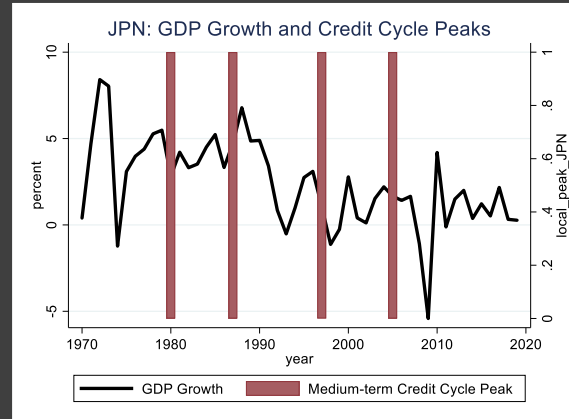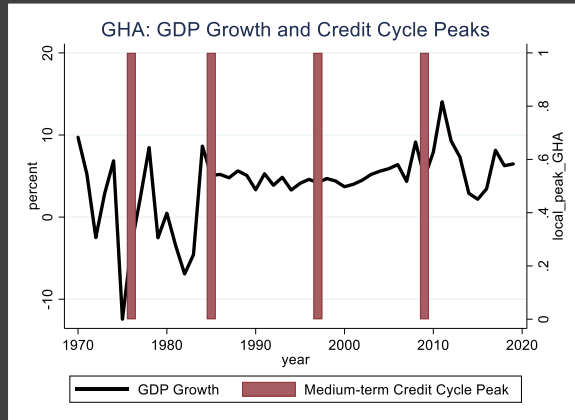| | | | | | | |
|---|---|---|---|---|---|---|
| **Acvanced Countries** | | | | | | |
| UK | -0.31 | | | | | |
| | -2.56 | | | | | |
| Japan | | -0.82 | | | | |
| | | -2.26 | | | | |
| USA | | | -0.37 | | | |
| | | | -2.66 | | | |
| Observations | 50.00 | 50.00 | 50.00 | | | |
| R Squared | 0.01 | 0.03 | 0.01 | | | |
| **Resources-rich countries (oil)** | | | | | | |
| Cameroon | -0.48 | | | | | |
| | -2.33 | | | | | |
| Chad | | 7.82 | | | | |
| | | 3.10 | | | | |
| Republic of Congo | | | 3.04 | | | |
| | | | 2.12 | | | |
| Cote d'Ivoire | | | | -1.28 | | |
| | | | | -0.74 | | |
| Nigeria | | | | | -1.48 | |
| | | | | | -0.79 | |
| Sudan | | | | | | 2.58 |
| | | | | | | 2.36 |
| Observations | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| R Squared | -4.48 | 0.12 | 0.04 | 0.01 | 0.01 | 0.02 |

# Regressions

| | | | | | | |
|---|---|---|---|---|---|---|
| **Resources-rich countries (Non-oil)** | | | | | | |
| Botswana | -2.87 | | | | | |
| | 2.33 | | | | | |
| Ghana | | 3.09 | | | | |
| | | 1.62 | | | | |
| Mali | | | 0.78 | | | |
| | | | 1.68 | | | |
| Sierra Leone | | | | 1.89 | | |
| | | | | 2.52 | | |
| Observations | 50.00 | 50.00 | 50.00 | 50.00 | | |
| R Squared | 0.03 | 0.07 | 0.00 | 0.01 | | |
| **Non-Resources-rich countries** | | | | | | |
| Mauritius | 0.04 | | | | | |
| | 1.01 | | | | | |
| Cabo Verde | | 3.13 | | | | |
| | | 1.78 | | | | |
| Malawi | | | 1.24 | | | |
| | | | 1.57 | | | |
| Rwanda | | | | 0.63 | | |
| | | | | 3.84 | | |
| Lesotho | | | | | 5.61 | |
| | | | | | 2.03 | |
| Central African Republic | | | | | | 0.61 |
| | | | | | | 2.50 |
| Observations | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| | 0.02 | 0.08 | 0.01 | 0.00 | 0.14 | 0.00 |

# Check 2—Medium-term Cycle Accounts for Most of the Fluctuations in Real Credit?

Nigeria: Real Credit (in percent)

Japan: Real Credit (in percent)

Central African Republic: Real Credit (in percent)

Ghana: Real Credit (in percent)
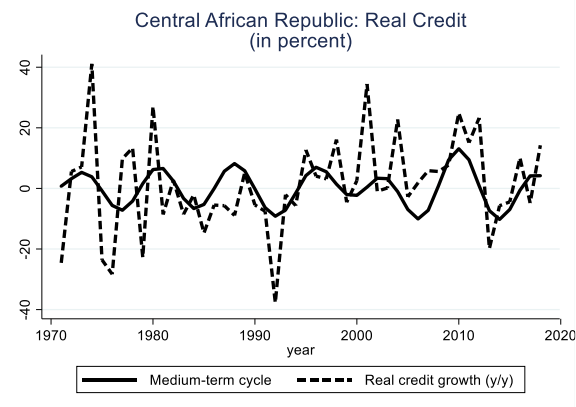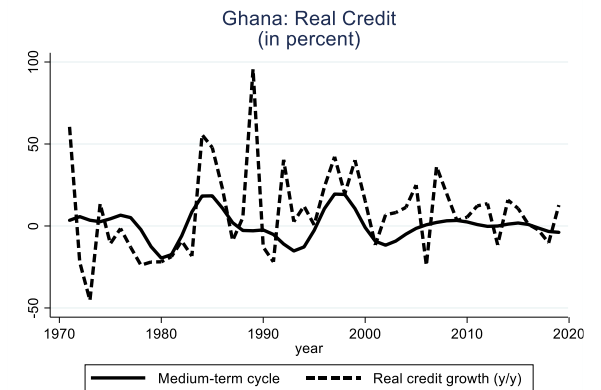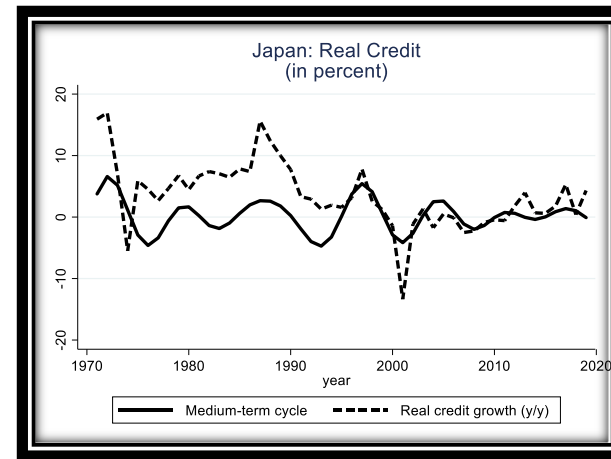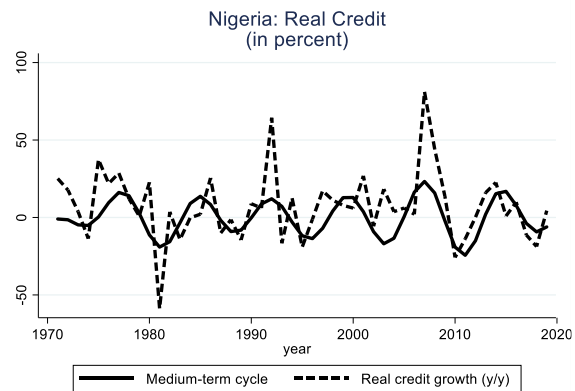
# Volatility Ratio

| | Volatilty Ratio |
|---|---|
| **_Advanced Countries_** | |
| UK | 1.27 |
| Japan | 1.07 |
| USA | 1.66 |
| **_Resource-rich (Oil)_** | |
| Cameroon | 1.02 |
| Chad | 0.78 |
| Republic of Congo | 0.77 |
| Cote d'Ivoire | 0.90 |
| Nigeria | 1.18 |
| Sudan | 0.68 |
| **_Resource-rich (Non-Oil)_** | |
| Botswana | 0.90 |
| Ghana | 0.67 |
| Mali | 0.84 |
| Sierra Leone | 0.91 |
| **_Non-resource rich_** | |
| Mauritius | 0.73 |
| Cabo Verde | 1.06 |
| Malawi | 0.99 |
| Rwanda | 0.54 |
| Lesotho | 0.81 |
| Central African Republic | 0.93 |

Medium-term Credit Cycle in Resource-Rich(Oil) (in percent)

Medium-term Credit Cycle in Non-Resource-Rich (in percent)

Medium-term Credit Cycle in Resource-Rich(Non-Oil) (in percent)
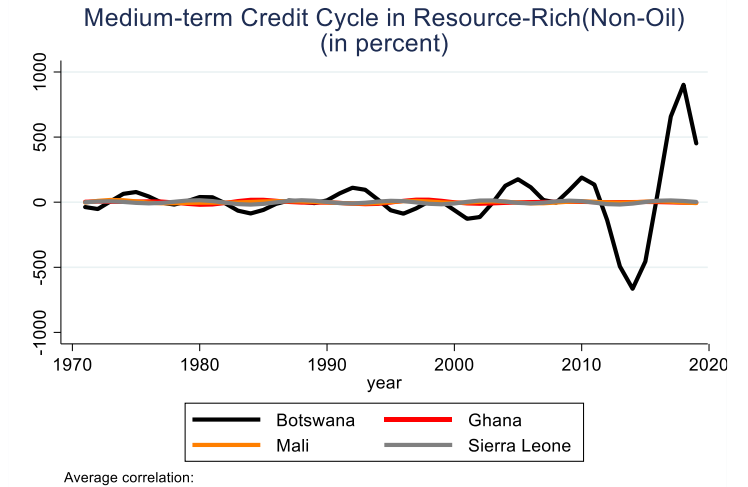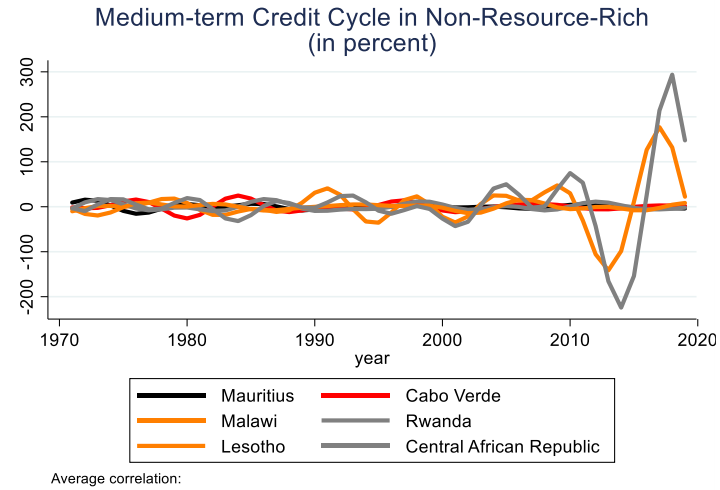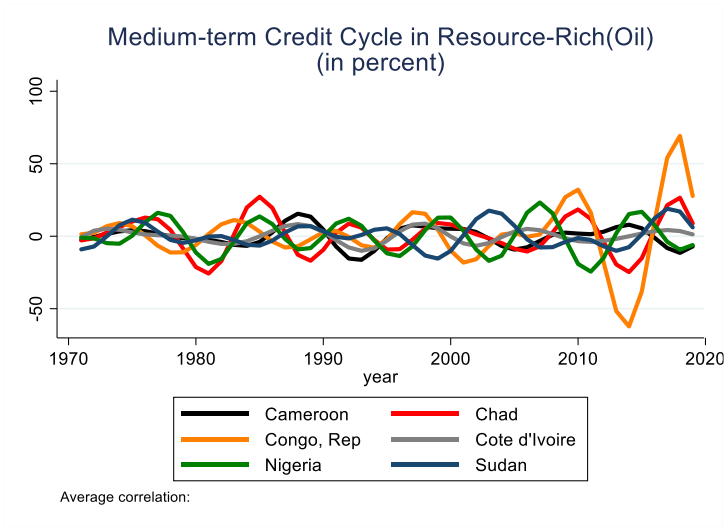
# Check 3: Credit Cycles are Synchronized Across Countries?

# Conclusion

**Credit cycles in SSA countries are different from those in advanced countries because:**

- A- The medium-term component of real credit growth is not associated with the recessions
- B- They credit cycles are not synchronized across SSA countries
- C- The medium-term credit cycle fluctuation is less than short-term fluctuation

# Our Next Working Paper for Credit Cycles in South Asia