# FINANCIAL MODELING OF THE POST-FRANC CFA SCENARIOS FOR CAMEROON

Uwem Essia[*]

Uwem Essia Policy Advice (UEPA )41 College Road, Mbiatok Itam, Itu Local Government Area, Akwa Ibom State, Nigeria

*Corresponding Author*  Uwem Essia (Uwem Essia Policy Advice (UEPA )41 College Road, Mbiatok Itam, Itu Local Government Area, Akwa Ibom State, Nigeria)

**Abstract:** This study explores possible post-reform CFA scenarios for an envisaged transition from the current CFA Franc arrangement. Utilizing the Synthetic Control Method (SCM), taking Cameroon as the treated unit and five countries—Nigeria, Namibia, Botswana, Morocco, and Libya – as control units, the study and evaluates the impact of different post-reform currency regime scenarios on key economic indicators, particularly, economic growth, inflation rate, trade balance, and foreign direct investment (FDI) inflows. Key findings indicate that transitioning from the current CFA Franc arrangement would yield different economic outcomes depending on the chosen currency regime. Ranking the scenarios suggests "Pegged to Basket" as the best-case scenario, followed by "pegged to Euro" and "comprehensive reform of the current CFA arrangement," tying as the second-best scenario. The fifth best scenario is "pegged to USD." A balanced policy approach addressing all key economic indicators is essential for Cameroon to achieve long-term stability and growth in the post-CFA Franc era. By prioritizing stabilizing and stimulating growth, maintaining price stability, enhancing trade competitiveness, and attracting foreign investment, policymakers can successfully implement a combination of the first- and second-best scenarios for a post-CFA franc currency arrangement.

**Keywords:** *Currency Reform, Exchange Rate Regimes, Synthetic Control Method (SCM),  Franc CFA, and Monetary Policy.*

*JEL Codes: E42, E52, F31, and F33*

## Introduction

The CFA franc was established in 1945, following the Bretton Woods Agreement, with the primary aim of stabilizing the economies of France's African colonies. The currency was divided into two versions: the West African CFA Franc (XOF) for eight countries in the West African Economic and Monetary Union (WAEMU) and the Central African CFA Franc (XAF) for six countries in the Central African Economic and Monetary Community (CEMAC). In 1999, the CFA Franc was re-pegged from the French franc to the Euro when France adopted the Euro as its official currency, maintaining the fixed exchange rate arrangement (World Bank, 2024:1).

The CFA zone arrangement has been criticized several times in recent years. The common view is that the member states need greater monetary autonomy to deploy monetary policies for a balanced policy mix. Drawing lessons from the experiences of other countries with different currency regimes, we modeled possible scenarios to help the CFA zone countries navigate the transition to an envisaged post-reform currency framework.

Cameroon is the biggest economy in the CEMAC region, accounting for about 60% of the region's reserves, 40% of its GDP, and about 55% of the total population. A lower-middle-income country with a population of over 27.9 million (2022), Cameroon is ranked 140 out of 180 countries in the 2023 Transparency International corruption index (World Bank, 2024:1,2). Tabi and Ondoa (2011) suggest that Cameroon would be better off having more control over its monetary policies. Njimanted (2009) argues that guided expansionary monetary policy, alongside controlling inflation and corruption, can support economic growth in Cameroon. SokengDongfack and Ouyang (2019) suggest that while devaluation alone may not be sufficient to correct trade imbalances, it can be part of a broader strategy involving structural reforms and export diversification.

We modeled and analyzed different post-reform CFA scenarios using the Synthetic Control Model (SCM) to evaluate the possible post-CFA scenarios. The pre-transition period for analysis was 2010–2022, and the post-transition period is 2026–2030, based on

the assumption that a transition to the post-CFA era may occur before the end of 2025.

### Research Objective

The study uses the SCM to assess Cameroon's potential economic outcomes by constructing and ranking selected post-currency reform scenarios based on their projected impact on key economic indicators. The specific objectives are to:

1. Forecast key economic indicators for Cameroon from 2026 to 2030.
2. Analyze the economic indicators of Cameroon before and after the hypothetic transition to the post-reform CFA framework.
3. Assess the potential economic outcomes for Cameroon under various currency regime scenarios.
4. Compare Cameroon's economic performance with that of the control countries under various scenarios to identify the most beneficial currency arrangement.
5. Rank the different post-CFA franc scenarios based on their projected impact on Cameroon's economic indicators and overall economic performance.

### Research Questions

1. How do Cameroon's projected key economic indicators from 2026 to 2030 perform compared to the historical data from 2010 to 2022?
2. How do Cameroon's economic indicators compare before and after the hypothetical transition from the CFA Franc, as analyzed using the SCM?
3. What are the potential economic outcomes for Cameroon under the different post-CFA Franc currency regime scenarios?
4. How does Cameroon's economic performance compare to the control countries under the post-CFA Franc scenarios?
5. Which post-CFA Franc scenario provides Cameroon with the most beneficial economic outcomes?

### Hypotheses

1. H1: The projected economic indicators for Cameroon for the period 2026-2030 show significant improvement compared to historical trends from 2010-2022.
2. H2: There is a significant difference between actual and synthetic Cameroon indicators.
3. H3: Different post-CFA Franc currency regimes result in varying economic outcomes for Cameroon.
   - H3a: A floated currency exchange rate management system will result in higher volatility in economic indicators.
   - H3b: Pegged to Euro will provide greater stability but tie Cameroon's economic performance to external factors.
   - H3c: Pegging to USD will provide greater stability but tie Cameroon's economic performance to external factors.
   - H3d: Pegged to a stronger African currency (Rand) will enhance regional integration.
   - H3e: Pegged to basket will mitigate external shocks.

4. H4: The different currency reform scenarios matched the economic performance of the respective control countries.
5. H5: A combination of scenarios will yield the most beneficial outcome than a single scenario.

### Significance of the Study

Currency sovereignty will help Cameroon synchronize monetary policies to its unique economic conditions. The study provides an evidential basis to guide the impending currency reforms in Cameroon and offers a framework that other CFA zone countries can replicate.

The rest of the article is divided into four sections, section 2 is literature review,

## LITERATURE REVIEW

The SCM is designed for comparative case studies in small and moderately sized samples. The framework for SCM is explained further in detail in Appendix 8. It is a transparent, data-driven way of constructing a synthetic control group that is used to compare the outcome of interest in an affected unit without the direct exposure of that control group to the intervention of interest (Abadie et al.; 2010; Abadie and Gardeazabal; 2003). An underlying assumption of the SCM is that the shock to be investigated should mimic the characteristics of the random assignment (Gilchrist et al., 2022). However, Ben-Michael, Feller, and Rothstein (2021) adopted the augmented synthetic control method (ASCM) to handle situations where regular SCM may not be feasible. Klößner and Pfeifer (2016) apply the SCM for forecasting purposes.

The SCM is used to study the economic effects of regional integration, disintegration, and populism (Gilchrist et al, 2022; Adhikari, 2022). For example, the SCM was used to estimate the economic impact of German reunification in 1990 on West Germany (Abadie et al., 2015). The SCM was equally used to examine the economic impact of EU membership for countries that joined between 1973 and 2004 (Campos et al., 2019). It was equally used by Campos and Moretti (2015) to investigate why Norway decided to join the European Economic Area (EEA) and not seek full membership in the European Union (EU). Saia (2017) investigates the impact of adopting the Euro on intra-European trade flows. Puzzello and Gomis-Porqueras (2018) used the SCM to analyze the impact of adopting the Euro on GDP per capita for several Eurozone countries. Born et al. (2019) and Breinlich et al. (2020) examined the economic consequences of the Brexit vote on the United Kingdom's GDP.

Our treated unit is Cameroon, and the control units are Nigeria (floated currency), Namibia (pegged to African currency), Morocco (pegged to Euro), Libya (pegged to USD), and Botswana (pegged to Basket). The exchange rate covariates used in the study were economic growth, inflation, trade balance, and foreign direct investment.

**Treated Unit - Cameroon**

Cameroon's foreign exchange management regime is primarily governed by the regulations set by the Bank of Central African States (Banque des États de l'Afrique Centrale or BEAC), which serves as the central bank for six CEMAC countries. Strong calls have been made for reforming the CFA arrangement to give the member-states more control of monetary policies. Weak

capacity for trade promotion, poor infrastructures, high incidences of multiple taxation and obnoxious levies, and low innovativeness within the country add up to dim the prospect of economic growth and achieving Cameroon Vision 2035 (IMF, 2019; Thaddeus et al. 2024). Njimanted (2009) suggests that expansionary monetary policies should be applied alongside sound fiscal measures to hasten Cameroon's economic development. Tabi and Ondoa (2011) suggest that gaining monetary autonomy can help Cameroon stimulate growth without causing excessive inflation.

Ngouhouo and Makolle (2013) found that GDP growth, stable exchange rate, FDI, and trade openness are crucial determinants of export trade in Cameroon. Sokeng, Dongfack, and Ouyang (2019) observe that devaluation should be a part of a broader strategy involving structural reforms and export diversification to improve trade performance in the long run. Fonchamnyo and Mbah (2017) recommend improved bilateralism and Ntu and Lobe (2022) found that FDI inflow in Cameroon is significantly connected to economic growth.

## Control Units

### Botswana

Botswana's Pula exchange rate is pegged to a trade-weighted basket of currencies (Bank of Botswana, n.d.). However, its macroeconomic growth has weak microeconomic foundations and is dominated by diamonds and livestock production (Chibba, 2007; Nair, 2016; Phiri, 2022). Inflation is influenced by domestic factors and imported inflation from South Africa, its major trading partner (KebretTaye, 2013; Chiba, 2007).

Using Thirwall's model, Baitsile (2020) explains how external balance constrains economic growth. Baker (2016) examines how economic diversification can be improved by fully taking advantage of Botswana's Preferential Market Access with the EU and the US, among other factors. The mining sector attracts most of the FDI in the country. Botswana is among Africa's most stable and transparent countries (Coface, 2023).

The relevant lessons from Botswana for Cameroon include near-zero corruption, commitment to human capital development, fiscal transparency, and strong institutions.

### Libya

Libya's dinar has been pegged to the USD since 2021 (World Bank, 2023). Economic growth is predominantly influenced by its oil sector but severely constrained by subsisting political stalemate (Ben-Naser, 2019; World Bank, 2023). Cevik and Teksoz (2014) identify past inflation, excessive government spending, and international sanctions as Libya's leading causes of inflation. Alkoum and Agil (2013) emphasize the importance of considering structural changes in the Libyan economy.

Khumkhem, Mossttafa, and Abdulla (2014) opine that Libya needs to strengthen institutional structures, foster bilateral and multilateral trade agreements with countries that provide reciprocal benefits, and liberalize the economy through privatization. IMF (2023) notes that the Libyan economy has not recovered since the fall of Ghaddafi's regime in 2011. Lloyds Bank (2024:1) reports that ongoing civil unrest, bureaucratic inefficiencies, and a lack of economic diversification present substantial challenges to FDI growth.

Libya's experience underscores how political instability can significantly disrupt economic activities and long-term development and why developing countries should diversify their economies from primary produce export.

### Morocco

The Moroccan Dirham is pegged to the Euro. Making exchange rate flexible and implementing trade reforms can serve the country's development better (Guechati and Chami,2021). However, Hrifa (2023) warns that transitioning to a floating exchange rate regime risks capital flight, increased exchange rate volatility, and severe inflationary pressures. Economic diversification, fiscal consolidation, and accelerating structural reforms can render the business environment hospitable and attract foreign investment (AfDB 2024, 1). Sadok, Fakir, and Hakik (2022) emphasize the link between price stability and political stability, and in support, Aourraz (2024) identified instances like the 1981 protests triggered by price hikes in essential goods.

Sadok (2018) found that a real depreciation of the MAD leads to an increase in exports and a decrease in imports, improving the trade balance in the long run. Baijou and Zaraba (2022) suggest that Morocco should improve its GDP and manage inflation effectively to stabilize the exchange rate. Concerning FDI inflow, Morocco's strategic location as a gateway to Europe, low labor costs (compared to its close European neighbors), and robust infrastructure make it an attractive investment and retirement resettlement destination (Stanbic Bank, 2024). Damoah (2023) observes that privatization of state-owned enterprises, simplifying the tax system, and establishing Free Trade Agreements have increased Morocco's attractiveness to foreign direct investment.

Cameroon can learn from Morocco's efforts to diversify its economy through industrialization and investments in renewable energy. Lessons are equally derivable from Morocco's reduction in dependence on traditional sectors through implementing structural reforms and modernization strategies.

### Namibia

Mushelenga and Sheefeni (2017) found a negative relationship between exchange rates and economic growth in Namibia. Asonuma, Debrun, and Masson (2013) found significant economic benefits of belonging to both the Rand Monetary Area (RMA) and the wider Southern African Development Community (SADC) region. Nainda (2014) opines that while RMA membership has significant benefits, losing monetary policy autonomy is a critical drawback.

Nakale (2014) finds infrastructural development a significant growth driver in Namibia, which receives development support from development partners/donors. Bobek, Moritz, and Horvat (2019) trace high-income inequality in Namibia to colonization and apartheid. Mushelenga and Sheefeni (2017) found that persistent exchange rate volatility or misalignment may deter long-term investments and economic stability.

Odada and Eita (2000, 2010) and Ackah, Hanson, and Agboyi (2015) identify exchange rates, global oil prices, and imported inflation from South Africa as key determinants of inflation. Mushendami and Namakalu (2016) explore the avenues for the exchange rate pass-through (ERPT) to inflation in Namibia. Eita and Gaomab (2012) found a direct significant relationship between fiscal and trade balance. Eita (2016) notes that Namibia exports more to neighboring countries, and Haansende and Nyambe (2020) show a significant short-term relationship between exchange rate volatility and trade balance. Imalwa and Sheefeni

(2017) found that Namibia can benefit from having more monetary autonomy. Sunde (2023) found a strong relationship between FDI and trade openness, supporting the Bhagwati hypothesis that trade openness enhances FDI growth.

Regarding lessons for Cameroon, effective management of natural resources, commitment to economic diversification, and pegged currency arrangement are the key success factors for Namibia.

### Nigeria

Nigeria uses a dirty naira float to manage the exchange value. Ijirshar, Okpe, and Andohol (2022) found that exchange rate depreciation initially worsened economic conditions. However, the trade balance improved later to make exports more competitive and imports more expensive. Udeaja and Obi (2015) found that investment in human capital development particularly affects economic growth positively. Bawa, Abdullahi, and Ibrahim (2016) found that past inflation rates significantly influence current inflation, indicating strong inertia in the inflationary process. Inim, Samuel, and Prince (2020) show that excessive government spending, exchange rate depreciation, poor infrastructure, and external shocks are the major causes of inflation in Nigeria.

Sanni (2006) notes that the economy's heavy dependence on oil exports exposes it to oil price fluctuations. Bello and Gidigbi (2022) observe that trade flows reduced significantly during the COVID-19 pandemic, although adopting digital platforms for trade accelerated. Uzoma-Nwosu and Orekoya (2024) found that higher exchange rate volatility creates uncertainty, discouraging foreign investors. Okonkwo, Osakwe, and Nwadibe (2021) explain why the real and nominal exchange rates positively correlate with FDI inflows.

The Nigerian economy's high dependency on oil makes it more vulnerable to global oil price fluctuations. Also, the challenge of corruption buttresses the need for transparent and accountable institutions to foster economic development.

## RESEARCH METHODOLOGY

### Research Design

- ➢ Selection of Treated and Control Units: Cameroon is our treated unit. The treatment is its potential currency management transition from the CFA Franc. The control units are possible post-reform frameworks: floated currency (Nigeria), pegged to a strong African currency (Namibia), pegged to a basket of currencies (Botswana), and pegged to strong international currencies like the Euro or USD (Morocco and Libya).
- ➢ Identify the pre-intervention and post-intervention periods: The pre-intervention period was (2010-2022) and the post-intervention period 2026-2030.
- ➢ Construction of the Synthetic Control: Create a weighted combination of control units that best approximates the treated unit's pre-intervention characteristics. The weights are chosen to minimize the difference between the treated unit and the synthetic control in the pre-intervention period. The indicators were used to construct the synthetic model by assigning optimal weights to the selected control countries.
- ➢ Comparison of Outcomes: Project the economic indicators for the treated and the control units for 2026-2030 under different post-CFA Franc scenarios and

compare them to the synthetic control to estimate the impact of each scenario on Cameroon's economy. This analysis helps identify the most beneficial scenario for Cameroon in terms of economic stability, growth, and resilience.

### Analytical Method

The analysis was conducted leveraging various libraries within the Python ecosystem for data manipulation, statistical analysis, and plotting. The analysis was AI-supported, powered by the professional versions of ChatGPT and Claude ai. The primary libraries used for the analysis were:

1. Pandas: For data manipulation and cleaning (McKinney, 2010).
2. NumPy: For numerical computations (Harris et al. 2020).
3. Statsmodels: For statistical modeling and analysis, Seabold and Perktold, 2010.
4. Matplotlib: For creating plots and visualizations. (Hunter, 2007)

### SCM Analysis

The SCM analysis was in two parts: financial modeling and comparative analysis.

### Financial Modeling

This involves analyzinghow each currency regime impacts the economic indicators:

1. GDP Growth Rate: Evaluating how the GDP growth rates could have performed under the different currency systems.
2. Inflation Rate: Comparing the inflation rates of the different (control) currency systems.
3. Trade Balance: Analyzing trade balances and the effects on import and export dynamics.
4. Foreign Direct Investment: Investigating the influence of currency regimes on FDI inflows and investor confidence.

### Comparative Analysis

This involves comparing the actual with the synthetic Cameroon data to select the one that is most appropriate for Cameroon's post-reform CFA framework.

### Data Collection and Preparation

The study's dataset was gathered from the World Bank Statistical Tables published online (2010 -2022) (World Bank, n.d.). Data was collected on the following variables: GDP Growth % (GDR), Inflation Rate % (INF), Trade Balance % (TRA), and FDI Net Inflows (USD) (FDI). Data preparation involves identifying and handling missing values in the dataset and normalizing/standardizing variables. The raw data set are tabulated in Appendix 1.

1. Filling Empty Spaces: The SCM requires that no empty data cell should exist. The missing values for Trade Balance (TRA) and FDI Net Inflow (FDI) were imputed using the mean/median of the respective columns. The cleaned data sets are tabulated in Appendix 2.
2. Normalization: The data was normalized to ensure comparability across different economic indicators. This involved having a mean of zero and a standard deviation of one or using min-max scaling to bring values within a

specific range (e.g., 0 to 1). The normalized data set are tabulated in Appendix 3.

3. Standardization: All the data was from one source, without abrupt changes, anomalies, or outliers, without merging or integration, and hence, there was minimal possibility of inconsistencies or errors.

**Projecting Data for 2026-2030**

The data was projected for 2026-2030 using time series analysis involving the ARIMA (AutoRegressive Integrated Moving Average) powered by NumPy. ARIMA is a widely used statistical for time series forecasting that combines autoregression, differencing, and moving averages. ARIMA models are suitable for capturing the underlying patterns in historical data and making future projections. The projected data sets for the treated and control units are tabulated in Appendix 4 and 5.

**Scenario Analysis**

The scenario analysis involves modeling the five post-reform currency scenarios and evaluating their respective projected economic indicators accordingly. The six possible exchange rate scenarios are: floated currency (naira), pegged to the euro, pegged to the USD, pegged a stronger African country (Rand), pegged basket (Botswana), and reform the CFA arrangement (synthetic control).

# PRESENTATION AND ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

The raw data, cleaned data, normalized clean data, projected data for 2026-2030, and synthetic control data for 2026-2030 are in Appendix 1-6.

## The Weights for SCM Analysis

Table 1 presents the weights obtained and used for the synthetic analysis. A step-by-step explanation of how the weights are derived is presented in Appendix 7

*Table 1: Weights Used for the Synthetic Control Analysis*

|  | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (FDI) |
|---|---|---|---|---|
| Botswana | 0.0094 | 0.1563 | -0.3709 | 0.3676 |
| Libya | 0.0003 | -0.0215 | 0.4692 | -0.2961 |
| Morocco | 0.0911 | 0.7005 | -0.2406 | -0.1577 |
| Namibia | 0.2191 | -0.2391 | -0.9362 | 0.1557 |
| Nigeria | -0.1502 | -0.0956 | -5.52e-17 | -0.0364 |

Author's Computation

With the data sets, we proceeded with the SCM analysis following the research questions and hypotheses.

**Comparing Actual (2018-2022) vs Projected Values (2026-2030) of Variables for Cameroon**

1. GDP Growth % (GDR): Positive GDP growth for (2018-2022) ranges from 0.259933% to 3.955514%. Projected GDP growth (2026-2030) is declining from -0.02923% in 2026 to -0.06729% in 2030. This suggests that without significant reforms, economic growth will decline, calling for immediate action.

2. Inflation Rate % (INF): The inflation rate for (2018-2022) rose from 1.068858% to 6.247677%. Projected inflation (2026-2030) is negative -0.49087% in 2026 to -0.40137% in 2030, indicating deflation, a sign of economic stagnation, or reduced demand if the status quo is sustained.

3. Trade Balance % (TRA): Cam (2018-2022): Cameroon had a significantly positive trade balance, ranging from 33.73898% to 43.37851%. The projected trade balance (2026-2030) worsens from -2.00648% in 2026 to -2.24245% in 2030. This implies that Cameroon might face challenges in its export sector, possibly leading to a trade deficit and affecting the overall economic stability if reforms are not implemented early.

4. FDI Net Inflows (USD) (FDI): During 2018-2022, Cameroon experienced substantial positive FDI inflows, with values ranging from 6.75E+08 USD to 1.02E+09 USD. The projected (2026-2030) is negative, although there was a slight improvement from -0.28443 USD in 2026 to -0.20438 USD in 2030. The decline in FDI inflows might reflect reduced investor confidence and could hamper economic growth and development.

The comparison between actual and projected economic indicators suggests that Cameroon's economy may stagnate in the medium to long term without the appropriate structural reforms.

**Comparing the Actual and Synthetic Economic Indicators for Cameroon**

Figure 1 visualizes the comparison of Cameroon's actual and synthetic economic indicators. Summarily, the synthetic control offered improvements in GDP Growth% (GDR), Inflation Rate% (INF), and Trade Balance% (TRA). However, a reduction in FDI inflow is likely because the change may adversely affect some groups of foreign investors.
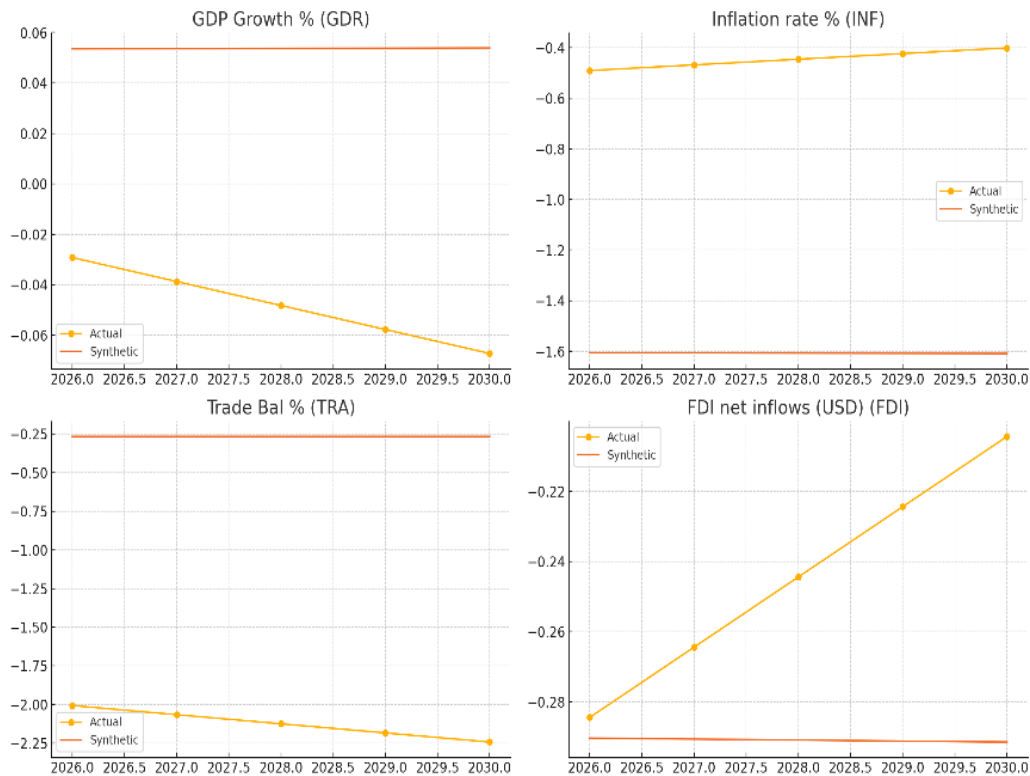
Figure 1: Comparison of Actual and Synthetic Economic Indicators for Cameroon

**Evaluating the Potential Outcomes Under Different Post-CFA Franc Scenarios**

Figure 2 visualize the potential outcomes under the six post-reform currency scenarios identified earlier. Summarily, "Pegged to Basket" is preferred because it provides a balanced performance across these indicators, suggesting a diversified currency approach could mitigate external shocks and provide stability.



Figure 2: Comparison of Economic Indicators for Different Post-CFA franc Scenario

**Ranking of Scenarios**

From Tables 2 and 3, the order of ranking from the best case to the least preferred is presented below:

1. Pegged to Basket: **Best Case Scenario** provides a balanced performance across all indicators.
2. Pegged to Euro: **Second-best Scenario** provides the lowest inflation rate, stable GDP growth and trade balance, and stable FDI inflows.
3. Synthetic Cameroon: **Second-Best Scenario**. Reforming the present CFA arrangement will prevent drastic changes that disrupt the economy and support steady growth and controlled inflation.

4. Floated Currency: This is the Third best Scenario provides improved GDP growth, trade balance, and FDI inflows, with higher inflation as a drawback.
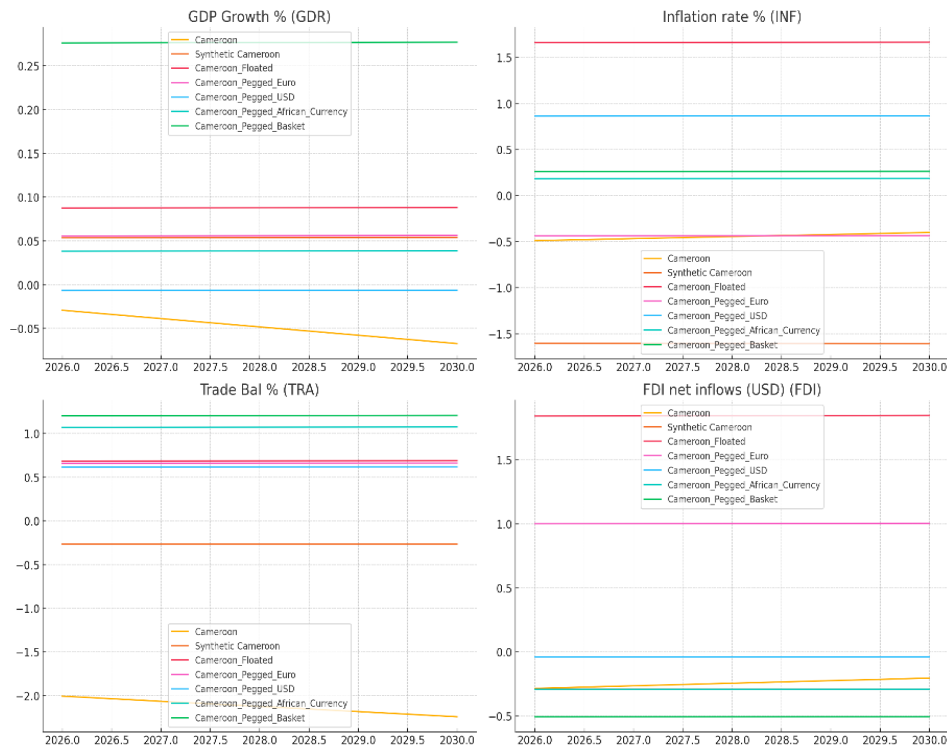5. Pegged to USD: This is the Fourth-Best Scenario. It provides moderate GDP growth, higher trade balance, and FDI inflow, with higher inflation and lower performance compared to other scenarios.
6. Pegged to African Currency: Fifth Best Scenario offers moderate performance of the indicators and enhances regional integration and economic stability within the African context.

Pegging to Euro and the Synthetic Cameroon are comparable because the CFA is pegged to the Euro in the current arrangement.

*Table 2: Comparison of the Scenarios*

| Indicator | Synthetic Cameroon | Floated Currency | Pegged to Euro | Pegged to USD | Pegged to African Currency | Pegged to Basket |
|---|---|---|---|---|---|---|
| GDR | Stable | Higher | Stable | Moderate | Moderate | Stable |
| INF | Low | Higher | Lowest | Higher | Moderate | Low |
| TRA | Stable | Higher | Stable | Higher | Higher | Stable |
| FDI | Stable | Higher | Stable | Higher | Lower | Moderate |

Author's Computation

**Table 3: Summarized Ranking of Scenarios**

| Description of Scenario | Decision | Justification |
|---|---|---|
| Pegged to Basket | Best-Case Scenario | Balanced performance across all indicators. Mitigates external shocks and ensures economic stability and investor confidence. |
| Pegged to Euro | 2nd-best Scenario | Lowest inflation rate, stable GDP growth and trade balance, and supports economic resilience with stable FDI inflows. |
| Synthetic Cameroon | 2nd-best Scenario | Stable performance across all indicators, and supporting steady growth and controlled inflation. |
| Floated Currency | 3rd-best Scenario | Higher GDP growth, trade balance, and FDI inflows, but higher inflation, posing a risk to economic stability. |
| Pegged to USD | 4th-Best Scenario | Moderate GDP growth and higher trade balance, with higher inflation. High vulnerability to USD volatility. |
| Pegged to African Currency | 5th-Best Scenario | Offers moderate GDP growth and inflation and enhances regional integration, but may not attract sufficient FDI. |

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**Imperatives for Implementing the Top Three Scenarios Simultaneously**

The top scenarios—Pegged to Basket, Pegged to Euro, and Synthetic Cameroon—can be implemented together as part of a major reform of the current CFA arrangement. By doing so, Cameroon can continue to benefit from the stability and low inflation of the current CFA arrangement, while transforming the existing weaknesses into opportunities.

**Test of Hypotheses**

The test of hypotheses is summarized in Table 4

**Table 4: Test of Hypotheses**

| |
|---|
| H1: The projected economic indicators for Cameroon for the period 2026-2030 show significant improvement compared to historical trends from 2010-2022. |
| Decision: Rejected |
| Why: Projected data shows worsening economic conditions. |
| H2: There is a significant difference between actual and synthetic Cameroon indicators. |
| Decision: Accepted |

| |
|---|
| Why: Reforming the CFA arrangement will yield more stable outcomes. |
| H3: Different post-CFA Franc currency regimes result in varying economic outcomes for Cameroon. <br><br> Decision: Accepted <br><br> Why: The scenarios yielded different outcomes. |
| H3a: A floated currency exchange rate management system will result in higher volatility in economic indicators. <br><br> Decision: Accepted <br><br> Why: The floated currency scenario indicated higher inflation and greater economic volatility. |
| H3b: Pegged to Euro will provide greater stability but tie Cameroon's economic performance to external factors. <br><br> Decision: Accepted <br><br> Why: The Pegged to Euro offers the lowest inflation but it ties economic performance closely to the Eurozone. |
| H3c: Pegged to USD will provide greater stability but tie Cameroon's economic performance to external factors. <br><br> Decision: Accepted <br><br> Why: The Pegged to USD scenario shows moderate GDP growth, but likely to introduce external vulnerabilities. |
| H3d: Pegged to a stronger African currency (Rand) will enhance regional integration. <br><br> Decision: Accepted <br><br> Why: Moderate GDP growth and inflation, and enhances regional integration. |
| H3e: Pegged to basket will mitigate external shocks. <br><br> Decision: Accepted <br><br> Why: The most favorable scenario. |
| H4: The different currency reform scenarios matched the economic performance of the respective control countries. <br><br> Decision: Accepted <br><br> Why: The economic performance under different scenarios aligns closely with performance of the control countries |
| H5: A combination of scenarios will yield the most beneficial outcome than a single scenario. <br><br> Decision: Accepted <br><br> Why: Most beneficial and balanced |

Author's Computation

# SUMMARY OF KEY FINDINGS, RECOMMENDATIONS AND CONCLUSION

**Summary of Key Findings**

1. If the currency reforms are not implemented, slower economic growth, reduced aggregate demand, a worsening trade balance, and negative FDI inflow may be experienced in the medium term.
2. Moving out of the CFA arrangement without adequate preparation may cause economic stagnation. In the long term, launching an independent currency may be considered.
3. A post-CFA framework that moves the peg from only the Euro to a basket of currencies (with the Euro being the most dominant) and includes the currency of a major trading partner like the naira will be helpful.

**Policy Recommendations**

1. Adopt a Balanced Policy Approach that addresses all key economic indicators, with continuous monitoring and adaptive policy measures to enhance trade competitiveness, improve trade infrastructure, and negotiate favorable trade agreements to expand market access for Cameroonian products.
2. Support a Holistic Reform of the CFA Arrangement by promoting trade, investment, and banking relationships with other CEMAC region countries, participating actively in the AfCFTA and taking advantage of its opportunities, and possibly belonging to both the

CEMAC and ECOWAS given its locational advantage as a Western and Central African country.

## Conclusion

Cameroon should implement structural reforms, enhance trade competitiveness, maintain price stability, and attract foreign investment to achieve sustainable economic development and stability. However, considering the need for economic stability, moderate growth, and controlled inflation, reforming the current CFA franc to be pegged to a basket of currencies should be considered in the immediate and medium term. Full currency sovereignty can be given long-term consideration. The experiences of control countries offer key lessons for advancement of the Cameroon economy, including the need for economic diversification, prudent resource management, political stability, promoting economic integration, attracting foreign investment, and promoting sustainable growth.

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**APPENDICES**

**Appendix 1: Raw Data for the Analysis**

| Year | Country | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (USD) (FDI) |
|------|---------|--------------------|------------------------|-------------------|------------------------------|
| 2010 | Cameroon | 2.899025 | 1.27538 | 47.23859 | 5.36E+08 |
| 2011 | Cameroon | 3.379211 | 2.939699 | 51.52199 | 6.53E+08 |
| 2012 | Cameroon | 4.625979 | 2.735297 | 50.03601 | 5.27E+08 |
| 2013 | Cameroon | 4.995529 | 2.050347 | 49.67454 | 5.47E+08 |
| 2014 | Cameroon | 5.719818 | 1.854899 | 50.83239 | 7.26E+08 |
| 2015 | Cameroon | 5.666953 | 2.676235 | 45.54015 | 6.94E+08 |
| 2016 | Cameroon | 4.535794 | 0.87419 | 40.63863 | 6.64E+08 |
| 2017 | Cameroon | 3.541177 | 0.640409 | 39.19902 | 8.14E+08 |
| 2018 | Cameroon | 3.955514 | 1.068858 | 40.5876 | 7.65E+08 |
| 2019 | Cameroon | 3.47506 | 2.452802 | 43.37851 | 1.02E+09 |
| 2020 | Cameroon | 0.259933 | 2.437609 | 33.73898 | 6.75E+08 |
| 2021 | Cameroon | 3.338857 | 2.271858 | 36.74584 | 9.64E+08 |
| 2022 | Cameroon | 3.582796 | 6.247677 | 41.28693 | 9.26E+08 |
| 2010 | Nigeria | 8.005656 | 13.74005 | | 6.03E+09 |
| 2011 | Nigeria | 5.307924 | 10.82614 | | 8.84E+09 |
| 2012 | Nigeria | 4.230061 | 12.22424 | | 7.07E+09 |
| 2013 | Nigeria | 6.671335 | 8.495518 | | 5.56E+09 |
| 2014 | Nigeria | 6.309719 | 8.047411 | | 4.69E+09 |
| 2015 | Nigeria | 2.652693 | 9.009435 | | 3.06E+09 |
| 2016 | Nigeria | -1.61687 | 15.69681 | | 3.45E+09 |
| 2017 | Nigeria | 0.805887 | 16.50227 | | 2.41E+09 |
| 2018 | Nigeria | 1.922757 | 12.09511 | | 7.75E+08 |
| 2019 | Nigeria | 2.208429 | 11.39642 | | 2.31E+09 |
| 2020 | Nigeria | -1.79425 | 13.24602 | | 2.39E+09 |
| 2021 | Nigeria | 3.647187 | 16.95285 | | 3.31E+09 |
| 2022 | Nigeria | 3.251681 | 18.84719 | | -1.9E+08 |
| 2010 | Morocco | 3.499557 | 0.993557 | 69.54198 | 1.24E+09 |
| 2011 | Morocco | 5.524645 | 0.906925 | 76.82587 | 2.52E+09 |
| 2012 | Morocco | 3.062344 | 1.287122 | 78.2221 | 2.84E+09 |
| 2013 | Morocco | 4.122213 | 1.880655 | 73.85776 | 3.36E+09 |
| 2014 | Morocco | 2.719244 | 0.44231 | 71.89357 | 3.53E+09 |
| 2015 | Morocco | 4.344583 | 1.557907 | 67.28868 | 3.25E+09 |
| 2016 | Morocco | 0.521186 | 1.635311 | 71.12266 | 2.15E+09 |
| 2017 | Morocco | 5.057898 | 0.754663 | 74.17336 | 2.68E+09 |
| 2018 | Morocco | 3.065641 | 1.803917 | 77.25489 | 3.54E+09 |

| 2019 | Morocco | 2.890975 | 0.303386 | 75.99812 | 1.72E+09 |
| 2020 | Morocco | -7.17821 | 0.705969 | 68.8438 | 1.42E+09 |
| 2021 | Morocco | 8.020984 | 1.401959 | 75.63219 | 2.26E+09 |
| 2022 | Morocco | 1.258544 | 6.657042 | 101.1159 | 2.18E+09 |
| 2010 | Botswana | 6.948877 | 6.948877 | 94.639 | 2.18E+08 |
| 2011 | Botswana | 8.459872 | 8.459872 | 98.96147 | 2.93E+08 |
| 2012 | Botswana | 7.536903 | 7.536903 | 111.8753 | 1.46E+08 |
| 2013 | Botswana | 5.884607 | 5.884607 | 125.783 | 67136806 |
| 2014 | Botswana | 4.402253 | 4.402253 | 119.4975 | 5.15E+08 |
| 2015 | Botswana | 3.062032 | 3.062032 | 112.9009 | 3.79E+08 |
| 2016 | Botswana | 2.814958 | 2.814958 | 100.4647 | 1.43E+08 |
| 2017 | Botswana | 3.308281 | 3.308281 | 81.92395 | 2.61E+08 |
| 2018 | Botswana | 3.238016 | 3.238016 | 87.4551 | 2.86E+08 |
| 2019 | Botswana | 2.772864 | 2.772864 | 83.09298 | 93607130 |
| 2020 | Botswana | 1.890359 | 1.890359 | 77.66321 | 31792610 |
| 2021 | Botswana | 7.240978 | 7.240978 | 88.82088 | -3.2E+08 |
| 2022 | Botswana | 11.66557 | 11.66557 | 85.46706 | 2.16E+08 |
| 2010 | Namibia | 6.039249 | 4.87492 | 108.0725 | 2.88E+08 |
| 2011 | Namibia | 5.091338 | 5.005595 | 102.1891 | 8.04E+08 |
| 2012 | Namibia | 5.061682 | 6.721998 | 100.2134 | 1.04E+09 |
| 2013 | Namibia | 5.61472 | 5.600925 | 97.7249 | 7.77E+08 |
| 2014 | Namibia | 6.092519 | 5.35017 | 103.0801 | 4.46E+08 |
| 2015 | Namibia | 4.264175 | 3.394015 | 97.23903 | 8.39E+08 |
| 2016 | Namibia | 0.033794 | 6.728582 | 93.96619 | 3.59E+08 |
| 2017 | Namibia | -1.02725 | 6.1458 | 81.21967 | 2.8E+08 |
| 2018 | Namibia | 1.059943 | 4.291591 | 81.71387 | 2.34E+08 |
| 2019 | Namibia | -0.83915 | 3.722394 | 82.90115 | -1.8E+08 |
| 2020 | Namibia | -8.1014 | 2.209382 | 76.92524 | -1.5E+08 |
| 2021 | Namibia | 3.524658 | 3.616905 | 82.0036 | 8.4E+08 |
| 2022 | Namibia | 7.562779 | 6.081281 | 91.77038 | 1.06E+09 |
| 2010 | Libya | 5.027248 | 2.799895 | 98.07721 | 1.78E+09 |
| 2011 | Libya | -50.3385 | 15.51848 | 63.00544 | |
| 2012 | Libya | 86.82675 | 6.059804 | 98.22432 | 1.43E+09 |
| 2013 | Libya | -17.998 | 2.605818 | 106.3344 | 7.02E+08 |
| 2014 | Libya | -23.0428 | 2.432941 | 76.52488 | |
| 2015 | Libya | -0.84266 | 10.40229 | 56.90491 | |
| 2016 | Libya | -1.49094 | 25.85387 | 41.11018 | |
| 2017 | Libya | 32.4918 | 25.80362 | 47.54897 | |
| 2018 | Libya | 7.941368 | 13.1702 | 63.78113 | |
| 2019 | Libya | -11.1957 | -2.16218 | 78.20913 | |
| 2020 | Libya | -29.7871 | 1.447037 | | |
| 2021 | Libya | 31.37252 | 2.86833 | | 6.03E+08 |
| 2022 | Libya | -1.23698 | 4.510301 | | |

Source: World Bank. (n.d.). World Development Indicators. Data Bank

**Appendix 2: Cleaned Data**

| Year | Country | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (USD) (FDI) |
|---|---|---|---|---|---|
| 2010 | Cameroon | 2.899025 | 1.27538 | 47.23859 | 5.36E+08 |

| 2011 | Cameroon | 3.379211 | 2.939699 | 51.52199 | 6.53E+08 |
|------|----------|----------|----------|----------|----------|
| 2012 | Cameroon | 4.625979 | 2.735297 | 50.03601 | 5.27E+08 |
| 2013 | Cameroon | 4.995529 | 2.050347 | 49.67454 | 5.47E+08 |
| 2014 | Cameroon | 5.719818 | 1.854899 | 50.83239 | 7.26E+08 |
| 2015 | Cameroon | 5.666953 | 2.676235 | 45.54015 | 6.94E+08 |
| 2016 | Cameroon | 4.535794 | 0.87419 | 40.63863 | 6.64E+08 |
| 2017 | Cameroon | 3.541177 | 0.640409 | 39.19902 | 8.14E+08 |
| 2018 | Cameroon | 3.955514 | 1.068858 | 40.5876 | 7.65E+08 |
| 2019 | Cameroon | 3.47506 | 2.452802 | 43.37851 | 1.02E+09 |
| 2020 | Cameroon | 0.259933 | 2.437609 | 33.73898 | 6.75E+08 |
| 2021 | Cameroon | 3.338857 | 2.271858 | 36.74584 | 9.64E+08 |
| 2022 | Cameroon | 3.582796 | 6.247677 | 41.28693 | 9.26E+08 |
| 2010 | Nigeria | 8.005656 | 13.74005 | 76.60443 | 6.03E+09 |
| 2011 | Nigeria | 5.307924 | 10.82614 | 76.60443 | 8.84E+09 |
| 2012 | Nigeria | 4.230061 | 12.22424 | 76.60443 | 7.07E+09 |
| 2013 | Nigeria | 6.671335 | 8.495518 | 76.60443 | 5.56E+09 |
| 2014 | Nigeria | 6.309719 | 8.047411 | 76.60443 | 4.69E+09 |
| 2015 | Nigeria | 2.652693 | 9.009435 | 76.60443 | 3.06E+09 |
| 2016 | Nigeria | -1.61687 | 15.69681 | 76.60443 | 3.45E+09 |
| 2017 | Nigeria | 0.805887 | 16.50227 | 76.60443 | 2.41E+09 |
| 2018 | Nigeria | 1.922757 | 12.09511 | 76.60443 | 7.75E+08 |
| 2019 | Nigeria | 2.208429 | 11.39642 | 76.60443 | 2.31E+09 |
| 2020 | Nigeria | -1.79425 | 13.24602 | 76.60443 | 2.39E+09 |
| 2021 | Nigeria | 3.647187 | 16.95285 | 76.60443 | 3.31E+09 |
| 2022 | Nigeria | 3.251681 | 18.84719 | 76.60443 | -1.9E+08 |
| 2010 | Morocco | 3.499557 | 0.993557 | 69.54198 | 1.24E+09 |
| 2011 | Morocco | 5.524645 | 0.906925 | 76.82587 | 2.52E+09 |
| 2012 | Morocco | 3.062344 | 1.287122 | 78.2221 | 2.84E+09 |
| 2013 | Morocco | 4.122213 | 1.880655 | 73.85776 | 3.36E+09 |
| 2014 | Morocco | 2.719244 | 0.44231 | 71.89357 | 3.53E+09 |
| 2015 | Morocco | 4.344583 | 1.557907 | 67.28868 | 3.25E+09 |
| 2016 | Morocco | 0.521186 | 1.635311 | 71.12266 | 2.15E+09 |
| 2017 | Morocco | 5.057898 | 0.754663 | 74.17336 | 2.68E+09 |
| 2018 | Morocco | 3.065641 | 1.803917 | 77.25489 | 3.54E+09 |
| 2019 | Morocco | 2.890975 | 0.303386 | 75.99812 | 1.72E+09 |
| 2020 | Morocco | -7.17821 | 0.705969 | 68.8438 | 1.42E+09 |
| 2021 | Morocco | 8.020984 | 1.401959 | 75.63219 | 2.26E+09 |
| 2022 | Morocco | 1.258544 | 6.657042 | 101.1159 | 2.18E+09 |
| 2010 | Botswana | 6.948877 | 6.948877 | 94.639 | 2.18E+08 |
| 2011 | Botswana | 8.459872 | 8.459872 | 98.96147 | 2.93E+08 |
| 2012 | Botswana | 7.536903 | 7.536903 | 111.8753 | 1.46E+08 |
| 2013 | Botswana | 5.884607 | 5.884607 | 125.783 | 67136806 |
| 2014 | Botswana | 4.402253 | 4.402253 | 119.4975 | 5.15E+08 |
| 2015 | Botswana | 3.062032 | 3.062032 | 112.9009 | 3.79E+08 |
| 2016 | Botswana | 2.814958 | 2.814958 | 100.4647 | 1.43E+08 |
| 2017 | Botswana | 3.308281 | 3.308281 | 81.92395 | 2.61E+08 |
| 2018 | Botswana | 3.238016 | 3.238016 | 87.4551 | 2.86E+08 |
| 2019 | Botswana | 2.772864 | 2.772864 | 83.09298 | 93607130 |
| 2020 | Botswana | 1.890359 | 1.890359 | 77.66321 | 31792610 |

| 2021 | Botswana | 7.240978 | 7.240978 | 88.82088 | -3.2E+08 |
|------|----------|----------|----------|----------|----------|
| 2022 | Botswana | 11.66557 | 11.66557 | 85.46706 | 2.16E+08 |
| 2010 | Namibia | 6.039249 | 4.87492 | 108.0725 | 2.88E+08 |
| 2011 | Namibia | 5.091338 | 5.005595 | 102.1891 | 8.04E+08 |
| 2012 | Namibia | 5.061682 | 6.721998 | 100.2134 | 1.04E+09 |
| 2013 | Namibia | 5.61472 | 5.600925 | 97.7249 | 7.77E+08 |
| 2014 | Namibia | 6.092519 | 5.35017 | 103.0801 | 4.46E+08 |
| 2015 | Namibia | 4.264175 | 3.394015 | 97.23903 | 8.39E+08 |
| 2016 | Namibia | 0.033794 | 6.728582 | 93.96619 | 3.59E+08 |
| 2017 | Namibia | -1.02725 | 6.1458 | 81.21967 | 2.8E+08 |
| 2018 | Namibia | 1.059943 | 4.291591 | 81.71387 | 2.34E+08 |
| 2019 | Namibia | -0.83915 | 3.722394 | 82.90115 | -1.8E+08 |
| 2020 | Namibia | -8.1014 | 2.209382 | 76.92524 | -1.5E+08 |
| 2021 | Namibia | 3.524658 | 3.616905 | 82.0036 | 8.4E+08 |
| 2022 | Namibia | 7.562779 | 6.081281 | 91.77038 | 1.06E+09 |
| 2010 | Libya | 5.027248 | 2.799895 | 98.07721 | 1.78E+09 |
| 2011 | Libya | -50.3385 | 15.51848 | 63.00544 | 8.04E+08 |
| 2012 | Libya | 86.82675 | 6.059804 | 98.22432 | 1.43E+09 |
| 2013 | Libya | -17.998 | 2.605818 | 106.3344 | 7.02E+08 |
| 2014 | Libya | -23.0428 | 2.432941 | 76.52488 | 8.04E+08 |
| 2015 | Libya | -0.84266 | 10.40229 | 56.90491 | 8.04E+08 |
| 2016 | Libya | -1.49094 | 25.85387 | 41.11018 | 8.04E+08 |
| 2017 | Libya | 32.4918 | 25.80362 | 47.54897 | 8.04E+08 |
| 2018 | Libya | 7.941368 | 13.1702 | 63.78113 | 8.04E+08 |
| 2019 | Libya | -11.1957 | -2.16218 | 78.20913 | 8.04E+08 |
| 2020 | Libya | -29.7871 | 1.447037 | 76.60443 | 8.04E+08 |
| 2021 | Libya | 31.37252 | 2.86833 | 76.60443 | 6.03E+08 |
| 2022 | Libya | -1.23698 | 4.510301 | 76.60443 | 8.04E+08 |

Source: Cleaned Using Pandas (AI Assisted)

**Appendix 3: Normalized Cleaned Data**

| Year | Country | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (USD) (FDI) |
|------|---------|--------------------|------------------------|--------------------|-----------------------------|
| -1.60357 | Cameroon | -0.03146 | -0.82452 | -1.42991 | -0.54123 |
| -1.33631 | Cameroon | 0.003512 | -0.52862 | -1.22134 | -0.47148 |
| -1.06904 | Cameroon | 0.094323 | -0.56496 | -1.2937 | -0.54653 |
| -0.80178 | Cameroon | 0.12124 | -0.68674 | -1.3113 | -0.53459 |
| -0.53452 | Cameroon | 0.173994 | -0.72149 | -1.25492 | -0.42822 |
| -0.26726 | Cameroon | 0.170144 | -0.57546 | -1.51261 | -0.447 |
| 0 | Cameroon | 0.087754 | -0.89585 | -1.75128 | -0.46515 |
| 0.267261 | Cameroon | 0.015309 | -0.93741 | -1.82138 | -0.3754 |
| 0.534522 | Cameroon | 0.045488 | -0.86124 | -1.75377 | -0.40483 |
| 0.801784 | Cameroon | 0.010494 | -0.61519 | -1.61787 | -0.25003 |
| 1.069045 | Cameroon | -0.22369 | -0.61789 | -2.08725 | -0.45842 |
| 1.336306 | Cameroon | 0.000573 | -0.64736 | -1.94083 | -0.28654 |
| 1.603567 | Cameroon | 0.018341 | 0.0595 | -1.71971 | -0.3091 |
| -1.60357 | Nigeria | 0.340487 | 1.391564 | 6.92E-16 | 2.731273 |
| -1.33631 | Nigeria | 0.143993 | 0.873502 | 6.92E-16 | 4.409139 |
| -1.06904 | Nigeria | 0.065485 | 1.122069 | 6.92E-16 | 3.35338 |

| | | | | | |
|---|---|---|---|---|---|
| -0.80178 | Nigeria | 0.2433 | 0.459142 | 6.92E-16 | 2.45505 |
| -0.53452 | Nigeria | 0.216961 | 0.379473 | 6.92E-16 | 1.937035 |
| -0.26726 | Nigeria | -0.0494 | 0.550511 | 6.92E-16 | 0.965619 |
| 0 | Nigeria | -0.36039 | 1.739455 | 6.92E-16 | 1.197549 |
| 0.267261 | Nigeria | -0.18392 | 1.882657 | 6.92E-16 | 0.577452 |
| 0.534522 | Nigeria | -0.10257 | 1.099111 | 6.92E-16 | -0.39877 |
| 0.801784 | Nigeria | -0.08176 | 0.974891 | 6.92E-16 | 0.513149 |
| 1.069045 | Nigeria | -0.3733 | 1.303731 | 6.92E-16 | 0.560942 |
| 1.336306 | Nigeria | 0.023031 | 1.962765 | 6.92E-16 | 1.114068 |
| 1.603567 | Nigeria | -0.00578 | 2.299559 | 6.92E-16 | -0.97223 |
| -1.60357 | Morocco | 0.012278 | -0.87463 | -0.34389 | -0.12137 |
| -1.33631 | Morocco | 0.159779 | -0.89003 | 0.010782 | 0.64206 |
| -1.06904 | Morocco | -0.01957 | -0.82243 | 0.078769 | 0.83316 |
| -0.80178 | Morocco | 0.05763 | -0.71691 | -0.13374 | 1.142502 |
| -0.53452 | Morocco | -0.04456 | -0.97263 | -0.22939 | 1.240543 |
| -0.26726 | Morocco | 0.073827 | -0.77429 | -0.45361 | 1.078127 |
| 0 | Morocco | -0.20466 | -0.76053 | -0.26692 | 0.422701 |
| 0.267261 | Morocco | 0.125782 | -0.9171 | -0.11838 | 0.736687 |
| 0.534522 | Morocco | -0.01933 | -0.73055 | 0.031673 | 1.25187 |
| 0.801784 | Morocco | -0.03205 | -0.99733 | -0.02952 | 0.164871 |
| 1.069045 | Morocco | -0.76545 | -0.92576 | -0.37789 | -0.01521 |
| 1.336306 | Morocco | 0.341603 | -0.80202 | -0.04734 | 0.488739 |
| 1.603567 | Morocco | -0.15095 | 0.132281 | 1.193536 | 0.437295 |
| -1.60357 | Botswana | 0.263515 | 0.184166 | 0.878157 | -0.73071 |
| -1.33631 | Botswana | 0.373571 | 0.452804 | 1.088631 | -0.68611 |
| -1.06904 | Botswana | 0.306345 | 0.28871 | 1.717443 | -0.77381 |
| -0.80178 | Botswana | 0.185997 | -0.00505 | 2.394654 | -0.82087 |
| -0.53452 | Botswana | 0.078027 | -0.2686 | 2.088594 | -0.55379 |
| -0.26726 | Botswana | -0.01959 | -0.50687 | 1.767383 | -0.63524 |
| 0 | Botswana | -0.03759 | -0.5508 | 1.161827 | -0.77593 |
| 0.267261 | Botswana | -0.00165 | -0.46309 | 0.259023 | -0.70556 |
| 0.534522 | Botswana | -0.00677 | -0.47559 | 0.528352 | -0.69043 |
| 0.801784 | Botswana | -0.04065 | -0.55828 | 0.315947 | -0.80509 |
| 1.069045 | Botswana | -0.10493 | -0.71518 | 0.051555 | -0.84194 |
| 1.336306 | Botswana | 0.28479 | 0.236098 | 0.594855 | -1.05107 |
| 1.603567 | Botswana | 0.607063 | 1.022743 | 0.431548 | -0.73186 |
| -1.60357 | Namibia | 0.197261 | -0.18456 | 1.532273 | -0.6895 |
| -1.33631 | Namibia | 0.128218 | -0.16133 | 1.245796 | -0.38187 |
| -1.06904 | Namibia | 0.126058 | 0.143829 | 1.149592 | -0.24003 |
| -0.80178 | Namibia | 0.166339 | -0.05549 | 1.028419 | -0.39768 |
| -0.53452 | Namibia | 0.201141 | -0.10007 | 1.289181 | -0.59528 |
| -0.26726 | Namibia | 0.06797 | -0.44785 | 1.00476 | -0.36084 |
| 0 | Namibia | -0.24016 | 0.145 | 0.845396 | -0.64705 |
| 0.267261 | Namibia | -0.31744 | 0.041387 | 0.22473 | -0.6937 |
| 0.534522 | Namibia | -0.16542 | -0.28827 | 0.248794 | -0.72118 |
| 0.801784 | Namibia | -0.30374 | -0.38947 | 0.306606 | -0.96608 |
| 1.069045 | Namibia | -0.8327 | -0.65847 | 0.015621 | -0.9504 |
| 1.336306 | Namibia | 0.014106 | -0.40822 | 0.262902 | -0.36 |
| 1.603567 | Namibia | 0.308229 | 0.029916 | 0.738475 | -0.23139 |

| -1.60357 | Libya | 0.12355 | -0.55348 | 1.045574 | 0.202529 |
| -1.33631 | Libya | -3.9091 | 1.70775 | -0.66218 | -0.38187 |
| -1.06904 | Libya | 6.081548 | 0.026098 | 1.052737 | -0.01147 |
| -0.80178 | Libya | -1.55353 | -0.58798 | 1.447639 | -0.44243 |
| -0.53452 | Libya | -1.92098 | -0.61872 | -0.00387 | -0.38187 |
| -0.26726 | Libya | -0.30399 | 0.798146 | -0.95923 | -0.38187 |
| 0 | Libya | -0.35121 | 3.545272 | -1.72832 | -0.38187 |
| 0.267261 | Libya | 2.123975 | 3.536338 | -1.4148 | -0.38187 |
| 0.534522 | Libya | 0.335804 | 1.290251 | -0.6244 | -0.38187 |
| 0.801784 | Libya | -1.05807 | -1.43568 | 0.078137 | -0.38187 |
| 1.069045 | Libya | -2.41221 | -0.794 | 6.92E-16 | -0.38187 |
| 1.336306 | Libya | 2.04245 | -0.54131 | 6.92E-16 | -0.50145 |
| 1.603567 | Libya | -0.33272 | -0.24939 | 6.92E-16 | -0.38187 |

Source: Pandas (AI assisted)

Appendix 4: Projected Cameroon Data

| Year | Country | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (USD) (FDI) |
|---|---|---|---|---|---|
| 2026 | Cameroon | -0.02923 | -0.49087 | -2.00648 | -0.28443 |
| 2027 | Cameroon | -0.03874 | -0.46849 | -2.06547 | -0.26441 |
| 2028 | Cameroon | -0.04826 | -0.44612 | -2.12446 | -0.2444 |
| 2029 | Cameroon | -0.05778 | -0.42375 | -2.18346 | -0.22439 |
| 2030 | Cameroon | -0.06729 | -0.40137 | -2.24245 | -0.20438 |

Source: NumPy (AI Assisted)

**Appendix 5: Projected Control Countries Data**

| | Year | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (USD) (FDI) | Country | Scenario |
|---|---|---|---|---|---|---|---|
| 0 | 2026 | 0.087531 | 1.660413 | 0.683992 | 1.840342 | Nigeria | Floated Currency |
| 1 | 2027 | 0.087671 | 1.66148 | 0.684927 | 1.841556 | Nigeria | |
| 2 | 2028 | 0.087811 | 1.662548 | 0.685862 | 1.84277 | Nigeria | |
| 3 | 2029 | 0.087951 | 1.663615 | 0.686797 | 1.843984 | Nigeria | |
| 4 | 2030 | 0.088091 | 1.664682 | 0.687733 | 1.845198 | Nigeria | |
| 0 | 2026 | 0.038265 | 0.182415 | 1.07009 | -0.29253 | Namibia | Pegged to African currency |
| 1 | 2027 | 0.038383 | 0.182882 | 1.071206 | -0.29237 | Namibia | |
| 2 | 2028 | 0.038501 | 0.183348 | 1.072323 | -0.29221 | Namibia | |
| 3 | 2029 | 0.038618 | 0.183815 | 1.073439 | -0.29205 | Namibia | |
| 4 | 2030 | 0.038736 | 0.184281 | 1.074556 | -0.29189 | Namibia | |
| 0 | 2026 | 0.276121 | 0.260861 | 1.202283 | -0.50603 | Botswana | Pegged to Basket |
| 1 | 2027 | 0.276348 | 0.261359 | 1.203461 | -0.50597 | Botswana | |
| 2 | 2028 | 0.276575 | 0.261858 | 1.20464 | -0.50592 | Botswana | |
| 3 | 2029 | 0.276801 | 0.262356 | 1.205818 | -0.50586 | Botswana | |
| 4 | 2030 | 0.277028 | 0.262854 | 1.206996 | -0.5058 | Botswana | |
| 0 | 2026 | 0.055677 | -0.43776 | 0.657357 | 0.999365 | Morocco | Pegged to the Euro |
| 1 | 2027 | 0.055803 | -0.43754 | 0.65828 | 1.000165 | Morocco | |
| 2 | 2028 | 0.055929 | -0.43733 | 0.659203 | 1.000965 | Morocco | |
| 3 | 2029 | 0.056054 | -0.43711 | 0.660126 | 1.001764 | Morocco | |
| 4 | 2030 | 0.05618 | -0.4369 | 0.661049 | 1.002564 | Morocco | |
| 0 | 2026 | -0.00671 | 0.862175 | 0.614636 | -0.03943 | Libya | Pegged to the USD |
| 1 | 2027 | -0.00661 | 0.862918 | 0.615539 | -0.03914 | Libya | |

| 2 | 2028 | -0.00651 | 0.86366 | 0.616441 | -0.03885 | Libya | |
| 3 | 2029 | -0.00641 | 0.864402 | 0.617344 | -0.03857 | Libya | |
| 4 | 2030 | -0.00632 | 0.865145 | 0.618246 | -0.03828 | Libya | |

Source: NumPy (AI Assisted)

**Appendix 6: Synthetic Control for Post-Treatment Cameroon**

| Year | Country | GDP Growth % (GDR) | Inflation rate % (INF) | Trade Bal % (TRA) | FDI net inflows (USD) (FDI) |
|------|---------|---------|---------|---------|---------|
| 2026 | Synthetic Cameroon | 0.053559 | -1.60605 | -0.2664 | -0.29032 |
| 2027 | Synthetic Cameroon | 0.053662 | -1.60663 | -0.26638 | -0.2906 |
| 2028 | Synthetic Cameroon | 0.053766 | -1.60722 | -0.26637 | -0.29088 |
| 2029 | Synthetic Cameroon | 0.053869 | -1.6078 | -0.26636 | -0.29116 |
| 2030 | Synthetic Cameroon | 0.053973 | -1.60839 | -0.26635 | -0.29144 |

Source: NumPy (AI Assisted)

## Appendix 7: Step-by-Step Explanation on How to Compute the Weights

### Define the Variables:

1. Treated Unit: The country that underwent the treatment (e.g., transition from the CFA Franc).
2. Control Units: Countries that did not undergo the treatment but have similar characteristics to the treated unit.

### Select the Economic Indicators:

1. Choose the economic indicators to be used for the analysis. Common indicators include GDP growth, inflation rate, trade balance, and FDI net inflows.
2. Pre-Treatment Period: Identify the period before the treatment occurred. For instance, the pre-treatment period could be from 2010 to 2022.
3. Data Preparation: Collect data for the economic indicators for both the treated and control units for the pre-treatment period.

### Matrix Construction:

1. Construct a matrix $X_1$ for the treated unit, containing the values of the economic indicators over the pre-treatment period.
2. Construct a matrix $X_0$ for the control units, containing the values of the economic indicators over the same pre-treatment period.

### Weight Optimization:

The goal is to find a set of weights $W_i$ for the control units such that the weighted combination of the control units' economic indicators closely matches the treated unit's indicators during the pre-treatment period.

Mathematically, this involves solving the following optimization problem:

$$\min_{w} \| X_1 - X_0 W \|_2$$

Where W is a vector of weights, and ∥ - ∥ denotes the Euclidean norm.

Constraint on Weights: The weights W must be non-negative and sum to one

$W_i \geq 0$ for all i, $\sum W_i = 1$

This ensures that the synthetic control is a weighted average of the control units.

The optimization problem was solved to find the optimal weights $W_i$ using NumPy (AI assisted)

### Appendix 8: Framework for SCM Analysis

We consider the canonical SCM panel data setting with 6 units i = 1,. .., 6 units (Cameroon, Nigeria, Namibia, Libya, Morocco, and Botswana) observed for 13 years t = 1,. .., T (13) years (2010 – 2022). The modeling was AI-assisted using Statsmodels. We present below the fundamental aspects of the SCM process in seven steps.

1. Setup and Notation:

➢ Units (Countries): I = 1, 2, …, 6
➢ Time period (years) t= 1, 2, …., 13
➢ Treatment Indicator: $W_i = 1$ if the unit is treated. $W_i = 0$ otherwise
➢ Treated Unit: Cameroon (i =1), treated at t = To +1
➢ Control Units: Nigeria, Namibia, Libya, Morocco, Botswana (i = 2,..., 6).
➢ Pre-treatment and Post-treatment Periods:
➢ Pre-treatment period: t = 1, 2, …, T13
➢ Post-treatment period: t=T0 + 1, .., 5

2. Outcome of Interest:

➢ Yit: Outcome for Unit I at time t
➢ YitN: Outcome for unit i at time t if no treatment occurred.
➢ YitI: Outcome for unit I at time t if treated.
➢ For the treated unit (Cameroon), the observed outcome post-treatment is Y1T.

3. Objective:

➢ Estimate the treatment effect for the treated unit (Cameroon) at post-treatment time t = T.
➢ The treatment effect is α1T = YITI - YITN

Constructing the Synthetic Control:

The synthetic control is a weighted average of the control units, designed to match the treated unit's pre-treatment characteristics as closely as possible.

Let W= (w2, w3, ..., wN) be the weights assigned to the control units

The synthetic control outcome for the treated unit is:

$$YITN = \sum_{i=2}^{n} wiYIT$$

4. Choosing Weights:

The weights W= (w2, w3, ..., wN) are chosen to minimize the difference between the treated unit and the synthetic control unit in the pre-treatment period:

$$\min_{w} \sum_{t=1}^{T0} (Y1t - \sum_{i=2}^{n} wiYIT)2$$

$$\sum_{i=2}^{n} wi = 1$$

Subject to: $wi \geq 0$ for all I and
Estimating the Treatment Effect:
Once the weights W= (w2, w3, ..., wN) are determined, the post-treatment synthetic control outcome is:

$$YITN = \sum_{i=2}^{n} wiYIT$$

The treatment effect is then $\alpha1T = YIT - YITN$
Where $\alpha1$ is the coefficient of the treatment.