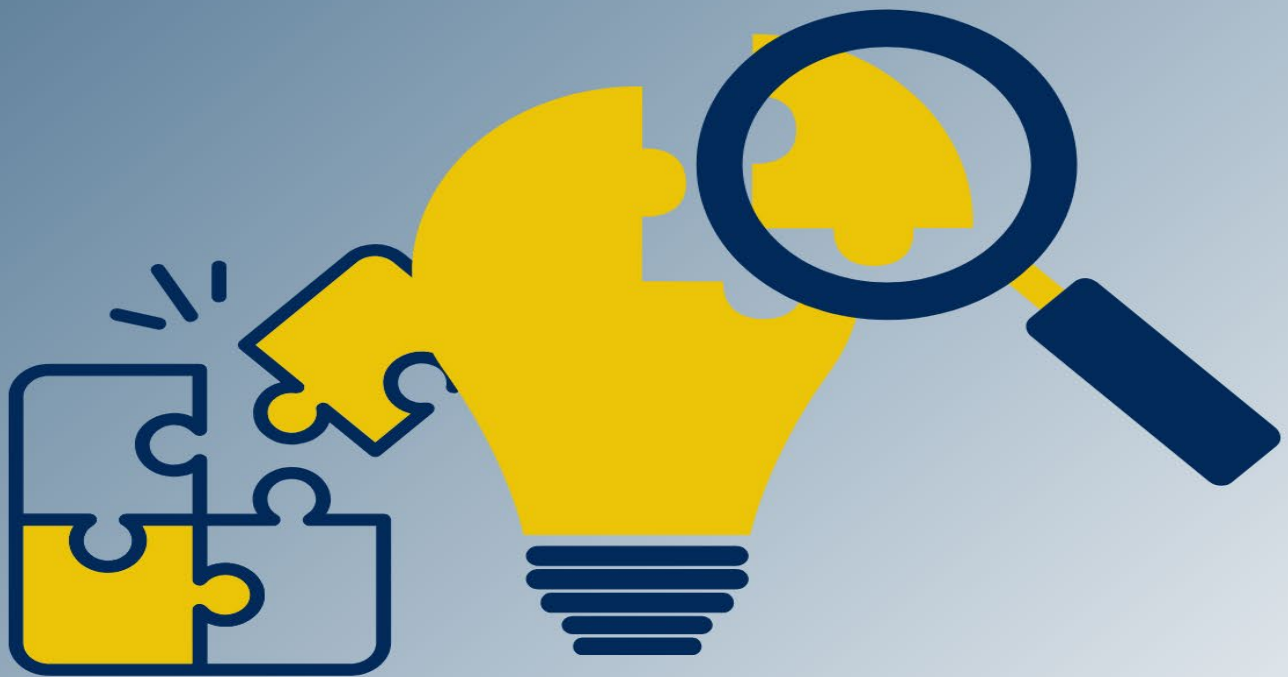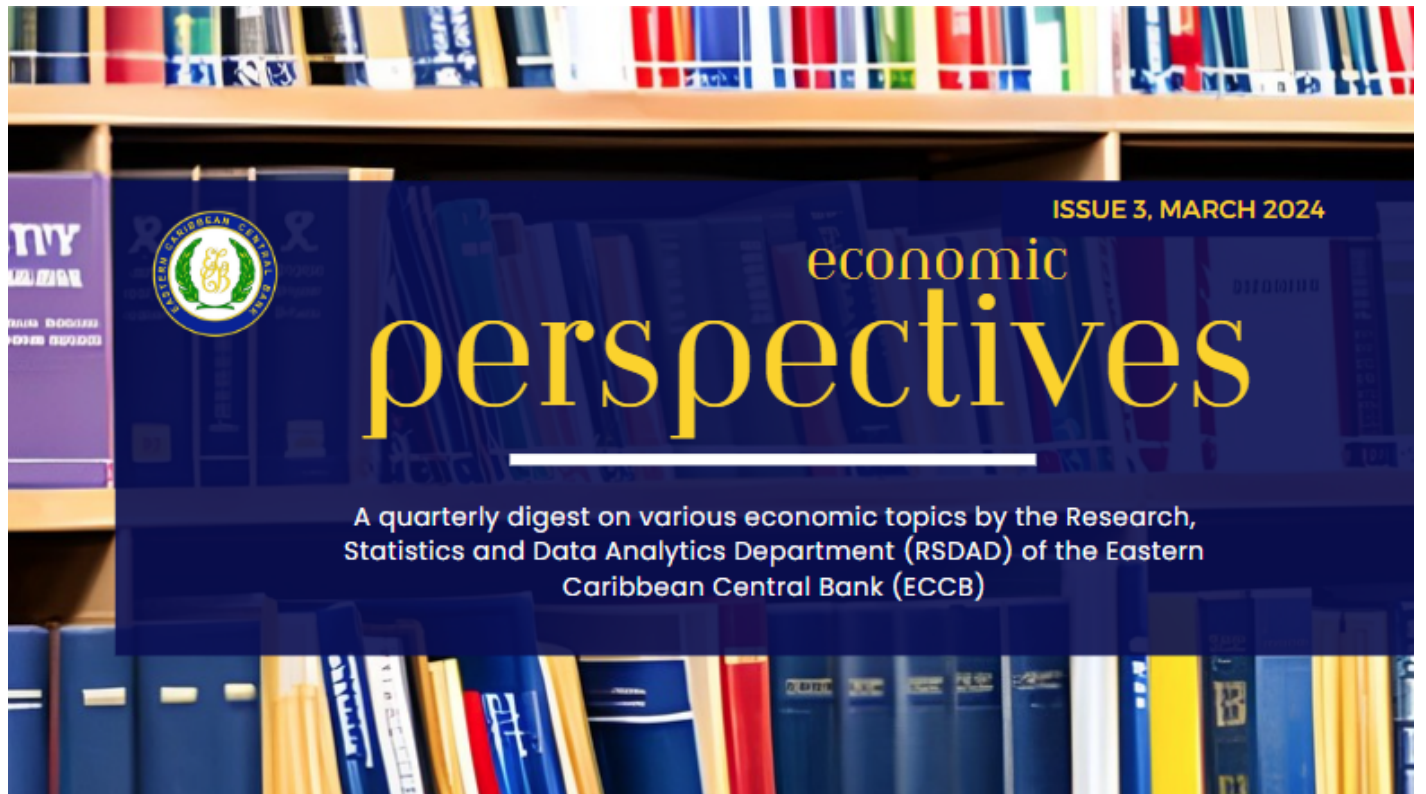# economic
perspectives

A QUARTERLY BULLETIN ON ECONOMIC TOPICS BY THE RESEARCH, STATISTICS AND DATA ANALYTICS DEPARTMENT OF THE ECCB

EASTERN CARIBBEAN
CENTRAL BANK

Contents

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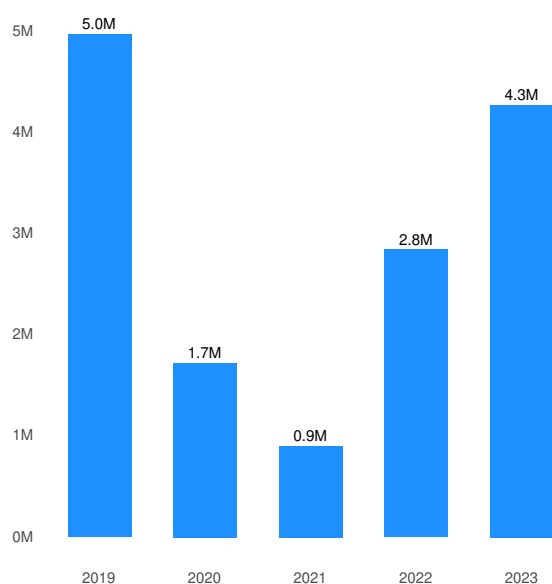✉ rsdad@eccb-centralbank.org

Regional Economic Activity in 2023

Sunset cruises and cool island breezes are synonymous with Caribbean vacations, and this was certainly the case in 2023. The ECCB released estimates of annual Gross Domestic Product for 2023, which revealed that the regional economy continued its recovery from the COVID-19 pandemic, supported by a momentum in tourism-related activi-

ties. The region welcomed 4,274,209 visitors, which contributed to an 11.7 per cent growth in the Hotels and Restaurants sector This sector exhibited remarkable post-pandemic recovery with real value added surpassing its (2019) pre-pandemic level by 4.8 per cent. The strong growth experienced in the Hotels and Restaurants sector bolstered overall real GDP, which rose by 4.3 per cent in 2023.

Figure 1: Total Visitor Arrivals to the ECCU

Source: ECCB

key services included Transport, Storage and Communications; Real Estate, Renting and Business Activities; Wholesale and Retail Trade; and Construction sectors, which accounted for 60.5 per cent of total real GDP in the ECCU in 2023 (Figure 2). The dominance of the services-related sectors was reflected across most ECCU member countries, with the exceptions of Montserrat and Grenada.

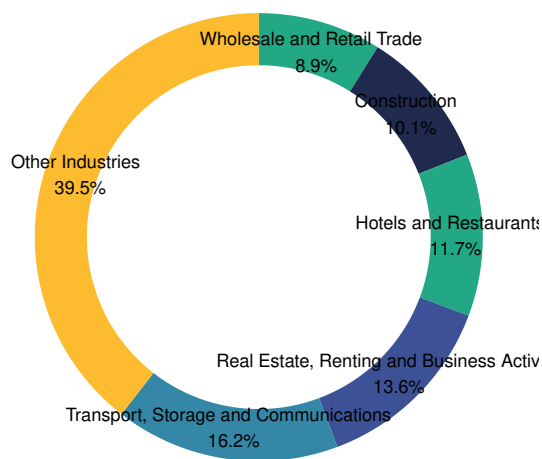**Figure 2: Major Contributors to ECCU GDP**

Source: ECCB

Although the pace of recovery across source markets was uneven in 2023, more visitor arrivals were recorded from all major markets, with the exception of the United Kingdom. Data show a staggering 50.2 per cent increase in total visitor arrivals, over 2022, which represented a rebound of 85.9 per cent of the 2019 pre-COVID-19 arrivals. Stayover arrivals to the region registered an even stronger recovery, reaching 92.8 per cent of its 2019 levels.

The momentum in the Hotels and Restaurants sector supported strong demand for other services both in terms of contribution and overall expansion. The

The growth recorded in the ECCU in 2023 reflected economic expansions in all member countries, with Anguilla, Montserrat and Saint Vincent and the Grenadines recording the highest growth rates in the region (Figure 3).

Figure 3: Real GDP Growth Rates in 202 by Country (%)

Country	
Anguilla	
Monsterrat	
Saint Vincent and the Grenadines	
Commonwealth of Dominica	
Antigua and Barbuda	
Grenada	
Saint Lucia	
Saint Christopher and Nevis	
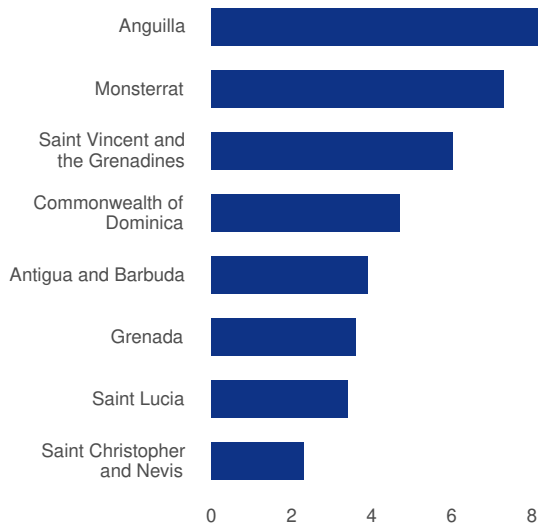
Source: ECCB

Food and Energy

Despite these encouraging developments, there are some areas which may require ongoing policy surveillance. In particular, food security continues to be a concern in the ECCU. In 2023, the agriculture, livestock, and forestry industry experienced a decline of 12.9 per cent. This was due to adverse weather conditions, plant diseases (particularly in bananas and plantain), and higher cost of inputs. Notably, the value of food imports increased by 8.7 per cent in 2023, which require added impetus by member countries in achieving the CARICOM food import bill target.
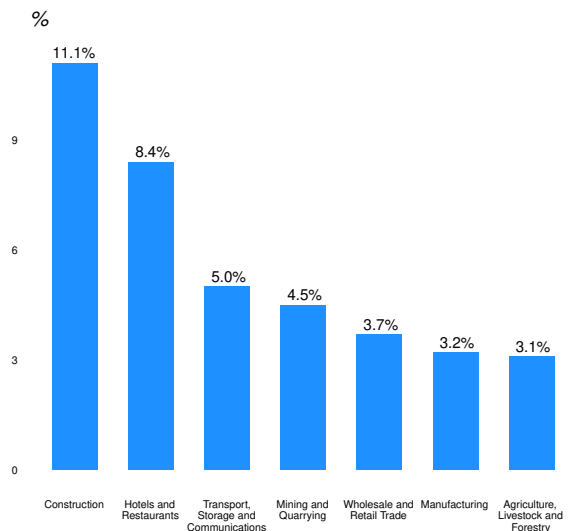
Meanwhile, there was a general deceleration in the price level (change in the GDP deflator) from 3.2 per cent in 2022 to 2.6 per cent in 2023. The reduction in global oil prices contributed favourably to the reduced costs of electricity, gasoline, diesel, and liquefied petroleum gas (LPG).

What's in Store for 2024?

As the region continues to ride the wave of post-

pandemic recovery, real GDP growth of 5.2 per cent has been forecast for 2024. Growth is forecast for all industries, with the construction industry leading the way (see Figure 4), owing to the implementation of major private and public sector projects across various member countries. These include the Kingstown Port Modernisation Project in Saint Vincent and the Grenadines, the Dominica International Airport project and the Hewanorra International Airport Redevelopment Project in Saint Lucia. Several private sector construction initiatives are also expected to drive growth in 2024, including several hotel and residential projects.

Figure 4: 2024 GDP Sectoral Growth Drivers

%

Sector	Growth
Construction	11.1%
Hotels and Restaurants	8.4%
Transport, Storage and Communications	5.0%
Mining and Quarrying	4.5%
Wholesale and Retail Trade	3.7%
Manufacturing	3.2%
Agriculture, Livestock and Forestry	3.1%

Source: ECCB

Caution, Captain!

While the economic outlook for the region is promising, there are some downside risks. Global growth may slow, as geo-political tensions heighten and global supply chain disruptions re-emerge in light of recent conflicts in the Middle East.

Air connectivity has improved in several member countries. This is expected to benefit regional

and international arrivals. While the region witnessed the withdrawal of LIAT from the market, InterCaribbean Airways, Caribbean Airlines, and WINAIR may help to fill this void. These developments are expected to positively impact travel from within and outside of the region and contribute to a full recovery in arrivals in 2024.

Several member governments have introduced increases in the minimum wage in 2024, which would assist in addressing price increases in recent years. The COVID-19 pandemic reminded us of the region's vulnerability to exogenous shocks and natural disasters. Going forward, more prudent spending and investment are encouraged, by accelerating domestic resource mobilization and rebuilding fiscal buffers (IMF). These would help member countries strengthen resilience to shocks amid rising challenges.

World Economic Outlook (WEO)

The International Monetary Fund (IMF) released its flagship World Economic Outlook (WEO), in April 2024. The report provided an economic assessment for the global economy for the short term to medium term. While the IMF upgraded its expectations for global economic growth to 3.2 per cent for 2024, the Fund warned that the outlook remained cautious, in light of persistent inflation and geopolitical risks. The Fund warned that policymakers should take greater steps toward economic resilience including improving government finances and stimulating greater options for economic growth. Some general concerns noted by the IMF in its April 2024 report included: geo-political tensions, including conflict in the Middle East, low productivity, stubborn inflation, growing global in-

equality, and the need to improve the fiscal situation for highly-indebted countries.

Introducing a Model for ECCB's Backing Ratio

This article is an abridged version of a research paper written by Senior Economist, Mr Kareem Martin in June 2023.

The ECCB operates as a quasi-currency board arrangement. Its prime objective is to preserve the external value of the domestic currency at the fixed parity to the U.S. dollar. Consequently, it is required to hold foreign exchange reserves equivalent of at least sixty (60) per cent of the value of the currency issued (backing ratio). The backing ratio is therefore critical to the maintenance of the credibility of the arrangement.

A Model for the Backing ratio

This article presents a summary of a research paper written by Senior Economist, Mr Kareem Martin of the RSDAD with respect to the ECCB backing ratio. It introduces an econometric model which seeks to explain the ECCB backing ratio as a function of multiple covariates. The model was developed using multiple regression analysis to explain the variability in the backing ratio. In this framework, the backing ratio is a function of the following:

1. **URL**: the level of unrealized gains or losses to value of marketable securities.

2. **ADV**: government advances as a percentage of total foreign assets.

3. **Inflation**: the monthly annualized change in US inflation.

4. **Tightening Cycle**: the current interest rate regime.

5. **Recession**: to capture periods of economic downturns.

6. **Interaction Term**: the URL during stressed periods.

Based on the model results, the above variables were found to be statistically significant. Specifically, it focuses on the URL (unrealized loss ratio) which is intended to be the foundation for the Bank's institutional stop loss and risk thresholds. It had a combined impact such that a unit increase in the URL resulted in a 0.8% increase in the backing ratio. However, it was not the most influential variable in the model.

Upon decomposition of the variance contributions of the variables individually, the follow results are obtained:

Table 1: Explained Variance

Variable	Explained (%)
URL	7.8
Interest rate regime	2.2
Stressed "URL"	11.7
Monetary Operations	65.1
Inflation	4.0
Recession	9.1
Total	100.0

Based on table 1, it is observed that the monetary

operations (credit to governments) accounts for 65 per cent of the explained variance in the model. This was followed by the variables related to the unrealized losses (URL) together account for 20% of the R-squared. Thus, during tightening cycles as much as 87 per cent of the explained variance in the backing ratio can be attributed to the unrealized losses and credit extended to governments. This is useful information given that the Bank has greater propensity to influence these variables.

Predictiveness of the Model
Notably, the model predicts the backing ratio both in and out-of-sample with good accuracy. A MAPE less than 2 per cent is obtained for a 5-month forecast horizon. In addition, the actual observed backing ratio falls well within our 95 per cent and 80 per cent prediction intervals. Based on these findings, the authors believe that the model would make a useful addition for sensitivity analysis, stress testing, and policy formulation.
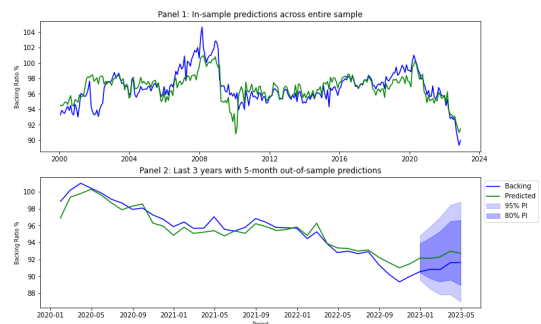

Probability analysis and risk thresholds
From the analysis, it has been found that a relationship exists between the backing ratio and unrealized losses, such that, low levels of the URL tend to correspond with low levels of the backing ratio. In this regard, the probability of these incidences are observed using historical observations. The focus in the research was on the unrealized losses since it is

directly related to the management of the foreign reserves portfolio and also can be used to quantify the bank's tolerance for investment losses. From the analysis, the probability that the backing ratio is in the hazard zone can be estimated given that the URL has reached certain thresholds. Here, interest is in the conditional probability, which is the likelihood of some event occurring given that an earlier event has already occurred. The hazard zone is set to be a backing ratio of [90 >hazard zone ≤93]. This allows for an in-built risk buffer in the presence of excessive volatility. The thresholds in question being the URL at -1, -1.5, -2, and -2.5 standard deviations; mimicking a progressive transition into the left tail.

The probability of the backing ratio trending into the hazard zone increases precipitously as each threshold is breached. In fact, from the probability analysis it was observed that tail risk quadrupled during periods of market turbulence. A downward revision of the thresholds to align with the -1, -1.5, and -2 SD regions of the URL distribution is recommended. This would mean an amendment of the early warning signals to green: -1.20%, amber: -2.15%, and red: -3.10%.
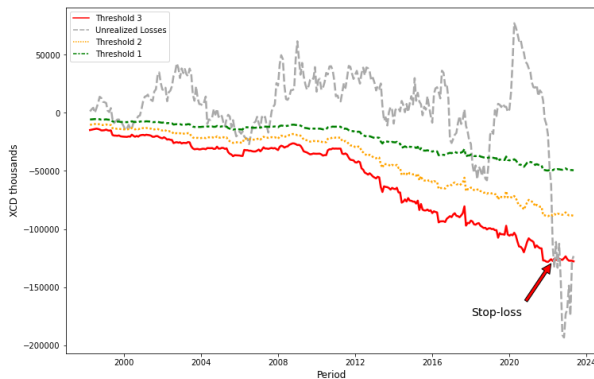
Further, an institutional trailing stop-loss is set to the lower bound of the URL or 3.1% in absolute

terms. Chart 2 shows the trend in the stop-losses over time.

As a point of integration and interoperability. The expected shortfall estimates obtained during the strategic asset allocation (SAA) process can be used as inputs for projecting the trailing stop-loss over a desired horizon. Predictions and probabilities can then be approximated regarding possible breaches over the investment horizon. This should be done under multiple market, economic, and internal operating scenarios.

Concluding remarks

In the paper, a multiple linear regression model was developed to explain the variance in the bank's backing ratio. The model performed reasonably well, explaining about 60% of the variance in the backing ratio and producing quite accurate predictions on both training and test data. It was also observed that credit extended to governments, the URL, and interest rate cycles were the most important regressors in the model. Combined, these explained over 85% of the model's coefficient of determination.

These findings are useful and would be instrumental in strategic planning and policy formulation within the Bank going forward.

Payment Habits in the ECCU

An important function of the financial sector is to provide sound avenues for households and businesses to make and receive payments through a

well-functioning payment system. It includes several payment instruments including cash, cards, cheques electronic funds transfers (EFTs), and other arrangements that ensure that funds move from accounts at one financial institution to another. This payment architecture is essential to support commerce and facilitate overall economic activity.

The ECCB plays a critical role in the payments system by providing the means to facilitate the settlement of wholesale and retail transactions as part of its overall mandate of promoting the safety and stability of the regional financial system. One of the Bank's key objectives is the modernization of the regional payments system. Within this broad objective, the ECCB is developing a robust legislative framework as well as enhancing payment system oversight within the region which would facilitate new service providers of digital payments and payment instruments. The new legislative framework will include inter alia, the enactment of the Payment System and Services Bill (PSSB) and the introduction of a Data Protection and Privacy Bill.

Over the past few decades, there have seen sweeping changes in payment systems worldwide. New payment methods and interfaces have been introduced and many more systems are ongoing (Bank for International Settlements, 2020). These forms of payments have included debit and credit cards, mobile wallets such as Apple Pay, instant payments and central bank digital payments (CBDC's). These cashless payments could potentially revolutionize financial transactions in the near and long-term.

As these new forms of payment have been introduced, it is important to assess the degree of use of various payment methods within the ECCU to en-

sure that payment needs are being met. The Bank conducted its first Financial Literacy and Inclusion Survey in 2022. In addition to assessing financial literacy and knowledge, the survey also assessed the extent to which various forms of payment are being used among the population.

The key findings of the survey concerning payment methods are depicted in Figure 7 below.

Figure 7: Payment Methods and Cash Use in the ECCU

Results by country

Source: ECCU Financial Literacy and Inclusion Survey
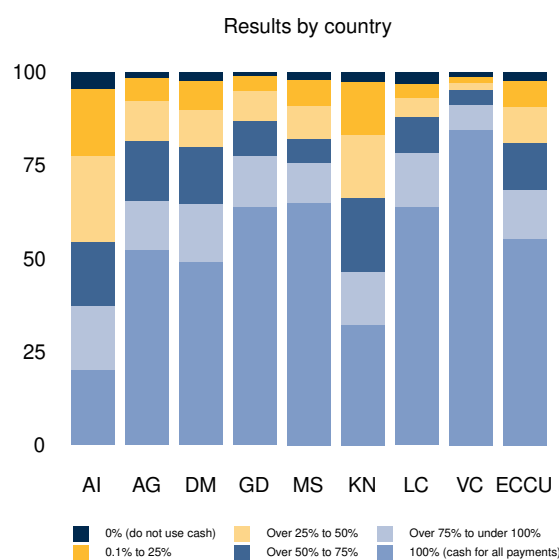
A review of the survey data found that although residents and citizens in the ECCU are gradually moving towards new forms of payment, cash was the most frequently used form of payment in the region. Based on the survey findings, a little more than half (approximately 55.3 per cent) of respondents across the region still use cash exclusively for making payments. This average masks differences across member countries.

The largest cash users across the eight member countries were St Vincent and the Grenadines (84.5 per cent), Grenada (63.7 per cent) and Saint Lucia

(63.7 per cent). In contrast, member countries with the lowest cash use were Anguilla (20 per cent), Saint Christopher (St Kitts) and Nevis (32.2 per cent) and Commonwealth of Dominica (49.0 per cent).

Only a small proportion of those surveyed no longer used cash for making payments, at 2.3 per cent at the regional level. Across member countries, the degree of non-cash use ranged from a high of 4.4 per cent in Anguilla to a low of 1.2 per cent in Grenada.

The survey findings provide valuable insights into the payment habits of citizens and residents within the ECCU. Notably, across the region, both cash and non-cash forms of payment are being used by consumers. One of the key takeaways from the survey is that although there has been a shift towards electronic payment methods in the region, cash remained a significant form of payment among residents. However, it is expected that as more non-cash payment options become available by businesses and new forms of payments are introduced, that the share of cash use will decline over time.

For greater insights on financial literacy in the ECCU, visit our website to read the Financial Literacy and Financial Inclusion survey report.

Book Review: The Elusive Quest for Growth

Amid increasing global risks, developing countries including those in the ECCU member continue to be confronted by a myriad of challenges, including the effects of climate change, limited fiscal space and

fossil fuel dependence. While the the member countries have made significant strides in their growth and development, their development paths have not been linear. Accordingly, young economists at the ECCB sought to explore, through the work of several economic scholars, 'why have the efforts of many developing countries not achieved significant success?'
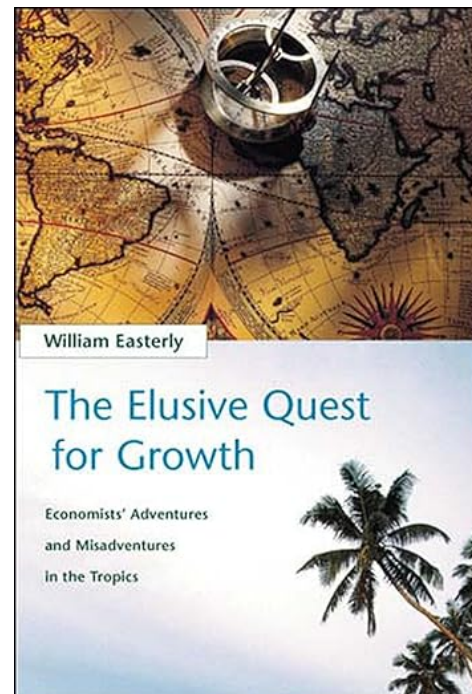
In the book The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics, William Easterly seeks to explain why the attempts of economists to help poorer countries to grow have not achieved significant success. While the book was written more than two decades ago, its lessons still resonate with many economists as it highlighted some key fallacies within the profession.

William Easterly explains, with several useful case studies from across multiple countries, many of the theoretical solutions which have been advanced by

economists and International Financial Institutions (IFIs) to pursue economic growth in poor countries. The book chronicles over 60 years of relatively unsuccessful attempts to generate economic growth in poor countries. These remedies focused on capital accumulation, the education revolution, as well as the use of foreign aid and adjustment lending. Interestingly, some of these challenges continue to plague developing countries today.

Applications for the ECCU and Other Developing Countries

Many developing countries, including member countries of the Eastern Caribbean Currency Union (ECCU), depend heavily on capital accumulation through Foreign Direct Investment (FDI) to generate growth. However, the book highlighted that capital accumulation does not contribute to long-run growth; especially considering political disruptions, weak institutional arrangements, and underdeveloped infrastructure. While the author noted that capital accumulation is useful to an economy for short-term growth and for fostering growth to an economy in transition, it encourages a cycle of dependence on externally-sourced funding to spur growth. In recent years, many ECCU member governments developed a lucrative Citizenship by Investment (CBI) Programme, which has helped countries fund resilient projects to spur growth. However, the lessons from Easterly's book suggest that investment should continue to be productively used while also building on other areas of revenue to mitigate future risks.

Another policy, which was espoused by economists and failed to realize success, according to Easterly, was the use of adjustment lending. During the 1980s, the World Bank and IMF supported adjustment lending - loans at concessional rates and specific conditions designed to achieve economic growth. Fast-forward 50 years, member countries continue to depend on external borrowing, including for budget support, which could be a worrisome trend if not appropriately managed. In addition, the author highlighted the importance of developing appropriate governance framework to maximise the economic benefits from this lending. Over a 22-year period, the annual average growth of the ECCU debt stock was 4.6 per cent and the average share of debt-to-GDP was 77.6 per cent. Although the stock of external debt at the regional has varied over time, external debt still accounted for approximately 40 per cent of outstanding public sector debt as at end 2022. In light of these developments, the proponents of adjustment lending would have projected a higher rate of growth, yet the ECCU's annual average GDP growth was 4.3 per cent over this period.

The book also highlighted the education revolution, which many countries have explored to spur economic growth. According to Easterly, there was limited correlation between education and growth. Instead, Easterly espoused that the education revolution often resulted in brain drain. Indeed, this challenge has persisted even today in many developing countries including in the ECCU. This has been fueled by three realities: excess supply of graduates over demand; relatively low wages in developing countries relative to advanced economies and better opportunities in advanced countries for skills application.

In conclusion, the author explored several policies

which have been advanced by economists and IFIs to achieve economic growth in poor countries over a six-decade period. Easterly reminds readers, particularly economists and policy-makers, that the challenges faced by developing countries, including member countries of the ECCU, are often not solved by theories, but are complex and multifaceted issues that require careful consideration and practical problem-solving.

Take Our Poll | Effects of Inflation

Inflation has been a global concern in recent years, causing prices across many categories of goods and services to increase. The increase in prices began following the pandemic and has been exacerbated by geopolitical tensions and global supply chain challenges. Although inflation peaked in 2022, and is now decelerating, there are concerns that inflation may re-emerge given the ongoing conflicts in the Middle East.

Against this background, the Bank is initiating research on how price increases have impacted consumer behaviour both at the macro and micro levels. Understanding the effects of price increases on consumer behaviour begins with having pertinent and timely data. Accordingly, as has been explored in previous issues of the Perspectives Newsletter, a poll is being conducted to gather data on the subject, while additional research is being conducted to provide a macroeconomic perspective.

Theoretically, rising inflation can have significant effects on consumer spending habits, as it often reduces the spending power of consumers. As prices rise, individuals have less discretionary income and tend to spend less on certain products or may opt for cheaper alternatives. This poll seeks to understand the effects of high prices on consumer behaviour in 2023 by asking 'Have higher prices affected how you shop, the brands you choose or how you save?'

Please click on the link below to take the survey.

Take the Survey

Economics 101: Machine Learning

The *Economics 101 column presents everyday economic concepts to facilitate general audience understanding.*

Have you ever wondered how platforms such as Netflix, Amazon and YouTube are so attuned to your preferences through their suggestions and recommendations? These applications have one thing in common – they all make extensive use of machine learning techniques.

Machine learning recommendation algorithms are at the core of these platforms. By utilizing machine learning, platforms such as Netflix, provide their subscribers with personalized suggestions to reduce the amount of time and frustration on finding useful

content to watch.

Machine learning is a subset of artificial intelligence (AI) which allows computers and applications to improve their performance on a specific task by learning from data which is fed to it, but without being explicitly programmed. Machine learning algorithms use a vast amount of data to learn about patterns and relationships in the data, and then use that expansive knowledge to make predictions or take decisions based on that data.
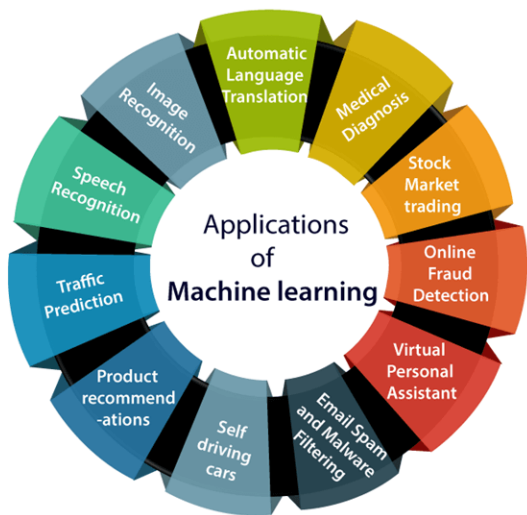
Data is the foundation for machine learning. Algorithms learn from historical data to identify patterns, trends, and relationships. Thousands of data points are fed into the applications while adjusting their parameters to minimize errors and improve accuracy. Once the application has been trained, a machine learning model can make predictions or decisions on new, unseen data based on the patterns it has detected from the data which it was fed.

Using Netflix as an example, machine learning can be better explained Through machine learning, Netflix, as one of the most popular Internet streaming services, identifies (learns) the patterns from its over 160 million members, by gathering data on the content that users watch and enjoy, as well as how they interact with the service to help determine the preferences of other users.

Machine Learning Increasingly Used in Economic Research and Forecasting

Besides YouTube and Netflix, machine learning has many potential applications and is being used in many different fields to solve complex problems and make better decisions using data. Machine learning is increasingly being used by central banks in economic research and in making predictions. Machine learning models are used to improve prediction problems and handle increasingly large datasets by providing critical insights to assess market outcomes.

According to the Bank of Canada, the size and complexity of economic data are increasing rapidly as more digital information becomes available with the increasing use of technology. Accordingly, machine learning models have improved economic research and analysis by helping economists and data analysts to process non-traditional forms of data, such as texts, audio, and videos, which could help improve the accuracy of predictions or extract new information.

Machine Learning algorithms can estimate future outcomes based on past data. Based on the trends and patterns in the historical data, machine learning algorithms can be used to make assumptions about the occurrence or non-occurrence of a certain event in the future. For example, researchers at the ECCB have used machine learning to forecast stayover arrivals for Antigua and Barbuda. The paper found that the inclusion of Google search data improved estimation results over the sample period

for the United Kingdom (UK) source market. Going forward, Economists at the ECCB are expected to explore this technique to enhance their predictions.

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