



24th Sir Arthur Lewis Memorial Lecture

Sir Cecil Jacobs Auditorium
ECCB Headquarters, St Kitts and Nevis
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About the Lecturer



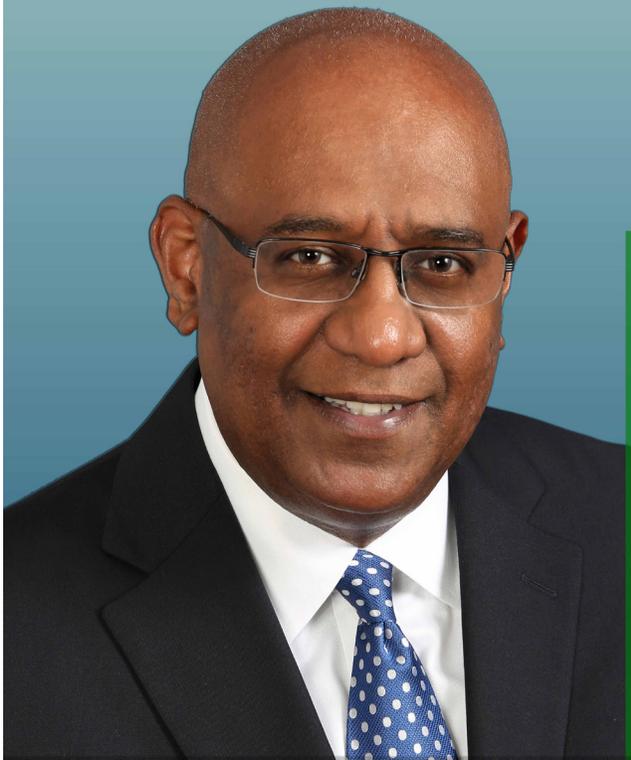
Mr Cecil Allan St Jules has over 25 years of experience in the banking and securities industry and has played a leading role in process management, automation, risk management and general organisation management. St Jules has led in several capacities including, the reconciliation effort of the multi trillion dollar Bond Clearing and repo settlement process post the events of September 11 2001 when the communications infrastructure collapsed and triggered major challenges in US Bond Market Clearance and settlement operations. His most recent role as an independent

partner is with a technology firm, that is an IBM Watson partner, to assist with developing the business model for a white label audit automation project for a US national audit firm. He has also been invited to join the Advisory Board of the FinTech firm, Emerging Market Technology (EMTECH). This Blockchain start-up company specialises in modernising central bank payment systems with a particular focus on emerging markets.

St Jules, Saint Lucian born, earned an MBA and a Bachelor's of Arts Degree in Economics from Howard University and serves in volunteer advisory capacities at several organisations focused on Caribbean related issues.



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Lecturer
Cecil St Jules
Banking Professional

Confronting the Fourth Industrial Revolution

Confronting the Fourth Industrial Revolution

Good Evening. It is indeed a pleasure to be invited here today to deliver this lecture. My deepest thanks to Governor Antoine and Deputy Governor Braithwaite for the opportunity.

Sir Arthur Lewis, born in Saint Lucia and having given birth to a whole branch of Economics called Development Economics was granted the Nobel prize in Economics along with George Schultze in 1979 for the body of his work. After spending time lecturing at the University of Manchester and laying the foundations for the Caribbean Development Bank and the University of the West Indies Arthur Lewis was getting the recognition that he belonged in the halls of greatness alongside Adam Smith, John Stuart Mill, Milton Friedman and John Maynard Keynes.

A year and a half later, a young Lucian entering Howard University in Washington DC would declare his major as Economics. Coincidence, perhaps not. Several years later that decision would eventually lead me to Wall Street into the heart of the Securities Industry with the organization that became the dominant leader in the market. Into the very core of the Funding markets for US Government debt, Mortgage Backed Securities, Agency Securities and ultimately into Global Collateral Management. It was a decision that led to a front seat view of the development of what is referred to as the Shadow Banking System, the near unravelling of the Financial System in 2008 and the painstaking recovery that the Federal Reserve

Bank had to implement after that. My perspective therefore comes from being on the frontline of implementation and execution in the market, not the classroom, Regulatory Agency or Government. It was a ringside view as firms complied with regulators who were still trying to assess the scope of the problem, implementing solutions without bankrupting firms and at the same time minimize the political criticism that would inevitably result from whatever policy decisions taken.

It was routine to manage a collateral pool of almost \$ 3 billion and manage reconciliations of over \$ 4 trillion. Technology and automation work wonders.

I entered the Securities Industry on Wall Street as a freshly minted MBA at a time when the Money Center of lower Manhattan buzzed with names like Smith Barney, First Boston, Salomon Brothers, Drexel Burnham and Kidder Peabody. I could not begin to even fathom the journey I was about to embark on. The journey that would go on to lead me to witness very closely the explosive growth of securitized assets. The development of the tri-party repo product as my colleagues developed the technological underpinning and launched the product. A whole new world of repo trading and Securities Lending Industry was about to be developed.

Times have changed. More controls on trading have been implemented. Derivatives have gone on exchanges and trades do have an amount of collateralization. Out of this era has emerges new standards of governance. New standards of corporate social responsibility and the emerging area of Environmental, Social and Governance (ESG) related funding.

The repo world has been central to the funding of US treasury debt. Broker Dealers purchased massive amounts of securities issued by the Treasury that were considered risk free. As a result, funding of those securities from a network of Pension Funds, Mutual Funds, Insurance companies etc. was a very academic process. The introduction of Mortgage backed securities on the Fedwire led to a vast expansion of the pool of collateral available for tri-party repos. At that time because of the implied guarantee of the Treasury these securities were generally considered to be risk free as well although a bit lower on the food scale. More and more esoteric securities were layered on top of the valuation of basic securities. This to the point where the established pricing and ratings firms left the valuation responsibility to specialized firms. Massive amounts of collateral whipped around the world in seconds and firms with global reach were able to have a unified view of their collateral positions across the US, EMEA and APAC and be able to manage that position efficiently with the minimum financing requirements.

The extent to which alternative funding mechanisms were no longer alternative but central to the funding of the basic foundations of the markets may have come as a surprise to regulators. The market had clearly progressed ahead of the regulator and the time to tame the beast was here.

I give this context in order to see that the financial underpinning of the Global markets was vastly different from when Sir Arthur Lewis wrote his seminal prescription on how developing economies should escape cycles of underdevelopment and transition to a higher sustained level of development.

Sir Arthur Lewis remains the preeminent Development Economist. He led the emergence of the field of Development Economics at a time when economic debate was concerned with Keynesian philosophy vs Classical thinking. Sir Arthur presented a credible model for economic development in the parts of the empire referred to and thought of as the back waters, the periphery. He presented a model that made a convincing case for some level of protectionism while a gradual transition was made from an Agrarian economy into an Industrialized economy with higher wages and sustainable modern infrastructure.¹

At that time the Western world had gone through two Industrial Revolutions. The First Industrial Revolution centered around Great Britain in the late 18th Century with the mechanization of textile production and those techniques being applied to other manufacturing.

Key to those developments were changes in the Banking Systems and the underlying production of Power. Similarly, credit and currency took on a very different role as a catalyst to the growth. The expansion of credit was coming of age. Long distance transportation was by steam engine powered trains.

The Second Industrial Revolution accompanied the development of electricity and further advances in mass production. At that time advances in the Internal combustion engine, glass and rubber production and the extension of National and State Highway systems in North America and Western Europe led to a growth that eventually saw the development of suburbs on the outside of the cities that

¹ W.A Lewis: Economic Development with Unlimited Supplies of Labour. (1954)

previously came into ascendancy in the first wave of Industrialization. Long distance travel by rail with powerful diesel locomotives became the norm. Power generation became standardized around the AC model. Companies that previously had to generate their own electricity to power their factories and offices now were able to focus completely on what they did best. In 1905 there were 50,000 individual power plants in the United States. These were mostly owned by businesses where their main business was not power generation. Today there are approximately 2,300.

Sir Arthur Lewis and the Periphery

Those were the lens through which Sir Arthur Lewis saw the salvation of the Periphery. How do you transition those rural parts of the empire from a backwater status into being high value parts of the World Economy? How do you develop an economic plan that Policy Makers would adopt and implement as a way to lift vast populations out of poverty? This was the question that consumed his mind back in those days in Manchester. At that time many countries on the edges of the British Empire suffered from low economic growth, high levels of poverty and generally low levels of socioeconomic development. The challenge was: What was the shortest path to an improved state of livelihood in those colonies? Back then it was generally agreed that the desirable end state of any economy was a certain level of industrialization. Men would tread to a factory and work an hourly wage producing a product that the factory would sell on either the local or if fortunate the world market. The path to get to that state was often proposed as allowing the nascent industries to incubate behind a protectionist wall and develop a level of “Import substitution” products in order to be allowed to flourish.

Sir Arthur proposed that given the vast amount of labor that existed in those societies that it should be possible to make that transition to an Industrial Economy without the marginal cost of labor increasing as one would expect in classical economics. Several factors would drive that surplus pool of labor:

1. Women would enter the work force
2. Increased mechanization would free labor
3. Disguised unemployment hid excess labor on many family-owned agricultural plots.

Therefore, the migration from countryside to town would not hamper agricultural production. That the path to our development was the acceleration of the urbanization already in place.

This migration has continued and has contributed to unplanned housing developments, overstretched educational and health facilities as well as uneven distribution. Since in the Caribbean urban living was often portrayed as culturally superior to a rural lifestyle, we have developed pools of poverty surrounding many of the Caribbean cities. Urban living carried with it the benefits of night life, entertainment, electricity, a regular paycheck and pension and of course indoor plumbing. The resulting squatting on public lands in and around the major cities have gone on to make urban planning a nightmare for policy makers as requirements to convert to modern road and telecommunications infrastructure became a necessity of modern Caribbean life. In times of tight budgets urban planning often became an afterthought. Squatting contributed to the lack of title/collateral that prevented the squatters from monetizing the value of the

properties on which their houses sat. They could not walk into a Bank or Financing Institution in order to get a loan to start a business as small it may be. This combined with the risk aversion and some will argue, an educational bias against entrepreneurship conspired to continue the cycles of poverty and malaise.

The Third Industrial Revolution was driven by the underlying improvements in Digital communications technology, the expansion of the internet and the ascendancy of the handheld device. The World Wide Web became a generic storefront and platforms that brought buyers and sellers together became the preferred channel for commerce.

Hence the likes of:

- Amazon
- Apple's iTunes and App Market
- Alibaba
- Dating sites
- Google/Alphabet
- Salesforce
- Asset Management Companies like Etrade, Ameritrade

Indeed, Asset management companies presented themselves as marketplaces to trade in stocks, bonds and mutual funds. Improvements in computing technology opened new markets. Again, business models continued to evolve and businesses that were viable in previous decades were rapidly becoming obsolete. Gone were the purveyors of CD and vinyl records, camera film and in came e-commerce on a large scale. Analytic power, data visualization enabled consumers to make quick

decisions based on data presented on a handheld machine. The overriding change was the importance of mobility. Again, business models changed to accommodate the new normal. Companies found that they had too much real estate and collaborative workspaces and a more relaxed work culture became the norm.

I paint this picture to show that Caribbean business culture is not immune to these mega changes. Companies that invest in our Eastern Caribbean expect a similar business culture in order to have unified policy and standards. Caribbean businesses that want to compete internationally must be up to international standards.

So now as we stand at the dawn of the Fourth Industrial Revolution the challenge is to harness the global trends to our advantage and attain the dream of Sir Arthur Lewis. Huge changes in business process are unfolding at a rapid pace. The need for education, talent and creativity is ever more apparent. Caribbean youth should be on an equal platform with youth from any part of the developed world in driving innovation and new business models.

These are some of the major changes that are shifting how businesses are run:

- Distributed Power generation/Renewables/Solar
- Digital Transformation/Cloud 2.0
- Millennial Thinking – Shared Economy
- Environmental, Compliance and Governance standards implications on cost of capital
- Blockchain technology

- Robotics/Artificial Intelligence/Machine Learning
- Rapid Scalability
- Centralized Policy Control

Newer technologies are making Solar Power generation much more efficient and there has been significant growth in that market ².

In the United States in 2012 a total of 17 billion kWh of solar power was generated. By 2018 that number had jumped to 96 billion kWh. In July of 2019 a total of 12 billion kWhs was generated based on solar power. This is almost the entire total that was generated in 2012. We are in a region of unlimited solar power while we pay rates that are three times the US average for power. We portray sun and sea purely as tourism attributes and leave behind development of solar power and the blue economy.

As the Cloud 2.0 era unfolds companies are changing their processes to be completely free of managing data centers. In much the same way that companies shed their power plants at the turn of the last century as power generation became commoditized now computing power is being commoditized. Many companies are rapidly transforming their operating model to be completely cloud based and using computing as a service.

² https://www.eia.gov/totalenergy/data/monthly/pdf/sec10_10.pdf

There is increasing use of AI to read through vast amounts of data and structure it in ways that make sense for analytical and decision support. Vast amounts of data from multiple sources can be combined and structured. The changes are quickly affecting many professional services from Legal to Accounting. Then once a process works the speed at which it can be scaled is often surprising to the uninitiated. Thus, companies go from zero to a billion-dollar valuation in the blink of an eye. This has been repeated over and over.

Along with the psychological drive causing the growth in the sharing economy is a drive by this generation to create new types of companies. There is also an emerging preference for firms that specialize in what is referred to as the ESG market. Environment, Social and Governance. Driving that change most of all are women and millennials. There is widespread expectation that this will accelerate as millennials inherit more wealth and have more say in the deployment of investment funds. Models have been developed for incorporating ESG data into investment decisions and more firms are getting into supplying ESG data.³ The implication for us in this region is that there is a more sympathetic ear for business projects that are rooted in environment sustainability and governance. It is left to us to identify the projects and present the business case.

³ Investment and Wealth Monitor Jul/Aug 2019: "ESG Data Drives Demand for Sustainable and Impact Investing" by Jeff Gitterman and Paul Ellis JD.

Supervision and Guidance

Blockchain technology is rapidly evolving to effect transactions between two parties who may not necessarily have a trusted relationship. Many companies are exploring payments possibilities. We have entered a world of ‘stable coin’ whereby the issued digital currency is 100% backed by fiat. In March 2018 the Bank for International Settlements published guidance for Central Bank digital currencies⁴. The Basel regulator recognized the emergence of the technology and took a tepid step to recognition of the possibilities that Central Bank Backed Blockchain currency brought to the table.

However, perhaps because of the ambivalence of the March guidance the BIS released a working paper that provided a much clear governance framework for deployment of distributed ledger technology by central banks. In Sept 2019 the Basel Bank released a much more comprehensive guide titled: “Embedded supervision: how to build regulation into blockchain finance:⁵. In that document the Bank acknowledged the benefits in transparency and reporting and laid guidance for embedded supervision that promise to reduce the cost of compliance for small banks.

Then the G7 commissioned a study on stable coin and released four basic pillars of guidance for a centrally backed stable coin⁶.

⁴ <https://www.bis.org/cpmi/publ/d174.htm>

⁵ <https://www.bis.org/publ/work811.pdf>

⁶ <https://www.bis.org/cpmi/speeches/sp190718.htm>

In addition to these guidelines the Financial Action task Force released guidance in June 2019 a document titled: *Guidance for a Risk-Based Approach: Virtual Assets and Virtual Asset Service Providers*⁷. This is a very detailed set of guiding principles relating to the adoption of virtual assets. It lays the framework for governance in the new emerging environment.

The governance models are circulating, and regulators worldwide are keenly observing developments. I cite those three recent developments to show that the International regulators realize the inevitability and that they need to stay engaged in the development and rollout of technology in this brave new world.

Options for the Caribbean

The urgency for modern solutions for the Eastern Caribbean cannot be understated. Cellular phone inclusion is almost universal, yet we continue to have large underserved populations and in person transactions at a financial institution often results in long waits in line and the resulting loss in productivity. One only must look at the tremendous impact of M-Pesa in Kenya to see the extent to which a mobile store of value was able to ease the friction of financial transactions and expanding inclusion.

⁷ <http://www.fatf-gafi.org/media/fatf/documents/recommendations/RBA-VA-VASPs.pdf>

Secondly, the Caribbean is a huge beneficiary of remittances from North America and to a lesser extent Europe. The cost of basic money transfers remains very high. Thirdly, the loss of sovereignty and policy control that would come with an external party establishing digital currency should be huge concern for all policy makers as the region's financial stability is directly related to the stellar management of this institution, the ECCB.

Fourthly, and perhaps the most important reason for adoption of Central Bank backed digital asset is the need for expansion of intra-regional trade and operationalizing the regional single market.

Digital currency conversations should be at the forefront on any development conversation in this region. Models for Regulatory Sandbox have been tried and tested. Moreover, it is important that commercial banks play a part in that evolution. They stand to benefit from unburdening of tenuous correspondent banking relationships that add so much cost to every transaction even for intra-regional money transfers. From a regulatory perspective the benefits relating to money supply management, risk management and compliance monitoring are immediate. Utility in everyday use can go a long way to strengthening public trust in institutions.

Philosophers in the past have said that the only thing that remains constant is change itself. What we have seen is the rate of change is increasing at a blinding pace and old models are being obliterated at a pace unseen before even as new

young loss-making enterprises attain billion-dollar valuation purely on the promise of what is possible.

What becomes obvious is that in order to take advantage of the new rules of the road is that education, creativity and talent becomes the key differentiators. The policy implication for development priorities should be clear. The emerging technologies present enormous opportunities for us in the Eastern Caribbean to substantially leapfrog our economies into modernity. For even while emerging technologies can accelerate obsolescence, they can present solutions to long standing challenges that we face. We cannot pretend that we are immune to the effects of these emerging trends. We must embrace them and structure proper governance and compliance standards in order to unleash the talent and creativity of our people. Very importantly, regulators must adapt to understanding what they are regulating and be a partner to innovative firms when necessary.

The prevalence of social media platform often gives rise to unrealistic expectations. Much like during the earlier part of the internet age the pace at which personal banking and financial services were transforming far outpaced commercial services that ran on old mainframe computers. This digital native generation will demand a level of banking and financial services that we must be prepared to deliver. They will not be affectionately tied to any brands. They will demand best of breed services. The velocity of disruption will only continue to increase as more and more investment dollars plough into FinTech.

The opportunities are there to create new businesses. What this means to us in the Caribbean is that the new environment also means that there are lower barriers to creating wealth. Entrepreneurship must be encouraged. Young companies must be given incubation space to develop and test proof of concept. They must be given a safe incubation space to try new business concepts and fail and refine and try again. Access to global platforms can accelerate obsolescence but they can provide a global marketplace for creative new services.

At the dawn of this new age of Artificial Intelligence, Deep Learning, Blockchain and Modern Power Generation it is worthwhile looking sideways for inspiration at some of the work that other developing nations have undertaken. There is a feeling among many that developing countries should not engage their budgets and capacity on dabbling in those technologies. Those newer technologies provide means to solve existing problems more effectively. What better to do than to be engaged in the development of new technology and have a guiding seat at the table as opposed to becoming a victim of progress.

The following are some examples of some successful businesses that were either started or rolled out in a developing country:

Medical Supplies via Drones in Rwanda

In Rwanda drones manufactured by San Francisco company Zipline are being used to improve medical services.⁸ Drones are being used to deliver medical supplies to

⁸ <https://www.wired.com/story/africas-delivery-drones-are-zipping-past-the-us/>

remote parts of the country. Rwanda is leapfrogging the infrastructure requirements of road, truck, motorcycle and moving to a whole new infrastructure to resolve this basic need. Rwanda has operationalized a national system to deliver critical medical supplies across remote terrain. Medical staff will enter their requirements via an app and then staff at a central storage facility will load the supplies on a drone and launch it within minutes. Thousands of critical medical packages have been delivered, thousands of flights have been flown and thousands of people have been served.

The company uses geospatial technology to track and manage flights. They train local Rwandan engineers and support staff and most importantly spark the imagination of the young people who jostle for position every day to witness the takeoffs and landings of the drones.

Today this startup is ranked # 39 on the 2019 CNBC Disruptor list. The company has raised capital of \$ 225 million and has a valuation of \$ 1.2 billion. While Zipline is a US company, I raise that example to show that business incubation for companies with global potential is not only limited to certain economies.

Micro Utilities Development

Distributed power generation has been on a growth trajectory in many economies. This trend is severely disrupting to established utilities that have a structured operating model with many fossil-fuel powered generating power plants that are on for 24 hours and power entire countries.

Nigeria, a country that is a major oil producer has the less unenviable title as the world's number two market for generators. Nigeria has operational 60 – 70 million generators. An estimated 12 million are in regular use emitting 29 mega-tonnes of Carbon Dioxide per year. A small innovative company, Rensource has developed a business model where they will install solar power generating units and modern lithium battery technology integrated with robust battery management systems to control the power production. The home or store owner pays a competitive monthly fee that will cover power usage. The customer does not bear the risk of obsolescence of equipment since the equipment is owned by Rensource. Rensource then sells the excess energy into the grid. Nigeria has no shortage of sun.

Founder and CEO Ademola Adesina states believes that Nigeria will completely skip the stage of building out a utility-scale solar power solution and head straight into a distributed core infrastructure for power generation. Again, another business model where bypassing an expected development stage and leapfrogging into a new infrastructure makes economic sense.⁹

Closer to home while we busily promote sea and sun as attributes for tourism development our blue economy and solar power generation lags many similar situated areas in the world. Experts estimate that with the sun, wind, geothermal and hydropower resources available the region could be entirely free of fossil fuels. The Caribbean's average cost for residential power generation is \$0.33 per kilowatt

⁹ <https://disrupt-africa.com/2018/01/nigerian-power-as-a-service-startup-resource-raises-3-5m/>

hour (kWh). This is almost three times the US average of \$0.12/kWh. The concerns of the existing utilities with high fixed costs, often aging generation capability and the reduction in revenue from micro utility self-generation must be addressed. They are the ones often saddled with repair costs after a storm.

Resilience and Recovery

We live in a time of increasing difficult challenges relating to weather. Caribbean leaders bemoan the continued of cycles of destruction and rebuilding that add to National Debt at a steady rate. We are expected to experience more and more Category 4 and 5 storms. While the chart from the National Hurricane Center gives the expected damage from wind speeds at the quoted level, what is not stated is the damage from sustained 185 mph winds for 24 hours as The Bahamas suffered from Hurricane Dorian.

Category	Wind Speed (one-minute maximum sustained speed)	Impact
4	130-156 mph	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	157 mph or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Distributed power generation will probably require legislative support and cooperation of the existing monopolies that have been granted certain rights. This is understandable because of the capital commitment that investors had to make in order to get existing facilities up and running.

The regions Parametric Insurance program has been tremendously successful in delivering quick liquidity to regional governments in times of crisis. In the case of Hurricane Dorian, the payment to The Bahamas from the Fund was among the earliest injections of liquidity for that critical post crisis period. A reasonable extension of the concept is to develop insurance products for fishermen and farmers who are among the most vulnerable to the changing climate patterns. Leadership must explore reliable methods to fund these programs and let insurance professionals develop suitable packages to address the need.

There are global markets for many of the solutions that can be brought to market. For example, affordable hurricane resilient housing designs, cloud storage solutions for resilience, emergency self-contained sanitation facilities and new energy solutions to reduce the cost of refrigeration and air conditioning. Additionally, new technology such as distributed ledger provides opportunities for cost sharing through regional implementation of basic records like land title documentation, vehicle registration, health records, etc.

Cloud based technology provides for Software as a Service economies. Advantages include low initial investment, immediate benefits from performance updates and enhancements, compliance updates, simplified reporting requirements, scalable and variable cost model, synchronicity with personal apps and other access channels and most importantly instant recovery if there is ever a need to relocate work location due to emergencies.

United Nations Sustainable Development Goals

Sir Arthur Lewis early work has been built on by countless other economists. The United Nation has established a roadmap for development by adopted sustainable a full framework of guidelines and goals. While this is a departure from the Lewis concept of economic transformation, the UN model considers degradation of the environment and the scarcity of resources. The following are excerpts from the UN goals as published.

UN Sustainable development goals

Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs that stimulate the economy while not harming the environment. Job opportunities and decent working conditions are also required for the whole working age population. There needs to be increased access to financial services to manage incomes, accumulate assets and make productive investments. Increased commitments to trade, banking and agriculture infrastructure will also help increase productivity and reduce unemployment levels in the world's most impoverished regions.¹⁰

¹⁰ <https://www.un.org/sustainabledevelopment/economic-growth/>

8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high value added and labor-intensive sectors

8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all”

The UN guideline still places industrialization as central to economic development. But then recognized the importance of technological progress in order to use resources and energy efficiently.

Emphasis is also placed on the importance of quality, reliable and resilient regional and transborder infrastructure. In addition, there is a clear recognition of the need for development of technologies that use mobile cellular networks.

Importance of Regulatory Sandbox

Due to the fact that many of the innovation trends were global the Financial Conduct Authority in the UK established a regulatory sandbox in order to provide a safe space for Testing, Regulatory Supervision and a controlled roll out. However,

because most of the innovation was happening fell outside of the jurisdictional reach of the UK a Global Sandbox was create, The Global Financial Innovation Network, GFIN. GFIN's focus will be Regulatory Cooperation and engagement, speed up the delivery of new technology, clarify governance standards with full transparency and staying abreast of emerging technologies like AI, Distributed Ledger Technology, Digital Identity and AML/KYC governance.¹¹

Several interested parties stepped forward and wanted to be involved in setting the governance of the framework while a wider set wanted to stay engaged and view the goings on from a moderately safe distance.

The fact is that this new world of rapid innovation is here to stay. The pace is accelerating due to funding and talent. New solutions are unfolding that provide opportunities for financial inclusion. It is estimated that there are 1.7 billion adults worldwide who are unbanked. That is 1.7 billion people who have no access to modern financial services. Right here within the Eastern Caribbean that population is in the thousands. Judging by the long lines one typically sees in the banks there is obviously a very deep need for financial services. However, the obvious productivity loss combined with limited product capability shows the need for better services. What is very clear is the extent to which telecommunications technology has permeated the societies thereby creating a readily available medium for the exchange of value.

¹¹ Financial Conduct Authority – G-FIN-Consultation Document
<https://www.fca.org.uk/publication/consultation/gfin-consultation-document.pdf>

Lessons from M-Pesa

One only has to look at the changes that have occurred in some of the developing countries as they have embraced digital technologies and other innovations. Having been more or less victims of the first and second Industrial Revolutions many African countries are experiencing high rates of growth mostly due to their willingness to adopt new technologies quickly. In East Africa the Digital Currency M-Pesa is old news. M-Pesa has almost 26 Million active users. Of that count a significant number of customers who are getting to financial services for first time. What makes the concept so easily exportable is that there is a young digital population 96% of households in Kenya have an M-Pesa account.¹²

In Kenya mobile money rolled out very quickly. It is estimated that almost 200,00 people have been lifted out of poverty as a direct result of the introduction of M-Pesa. Most pronounced has been the effect on poor women and households headed by women.

Key in the success story in Kenya is the role that the Central Bank played. In order to foster innovation, the Bank decided not to oppose the introduction of M-Pesa even though it would run on the platform of a telecom company.

The introduction of M-Pesa helped firms to reach out to new customers and for additional new products to be developed. Micro insurance products covering crop failure have been introduced with payments going directly to farmers M-Pesa accounts once certain rainfall measures are recorded. Additionally, micro credit

¹² <https://www.cnet.com/news/kenya-mobile-money-vodafone-mpesa-10-years/>

programs and small savings accounts have been built on the platform. Individuals are now able to invest directly via M-Akiba bonds into Government Bonds and earn a tax-free return. Thus, the Government has a direct source of funding for investment into major capital projects.

Creative Governance

In addition to the regulatory sand box government must invest in education and provide the enabling environment for small innovative firms to thrive. We always have to reevaluate methods to take a hard look at the regulatory model to confirm that existing frameworks are best suited for the current needs. For example, in Nigeria a rural electrification drive had given rise to many solar powered micro utilities online and provided electricity without gasoline fumes from loud generators to many public markets much to the delight of hundreds of merchants. Perhaps with our abundance of sunshine this may be a business model that deserves serious review.

As more firm's digital platforms become available startups can operate as a completely fully digital service on a cloud-based application.

According to the World Bank remittances to low- and middle-income nations reached \$529 Billion in 2018. That is almost 10% higher than 2017. The bulk was to South East Asia and Sub Saharan Africa. The average cost to send \$200 was close to \$ 14.00 ¹³ An average of close to 7 % of the funds. The UN's goal is set at 3% by 2030. This will not happen without significant changes in technology.

¹³<http://blogs.worldbank.org/peoplemove/data-release-remittances-low-and-middle-income-countries-track-reach-551-billion-2019>

While the goals of financial inclusion are laudable and in fact one of the major benefits of a Central Bank Block Chain based currency, the governance framework becomes paramount. Issues of consumer education, general acceptance, overcoming fear, misinformation and tax evasion are human issues to be addressed.

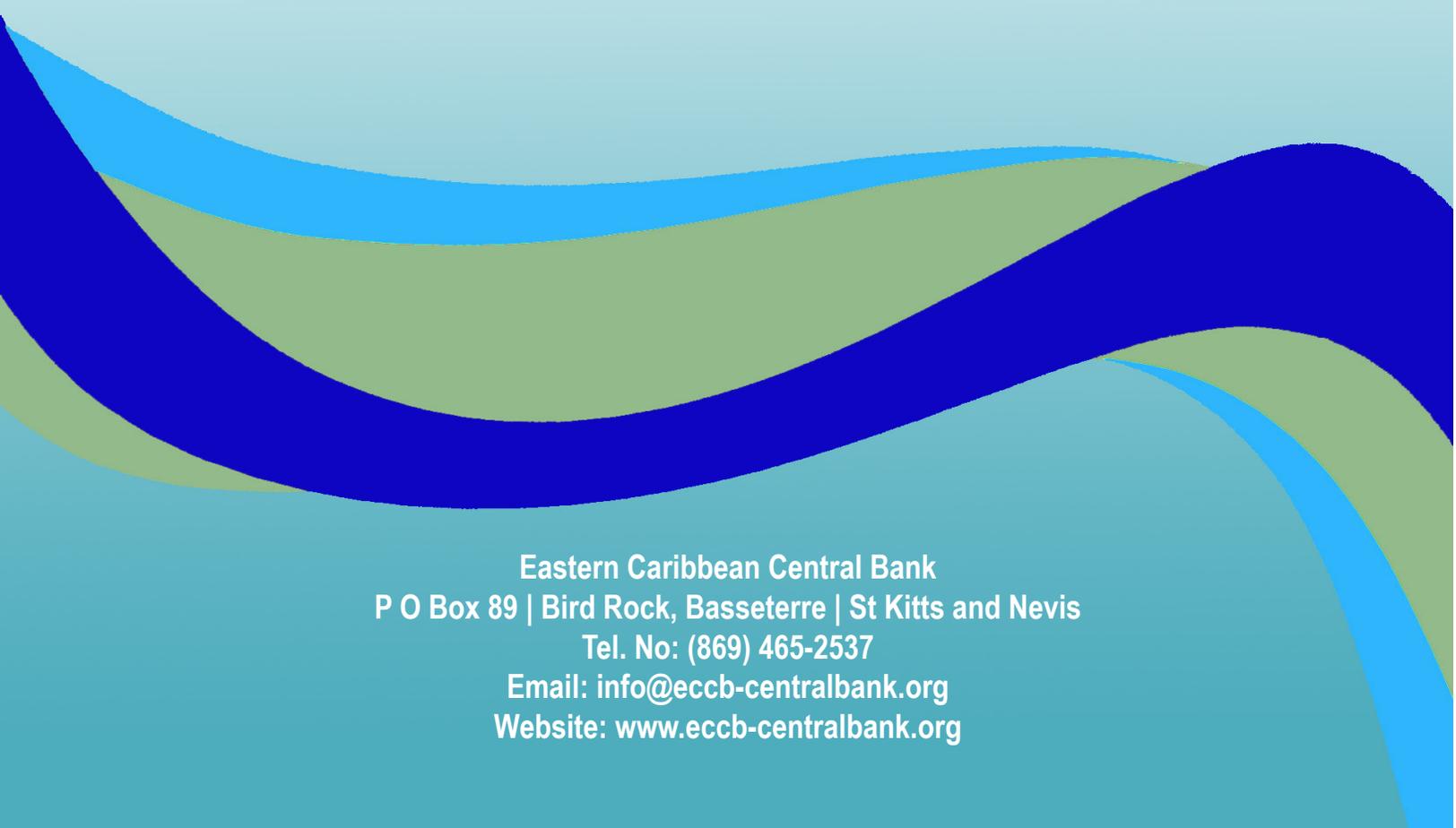
Then there is the wider infrastructure issue like underlying communications network and its systems resilience, particularly in a region that is prone to devastating storms and the expectation of more to come. There are also issues relating to updating of tax regulations in order to accommodate taxation in relation to virtual assets. There are the issues of a wider global scale inter-operability, reliance of AML/CFT processes by all parties in network and compatibility of eco system of applications. Then we need to consider recognition of tax regimes and honoring of tax related international treaties.

This leads me now to one issue that right or wrongly overhangs perception issues of political leadership. This is the issue of Governance and protection of the public purse. The World Bank estimates that approximately 5% of world tax revenue is lost due to corruption. This, however, does not include the immense budget strain of inflated costing of contracts, the misplacement of national priorities the do over work related to unqualified vendors and the general corrosive lack of trust in public institutions. New technologies provide governments with tools to establish mutually supporting governance processes, provide transparency and reduce tax

evasion. Some countries like Georgia, the former Soviet republic have improved procurement processes and have been able to reduce tax rates as a result.

In conclusion, it is very heartening to see the beginnings of the process of modernization of the Eastern Caribbean financial infrastructure. Wise old men say that it is always good to learn from your mistakes. But even wiser men say that it is better to learn from other people's mistakes. I pray that nowhere in this region ever must go through the massive recovery/resilience efforts that we had to undertake after both Sept 11th and the Financial Crisis of 2008. Important to note that not even one of our clients went bankrupt during the crisis. Therefore, a well thought out governance plan is central to create the right balance between innovation and regulation and allowing the young people of the Caribbean to explore the limits of creativity and seeing Sir Arthur Lewis's vision of development in the periphery dreams come true.

I thank you.



Eastern Caribbean Central Bank
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