INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Robotics & its Implication for Job Growth and Regional Development

Presenter: Damion R. Mitchell
Northern Caribbean University
Mandeville, Manchester

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

The world is currently in the midst of its 4th Industrial Revolution—*one driven by information and automation*.

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

"Robots, artificial intelligence, computerized algorithms, mobile sensors, 3-D printing, and unmanned vehicles are here and transforming human lives. People will decry these developments and worry about their ***'dehumanizing impact.'***"

Darrell West - Center for Technology Innovation at Brookings University

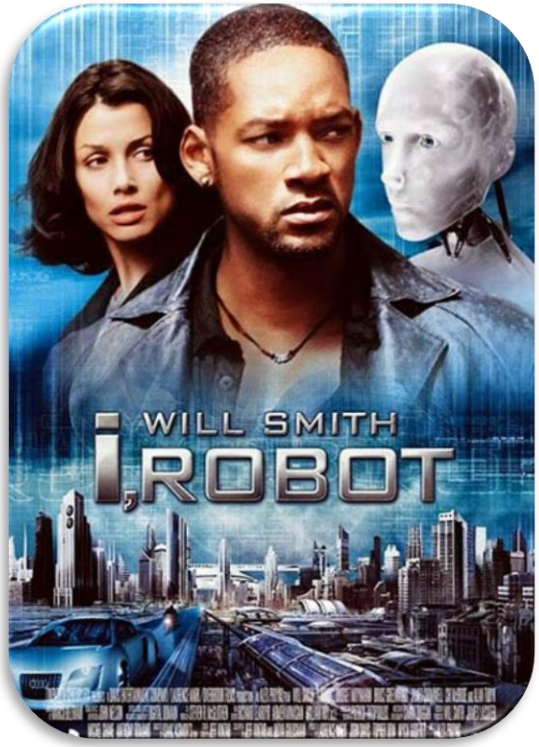
Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Hollywood's Vision

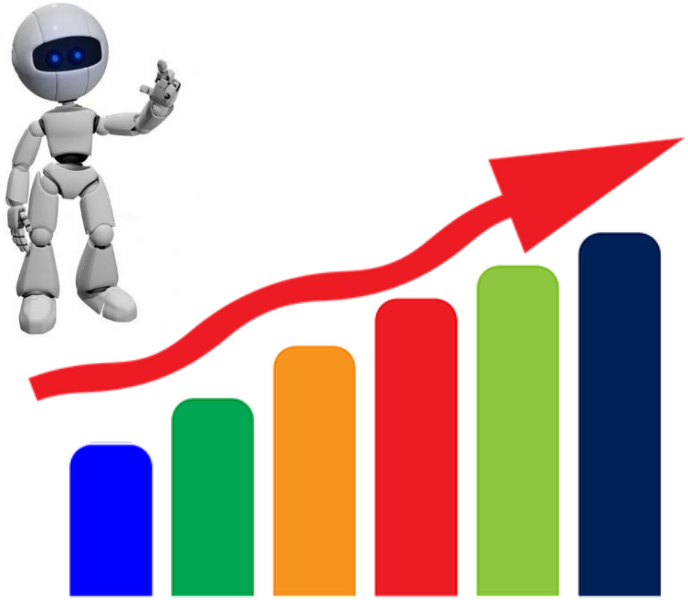


Jefferies

NCB CAPITAL MARKETS LIMITED

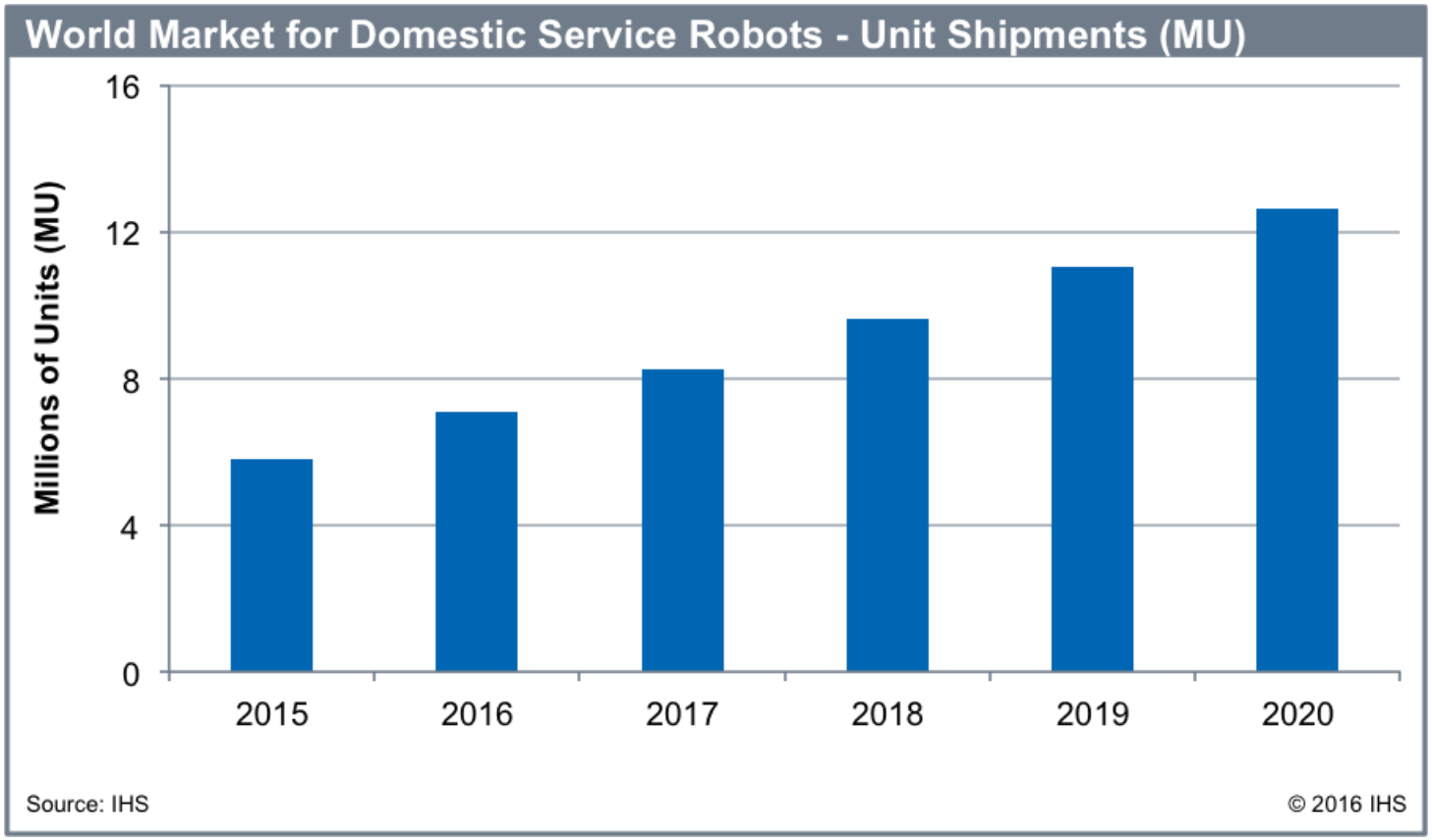
JAMAICA OBSERVER

International Federation of Robotics (IFR) 2016 Report



- Sales of robots are increasing year-on-year, with a 15% increase in 2015 over the previous year.
- The IFR estimates that over 2.5 million industrial robots will be at work in 2019.
- This represents an average annual growth rate of 12% between 2016 and 2019

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018



Source: https://technology.ihs.com/

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

A **Pessimistic**

B **Optimistic**

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Pessimistic Perspective

Human labor does not stand a chance against them!!!

Machines are coming for all jobs!

"automation apocalypse"

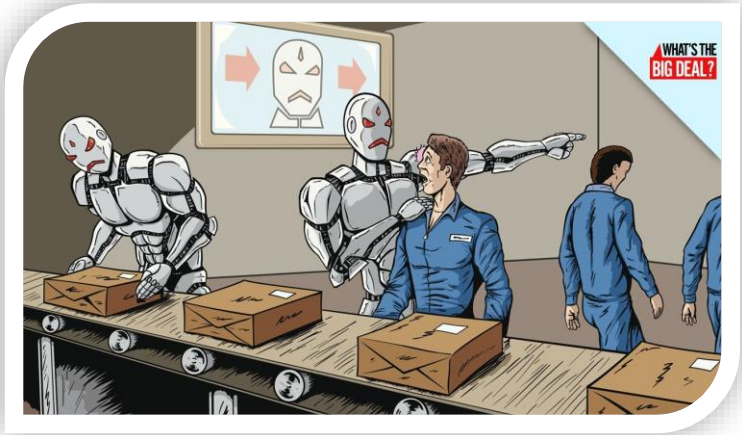
1. Robots Flipping Burgers
2. Artificial Intelligence:
   a) Handles Insurance Claims
   b) Manages Investment Portfolios
   c) Conducts Legal Research
   d) Performs Basic HR Tasks

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

Pessimistic Perspective



1. Robots will not call in sick
2. There will be no need for wage negotiations
3. Vacation roster
4. Personality clashes

Machines are coming for all jobs!

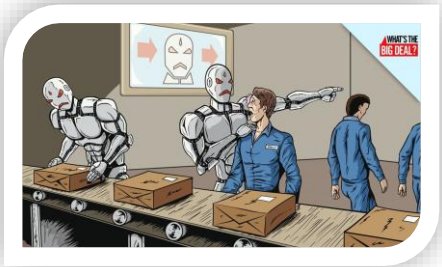
"automation apocalypse"

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Pessimistic Perspective

"Half of these experts (48%) envision a future in which robots and digital agents have displaced significant numbers of both blue- and white-collar workers—with many expressing concern that this will lead to vast increases in income inequality, masses of people who are effectively unemployable, and breakdowns in the social order."

Pew Research Center, Internet & Technology, 2014



Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Optimistic Perspective

"Most computer scientists agree that predictions about robots stealing jobs are greatly exaggerated. Rather than worrying about an impending **Singularity**, consider instead what we might call **Multiplicity**: diverse groups of people and machines working together to solve problems."

*From Ken's op-ed in the **Wall Street Journal***

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

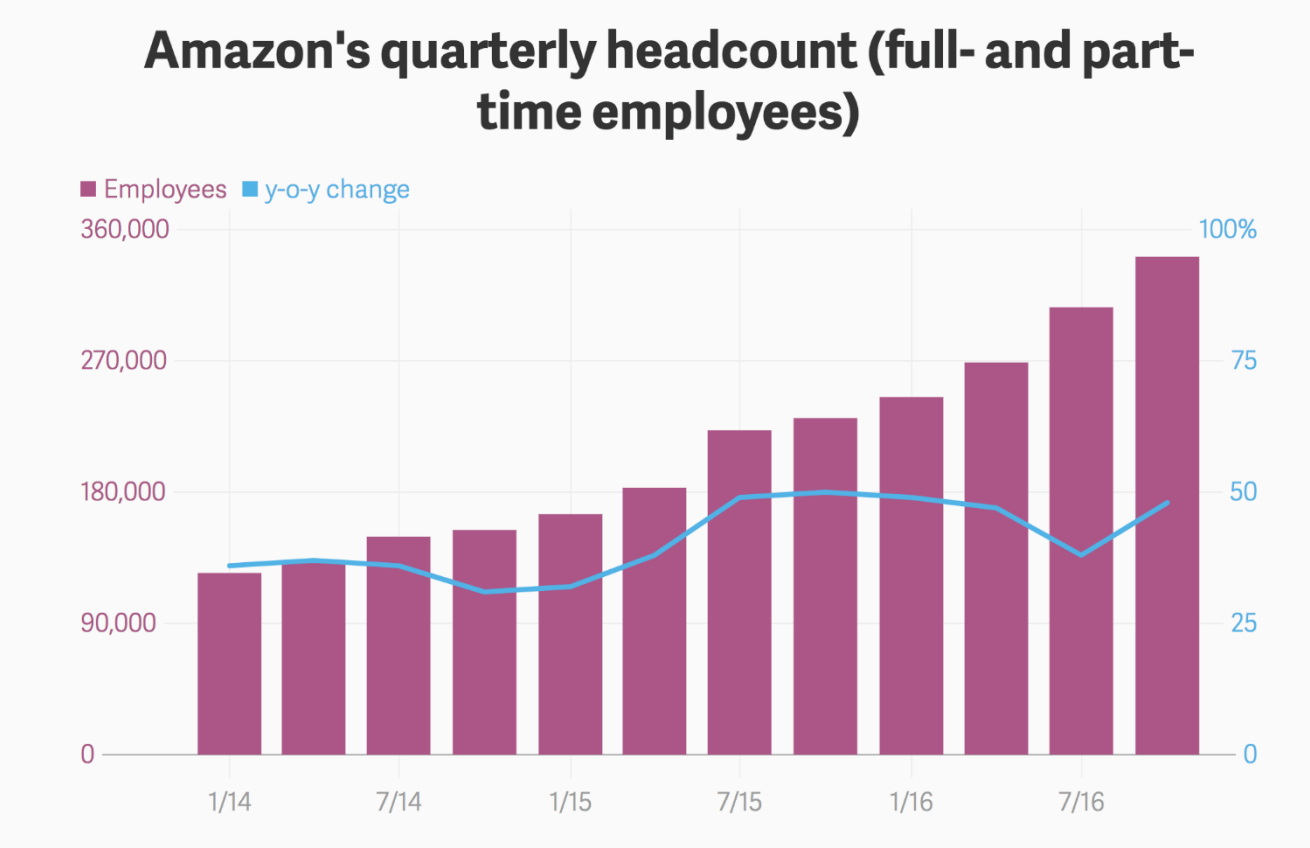
INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Optimistic Perspective

AMAZON

Robots working in Warehouses

(1400 – 45000)



Source: https://qz.com

Jefferies

NCB CAPITAL MARKETS LIMITED

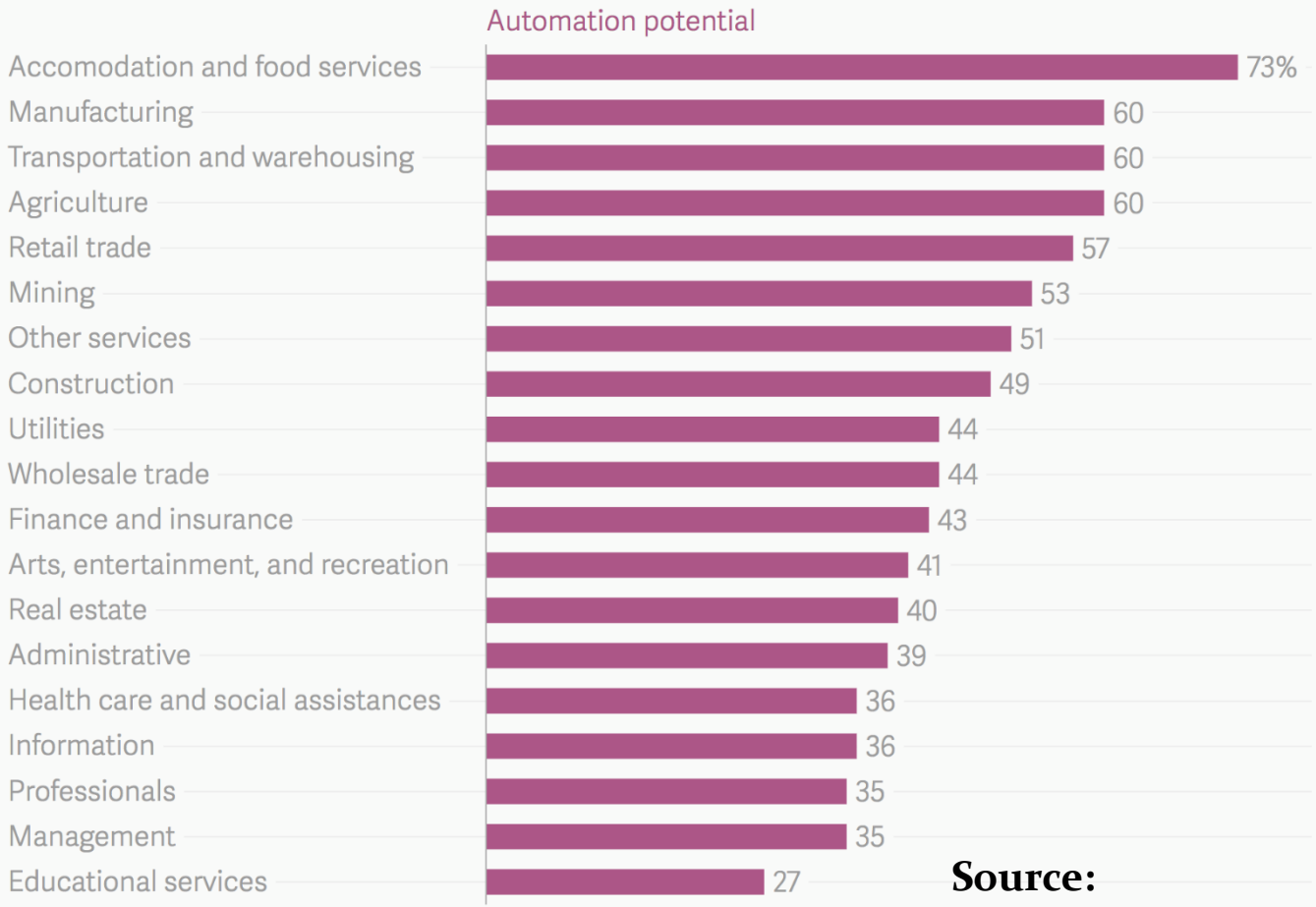
JAMAICA OBSERVER

Optimistic Perspective

- Robotics will render some jobs useless, but it will create others
- Robotics doesn't necessarily make humans obsolete
  - 830 occupations, it concluded that just 5% of them could be completely automated.

    Source: *https://www.mckinsey.com/*

Automation can replace at least some work in almost all job sectors



Source: *https://www.mckinsey.com/*

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Optimistic Perspective

- ***Argument #1: Throughout history, technology has been a job creator—not a job destroyer***

"Historically, technology has created more jobs than it destroys and there is no reason to think otherwise in this case. Someone has to make and service all these advanced devices."

Vinton Cerf, *Vice President and Chief Internet Evangelist for Google*

Jefferies NCB CAPITAL MARKETS LIMITED JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Optimistic Perspective

- ***Argument #2: Advances in technology create new jobs and industries even as they displace some of the older ones***

"In a given context, automated devices like robots may displace more than they create. But they also generate new categories of work.... Also, there is likely to be more human-robot collaboration—a change in the kind of work opportunities available."

***Marjory Blumenthal**, a Science and Technology Policy Analyst, USA*

Jefferies CAPITAL MARKETS LIMITED JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Optimistic Perspective

Argument #3: There are certain jobs that only humans have the capacity to do

"There will be many things that machines can't do, such as services that require thinking creativity, synthesizing, problem-solving, and innovating…"

Pamela Rutledge, PhD and director of the Media Psychology Research Center, CA

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

Regional Development

Our region is characterized by:

- low growth rates
- high public sector debt
- high emigration rates *(especially of skilled and tertiary educated people)*

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Robotics + Regional Development

T

THREATS

- If knowledge based economies are not actively crafted
- Region being unable to compete in manufacturing

O

OPPORTUNITIES

- Designing, programming, repairing, and maintaining
- Revolutionizing Educational systems, with emphasis in STEM

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Robotics & Regional Growth

Productivity Growth

"Even if the human component of factories remains constant, increased efficiencies from robotics inevitably leads to more productivity growth."

Craig Anthony, Investopedia

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

Robotics & Regional Growth

Gross Domestic Product Growth

With increased **productivity** comes an increase in gross domestic product (GDP)

Research: Graetz & Michaels (2015). *Robots at Work.*

Jefferies CAPITAL MARKETS LIMITED JAMAICA OBSERVER

Summary

- **Robots increase productivity and competitiveness**. Used effectively, they enable companies to become or remain competitive.
- **Increased productivity** can lead to increased demand, creating new job opportunities.

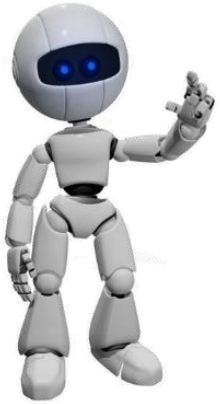
Summary

- **Robots complement and augment labour**: The future will be robots and humans working together. Robots substitute labour activities but do not replace jobs
- **Governments and companies** must focus on providing the right skills to current and future workers to ensure a continuation of the positive impact of robots on employment, job quality and wages.

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

…both schools and universities ‘should not teach the world as it was, but as it will be’

Agreement at the World Economic Forum 2016



Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018

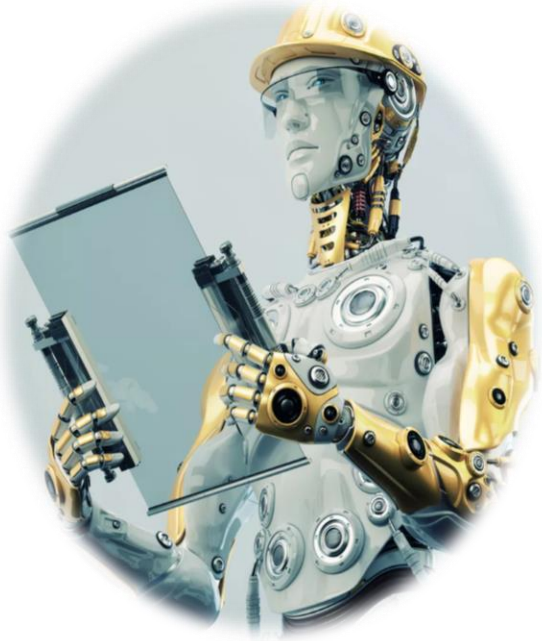
Optimist Or Pessimist

Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER

INVESTMENTS & CAPITAL MARKETS CONFERENCE 2018



Jefferies

NCB CAPITAL MARKETS LIMITED

JAMAICA OBSERVER