

## Re-Visiting the Crime-and-Poverty Paradigm: An Empirical Assessment with Alternative Perspectives

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**Abstract:** The common sense notion of the crime-and-poverty synergy is widely used by many people. It influences policy directions and some researchers have used empirical works on the matter without testing its premise. The current study uses national data from Jamaica on 1) inflation, 2) unemployment, 3) poverty, 4) gross domestic product per capita growth, and the 5) exchange rate to test the crime-and-poverty phenomenon, and establish models that can be used to explain violent crimes. Data from 1989 to 2009 were used to carry out this secondary data analysis. Poverty is not a causal factor of violent crimes in Jamaica, and the positive correlation between poverty and violent crimes is a spurious one. Of the five macroeconomic variables that were entered into the model, two emerged as statistically significant which explained violent crimes (F statistic = 10.1, Probability (F-statistic) <0.00001). The two factors of violent crimes are GDP per capita growth ( $p = 0.003$ ) and annual exchange rate ( $p = 0.011$ ). Eighty per cent of the variance in violent crimes is explained by changes in GDP and exchange rate. ( $R^2 = 0.795$ ) Even though 80% of variability in violent murders can be explained by annual exchange rate and annual GDP per capita growth rate, evidence shows that there are omitted variables ( $F > F_{table}$ ), but this study still provides a good understanding of the new paradigm. There is a need for social, political and economic transformation of the Jamaican society to benefit all.

**Key words:** Crime, crime model, exchange rate, inflation, Jamaica, poverty, unemployment

### INTRODUCTION

The common sense notion of poverty explaining violent crimes has infiltrated the consciousness of many people. So much so that some academic scholars have not even tested this hypothesis as they believe it to be true and this they use to interpret the crime phenomenon in Jamaica. Using Tremblay's study, without pragmatic utilization, Robotham extensively conceptualized and purported that poverty is a causal factor of crime (Robotham, 2003) Robotham's study did not:

- Do a specification test,
- Test the goodness of fit of the model,
- Use probability sample size and probability,
- Use experimentation or Quasiexperimentation (including pretest and posttest design),
- Drawn on the techniques of econometrics, and/or established
- Cause and effect as well as
- Structural equation modelling, which are important for causal inference, yet he spoke of causation

Many scholars have provided a comprehensive body of works examining correlation and causation, conditions for cause inferences and guide to data interpretation,

which warns against imposing bivariate relationship on causal modeling (Holland, 1986; Bernert, 1983; Blalock, 1971; Blalock and Blalock, 1968; Cochran, 1983; Pindyck and Rubinfeld, 1998; Duncan, 1975, 1984; Ehrenberg, 1977; Campbell and Stanley, 1963; Mills, 1872; Hume, 1740).

The use of past research and theory are important in the establishment of sociological issues, but these do not mean that all germane covariates have been taken into consideration (the most parsimonious version), which was the case in Robotham's paper. And a serious problem that Robotham ran into was being able to identify multicollinearity among the explanatory variables, which he did not attend to address in his study.

In a qualitative research conducted by Levy (1996), he wrote the aim of his research was to examine the crime-and-poverty phenomenon in five urban areas in Jamaica. None of the issues to establish deterministic relationship and statistical operations were used in the study. He opined that:

The immediate aim of the research was to conduct a Participatory Urban Appraisal (PUA) of poverty-related violence in five urban areas in Jamaica. The further objectives were to provide a critical basis for the Social Investment Fund (SIF) being established

by the Government with the assistance of the World Bank and other international agencies, to contribute to the policy debate on the poverty-violence nexus, and to develop the institutional capacity of the UWI's Department of Sociology and Social Work to use PUA methodology (Levy, 1996).

From what Barry Chevannes, who wrote the Preface to Horace Levy's study, opined that '...Urban Violence and Poverty [research] comes amidst heightened anxiety that our crime rate has got out of hand' (Levy, 1996), it would suggest that solutions were needed, which is a justification for academics and researchers being brought into the discourse. Levy believed that researching the phenomenon must be in areas where crimes were high as this would provide an understanding of the phenomenon. This led to the selection of only inner-city urban communities. Clearly, within the context of a quick examination of the crime phenomenon, a selection bias used to create a framework for the inquiry and guide the interpretations. Throughout the findings, which pointed in another direction, Horace Levy articulated about the crime-and-poverty phenomenon. Much so that even when genuine issues emerged to the contrary, he spoke of poverty. The general themes which flowed throughout Levy's research were:

- Finance (little or no money)
- High cost of living
- Economic pressure
- Human suffering because of economics
- Economic frustration
- How the previously states issues influence crime and violence; while the discourse surrounds poverty and unemployment

The title of Horace Levy's research highlighted that he is cognizant of the crime-and-poverty paradigm and that poverty was broadly labeled to encompass all the economic issues of the Jamaicans who reside in urban inner-city communities. He postulated that "In a context of prolonged unemployment and unrelieved poverty, this appears to many males as the only way [crimes] to gain respect and status" (Levy, 1996) suggesting that poverty fosters gang formation and the utility of crime supply. Again, Levy missed the economics of criminal involvement, which was established by Gary Becker in his seminal work (Becker, 1968). Barry Chevannes, in the Forward of Levy's study, postulated that "Nonetheless, the study delineated both the political roots of gang violence, historically, and the current responsibility of both politicians and the business class in not dealing with the economic and social conditions fostering gang formation and crime" (Levy, 1996) indicating that economics was directly causing criminal activities and not poverty. Economic marginalization seems to be, therefore,

accounting for the nexus of crimes in Jamaica and the crime-and-poverty paradigm should not have been dominated by a common sense tradition, which is the case.

## LITERATURE REVIEW

The discussion of crime-and-poverty in the Caribbean is a longstanding one that includes its direct association (Ellis, 1992; Robotham, 2003; Harriott, 2004), inequalities (Headley, 1994), deprivation (Stone, 1987), exclusion (Boullion and Buvinic, 2003), causes (Moser, 1999) and the antecedents (Simmonds, 2004). Lorna Simmonds contextualized the current crime problem in Kingston back to slavery in the early nineteenth century. She showed that the rise of urban settlements, particularly Kingston, emerged as a result of the economic activities with the metropolis. Kingston during the early nineteenth century was a crowded settlement of poor slaves and free people. Its inhabitants sought economic survivability which was not provided to them by the plantation hierarchy (Simmonds, 2004). The economic deprivation, survivability and marginalization as well as social realities (including overcrowding) were among the rationales for the emergence of criminal activities. Simmonds, however, noted that most of the urban poor slaves and other African descendants within the communities were not involved in criminal activities, suggesting that economics would have led a few to criminal activities as the majority of poor dwellers abstained from antisocial behaviours. Apart of the emergence from Simmonds' research is the marginalized socio-physical milieu of the urban settlers as desperation drove them to establish their economic survivability, which included the squatting on marginalized lands.

Although reforms (inclusive of land) sought to address some of the conditions of the slaves (Beckford, 1972; Besson, 1995; Clarke, 1953), many slaves suffered prior, during and even after the restructuring (Beckford, 1972; Simmonds, 2004; Stolberg and Wilmot, 1992; Bernal, 1986). The slaves were cognizant of the socio-economic inequality which led to social unrest, which resulted in land reform by the planters' class. In spite the 'plantocracy' response to the social deviant at the time, Besson postulated that land reform in Jamaica did not change fundamentally the position of the working class, and these are embedded in the perspectives outlined below:

Veront Satchell's chapter, "Government Land Policies in Jamaica during [the] Late Nineteenth Century", focuses on the period following the Morant Bay Rebellion. This was typified by disorganized agrarian relations and a paradox of constrained peasant land acquisition coinciding with an abundance of unused land. Satchell shows that

government policies from 1866 to 1900 reinforced the plantation system rather than developing the peasantry (Besson, 1995).

Class stratification was clear in Jamaica, and it was based on economics which denotes social positioning, opportunities and material acquisitions. The reality was land reform between 1866 and 1900 had maintained the social stratification and structure; the working class was again marginalized. This was noted by Besson (1995):

Espeut's related argument that "whereas land for peasant activity was scarce in Barbados it was fairly common in Jamaica" (p. 71) similarly neglects the constraints of land acquisition facing the Jamaican peasantry, underlined not only in my own study but also by Beckford (1972) and in the chapters by Wilmot, Satchell, Augustin, and McBain.

Some Caribbean scholars (Derick Gordon, Carl Stone) have postulated that the class stratification and the legacies of plantation autocracy are still evident in contemporary Jamaica (Gordon, 1987; Stone, 1987), a privileged few; prosper from the activities and the masses desire the opened display of economic successes. There are sentiments that socio-economic inequalities in Jamaica some two (2) decades are evident as revealed in a study in 2007.

A national probability cross-sectional survey conducted by Powell *et al.* (2007) revealed that 7 out of every 50 Jamaicans can be trusted and this is even lower for government (7 out of every 100). They found that 6 out of every 50 Jamaicans had confidence in the private sector (including financial institutions); 5 out of every 50 had confidence in large companies; 15 out of every 50 stated that the country is 'going in the right direction'; 31 out of every 100 indicated that the current economic situation is at least good; 39 out of every 100 mentioned that their salary is able to cover expenditure and 69 out of every 100 people believed that "...the country is governed for the benefit of a few powerful interests ..." (Powell *et al.*, 2007). The findings of Powell and his colleagues underlines the plight of many Jamaicans which extends beyond poverty. Derek Gordon's perspective provide a context of Powell *et al.* (2007) study that "The fundamental issue which researched into social mobility in Jamaica must confront is the paradox of large scale social mobility generated by the opening up of new positions coexisting side by side with gross and, perhaps, even widening inequalities of opportunity between the minority at the top and majority at the bottom of the social order" (Gordon, 1987), suggesting that economic challenges of many people are noted compared to those of others in the society.

In Levy's study (1996), issues emerged that highlighted the social inequalities, marginalization and economic challenge of people. One of the participants in

Levy's study indicated that "the police cannot conceive of a doctor or a lawyer coming out of this area...Dem feel we have no rights" (Levy, 1996), speaking to not only to economic marginalization of some people in the society, but to the stereotype they face and the treatment meted out to them because of resource deprivation. This was evident in one of the Levy's comment, when he said that "In a context of prolonged unemployment and unrelieved poverty, this appears [crime] to many males as the only way to gain respect and status" (Levy, 1996). Harriott's reinforces the problems of some Jamaicans, when he opined that "They therefore themselves as having little hope of integration into the shrinking formal economy and increasingly competitive labour market" and their involvement in criminal activities are in result to economic marginalization, inequalities and label of poverty. One criminologist recognized those issue, when he forwarded that "The marginalization of a high proportion of the urban poor who inhabit the slums of Kingston and the large towns of Jamaica (Spanish Town, Montego Bay) indirectly contributes handsomely to the problem of violent crime" (Harriott, 2004). Again, the social exclusion that exists in the plantation autocracy bars economic resources, opportunities and social mobility of many Jamaicans in a nation which has seen the fluctuation of GDP, especially increases, while many people indicate economic sufferings.

In 2007, a study conducted by Boxill *et al.* (2007) found that 77 out of every 100 Jamaica have at most secondary level education, 7 out of 10 Jamaicans received an income of less the \$30,001 monthly (US \$434.40 monthly), while 3 out of every 100 Jamaican obtained an income of at least \$150, 000 monthly (US \$2 172.02), with 1 out of every 100 received at least Jamaican \$250,000 (US \$3, 620.04), highlighting the income inequities and by extension social inequalities in the society (Boxill *et al.*, 2007). Even though the established definition of poverty covers a certain economic and social exclusion, income inequality summarizes the economic status in the nation than poverty. Only 1 out of every 10 Jamaicans in 2007 was below the poverty line (or defined as poor) (Planning Institute of Jamaica, 1990-2010) and in Powell *et al.* (2007) study 31 out of every 50 Jamaicans indicated that their salary was unable to cover expenditure, with 13 out of every 100 being able to save after paying expenses on a monthly basis (Powell *et al.*, 2007). The economic situation of Jamaicans can be captured in Powell *et al.* (2007) research that found 24 out of every 50 respondents indicated that they were worse off in 2007 than 12 months ago, 15 out of 50 indicated the same and only 23 out of every 100 remarked 'better off' (Powell *et al.*, 2007, 34). During the same period when there was reported general economic suffering, the Bank of Jamaica noted that the GDP grew by 8.04% (Bank of Jamaica, 2010). The rise in murders by 17.5% in 2007 compared to 2006 (calculated from statistics from the Jamaica Constabulary Force, 2008-2010), although

poverty declined by 30.7% in the same period, can a response to the economic climate and people's general perception of suffering, which accounts for them seeking alternative paths to economic hardship that are outside of the failed formal economy.

It can be extrapolated from the literature that poverty is widely labelled to explain the rise in violent crimes and that the economic marginalization of many Jamaicans is as a result of years of neglect, social exclusion, political exploitation and isolation from the formal economy. Crime is, therefore, an economic phenomenon and the lack of general personal economic development noted by Francis *et al.* (2001) and Becker (1968). It may appear that the crime-and-poverty paradigm, because of its historic roots, which needs a solution has weighed heavily on the forefront of Jamaicans psyche that the traditional consequences and causes seem an easy fit to use instead of searching for new sets of epistemology. Outside of Jamaica .

This study seeks to re-examine the crime-and-poverty paradigm, because of its consequences, implication and urgency, in attempting to provide an explanation that can forge a new policy direction to the aged old problem of violent crimes in Jamaica. Increasingly, enough evidence has come in that questions the crime-and-poverty paradigm, and that this paradigm which has led policy formulation clearly has not worked in Jamaica as well as the wider Caribbean. The current study uses national data from Jamaica on

- Inflation
- Unemployment
- Poverty
- Gross domestic product (GDP)
- Exchange rate to test the crime-and-poverty phenomenon, and establish any other explanation that is probable.

### **THEORETICAL FRAMEWORK**

The use of a theoretical framework is well documented in social science research, equally and widely used by Caribbean criminologists to examine the crime phenomenon, particularly positivism which is embedded in an objectivist epistemology (Chadee, 2003; Ellis, 1992; Harriott, 2003, 2004). Crotty (2005) forwarded a premise for a theoretical framework when he postulated that "The philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria" (3) as a study brings with it a set of assumptions. He further opined that "this is precisely what we do when we elaborate our theoretical perspective. Such an elaboration is a statement of the assumptions brought to the research task and reflected in the methodology as we understand and employ it" (Crotty, 2005). The theoretical perspective that is brought to bear on this study is positivism (and post-positivism). The

perspective of positivism is embedded in the epistemology of objectivism. The "objectivist epistemology holds that meaning, and therefore meaningful reality, exists as such apart from the operation of any consciousness" said Crotty (2005).

The objectivist epistemology holds sacred logic, precision, general principles, principles of verification, the standard of rigor, gradual development, establishment of laws, principles, theories and apparatuses in "search for truth" and proofs (Balashov and Rosenberg, 2002). Hence, the rationale for the use of an objectivist epistemology in the inquiry of crime phenomenon by Caribbean criminologists such as Anthony Harriott (2003, 2004), Ellis (1992), Chadee (2003) and others.

Wanting to examine a general law, crime-and-poverty relationship, for this study the researcher collected data from Bank of Jamaica, the Statistical Institute of Jamaica and the Planning Institute of Jamaica on crimes and other macroeconomic variables. The testing of the crime-and-poverty phenomenon also meant that specification bias was not creating by omitted appropriate variables (Mamingi, 2005; Hill *et al.*, 2001; Wooldridge, 2006). Therefore, this study brought in other macroeconomic variables such as inflation, unemployment, annual exchange rate, and Gross Domestic Product (GDP) along with poverty to ensure that no pertinent variable that should have been included were entered in the same econometric model.

**Econometric model:** Econometricians have long developed a set of tools that can be employed to model many factors simultaneously influencing a single dependent variable, and an economic model of crime was established by Becker (1968).

Becker's seminal work established a utility maximization framework that determines factors that influence an individual's choice in crime. Embedded in Gary Becker's model is the economic cost of criminal involvement, which denotes that supply for crime is an economic phenomenon. The *utility maximization crime* framework expresses crime as a function of many variables. The crime function is written below:

$$y = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7) \quad (1)$$

where y = Hours spent in criminal activities,

- $x_1$  = Wage for an hour spent in criminal activity
- $x_2$  = Hourly wage in legal employment
- $x_3$  = Income other than from crime or employment
- $x_4$  = Probability of getting caught
- $x_5$  = Probability of being convicted if caught
- $x_6$  = Expected sentence if convicted
- $x_7$  = Age

Becker's economic crime function establishes that crime is a function of employment (return from

employments), economic activities outcome of criminal actions and economic betterment from engagement in crime. With poverty being an incapacitation, it could be deduced from *utility maximization crime function* that critical to the participation in criminal activities as an economic medium of survivability created by a failure of the formal economy.

Using the sample economic principle employed by Gary Becker, this study commences by testing the hypothesis that crime is a function of poverty (Eq. 2):

$$y_t = f(p_t) + e_t \quad (2)$$

where  $y_t$  = Number of violent crimes,  $p_t$  is poverty,  $e_t$  represents the random error and  $t$  stands for time.

Another hypothesis, based on the literature, is violent crime is a function of unemployment (Eq. 3):

$$y_t = f(u_t) + e_t \quad (3)$$

where  $y_t$  = number of violent crimes,  $u_t$  denotes unemployment,  $e_t$  represents the random error and  $t$  stands for time.

Among the assumption of classical linear (or multivariate) regression model, is the correctness of specification. This denotes that no variable should be omitted that should have been included as the violation of this assumption would result in specification bias (Mamingi, 2005; Hill *et al.*, 2001; Wooldridge, 2006), which lead the researcher to test other macroeconomic variables such as exchange rate, GDP and inflation along poverty and unemployment to eliminate specification bias. This gave rise to testing hypothesis 3 (Eq. 4), which is written as:

$$y_t = f(p_t, i_t, u_t, er_t, GDP_t) + e_t \quad (4)$$

where  $y_t$  = number of violent crimes,  $p_t$  is poverty,  $i_t$  is inflation,  $u_t$  denotes unemployment,  $er_t$  represents annual exchange rate, and  $e_t$  is the random error and  $t$  stands for time.

**Data and methods:** The current study is a secondary data analysis. Data are collected from Government of Jamaica Publication, namely the Jamaica Survey of Living Conditions (JSLC) (Planning Institute of Jamaica, 1990-2010) on health care utilization (or health care seeking behaviour), illness rate and poverty; Economic and Social Survey of Jamaica on poverty (Planning Institute of Jamaica, 1990-2010); Statistical Digest on inflation and annual exchange rate (Bank of Jamaica, 2010) and the Demographic Statistics on mortality, crude death rate (Statistical Institute of Jamaica, 1989-2009) and the Statistical Department of the Jamaica Constabulary Force on crimes. The period for this study is from 1989 to 2009.

The JSLC is jointly conducted by the Planning Institute of Jamaica (PIOJ) and the Statistical Institute of

Jamaica (STATIN). The JSLC is a nationally representative cross-sectional descriptive survey which uses stratified random sampling and comprised data on households' characteristics, health, education, expenditure, social programmes, and other information. An administered questionnaire modelled from the World Bank's Living Standards Measurement Study (LSMS) household survey (World Bank, 2002) is used to collect the data. There are some modifications to the LSMS, as JSLC is more focused on policy impacts.

The JSLC used a two-stage stratified random sampling design where there was a Primary Sampling Unit (PSU) and a selection of dwellings from the primary units. The PSU is an Enumeration District (ED) which constituted of a minimum of 100 dwellings in rural areas and 150 in urban areas. An ED is an independent geographic unit that shares a common boundary. This means that the country was grouped into strata of equal size based on dwellings (EDs). Based on the JSLC, the PSUs is a listing of all the dwellings and this was used as the sampling frame from which a Master Sample of dwelling was compiled. According to the JSLC, the sample was weighted to reflect the population of the nation. The households in the JSLC were interviewed during three to four years, after which a new representative sample was drawn. In this study, we used aggregate to the parish level, which means that analysis can be made across periods (or over time).

The Economic and Social Survey of Jamaica (ESSJ) is a publication of the PIOJ which collates information on social and economic indicators of Jamaica. Data was collected mainly on unemployment rate in Jamaica from 1989 to 2009 (Planning Institute of Jamaica, 1990-2010).

The annual exchange rate of the Jamaican to the United States' dollar were collected from the Bank of Jamaica's (BoJ) publication (Bank of Jamaica, 2010) and the Gross Domestic Product (GDP) information was had from the International Monetary Fund's World Economic Outlook (International Monetary Fund, 2009). Data on violent crimes were obtained from Statistical Unit, Jamaica Constabulary Force (JCF) in the publication of the Economic and Social Survey of Jamaica (various years).

**Statistical analysis:** Data were entered and stored into Microsoft Excel and SPSS for Window version 17.0 (SPSS Inc; Chicago, IL, USA) which were both used to analyze the data. Pearson's product Moment Correlation was used to assess the bivariate correlation between particular macroeconomic and other variables. Scatter diagrams and best fit models were used on the data. Ordinary least square (OLS) regression analyses were used to establish the model for 1) log mortality and 2) log murder. Ordinary least square regressions were utilized to analyze the possible explanatory variables. A p-value of 5% was chosen to indicate statistical significance. The variables that were entered into the model were

significant in the bivariate correlation (Pearson's Product Moment Correlation). In any instance where collinearity existed ( $r > 0.7$ ); the variables were entered independently into the model to determine as to which of those should be retained during the final model construction. The final decision on whether or not to retain the variables was based on the variables' contribution to the predictive power of the model and its goodness of fit. Each scatter plot was modelled by a linear, power, exponential or polynomial best fit function based on the data, with the aid of Excel as well as in SPSS. Some variables are logged transformed based on their skewness (poverty, inflation, unemployment); but the dependent variable (violent crimes) did not have to be.

James Durban and G.S. Watson (Durbin-Watson or D-W) test statistic can be used to determine autocorrelation (or multicollinearity). The values range from 0 to 4, where 2 indicates no autocorrelation and values greater or less than two suggest the potential of autocorrelation problems (Mamingi, 2005; Gujarati, 1995). Another fact used by the researcher is the eye holding of the correlation matrix, particularly correlation among the explanatory variables. The rule of thumb, for this study is high correlation ( $r > 0.7$ ) among explanatory variables is that high correlation among the regressors is an indication of multicollinearity.

Ramsey's RESET test was used to test for omitted variables (Mamingi, 2005, 50-51). Ramsey's RESET estimate equation is:

$$F = \frac{[(R^2 \text{ new} - R^2 \text{ old}) / \text{number of new regressors}]}{[(1 - R^2 \text{ new}) / (n - \text{number of parameters})]}$$

We reject the null hypothesis is  $F > F_{\text{table}}$ .

Because logging a variable does not remove heteroscedasticity, this study test for its existence (or non-existence) using White's test (Mamingi, 2005; Gujarati, 1995)

**Variables (definition):** The exchange rate (or Jamaican exchange rate) is the number of Jamaican dollars needed to purchase one United States' dollar (US\$1). Inflation denotes the upward movement in the general price level.

Violent crimes (or major crimes) constitute the following offences against person murder, shooting, rape and carnal abuse, robbery, felonious wounding, suicide, infanticide, and manslaughter. In this study, violent crimes denote the frequency of those crimes in the aforementioned listing.

**RESULTS**

Violent crimes have been fluctuating since 1989 in Jamaica, with the highest being in 1996 (24,617 offences against the person). Since 1996 to 2002, the numbers of major crimes have been declining, with periodic fluctuations between 2002 and 2008 (Fig. 1). The

skewness of the distribution was 0.12, representing a relative normal distribution.

The mean number of violent crimes in the decade of the 2000 (2000-2010) was 20,966, which declined by 34.5% compared to the decade of the 1990s (1990-1999).

Figure 2 depicts a distribution of the logged violent crimes in Jamaica from 1989-to-2010. Based on Fig. 2 compared to Fig. 1, there is no difference in the shape of the distribution, when natural logarithm is used on violent crimes. This is a justification for using violent crime instead of logging the variable.

Figure 3 depicts the prevalence of poverty (in %) from 1989-to-2010, with a linear best fit and a polynomial best fit curves. Based on the explanatory power of the



Fig. 1: Violent crimes, 1989-2010

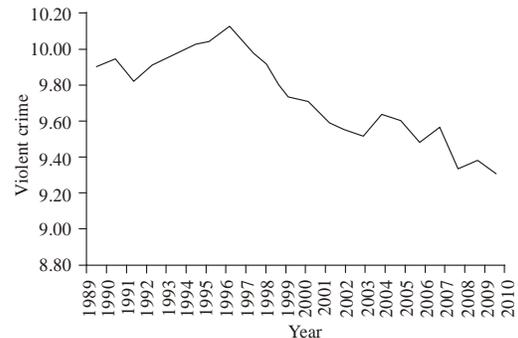


Fig. 2: Natural log of violent crime from 1989-to-2010

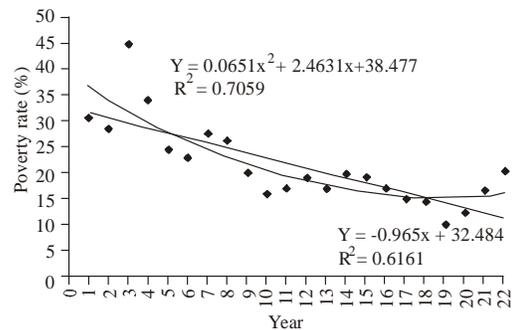


Fig. 3: Prevalence of poverty (in %), from 1989-2010

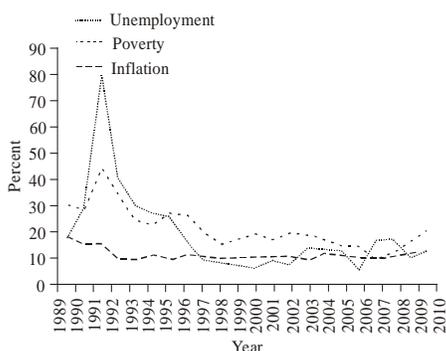


Fig. 4: Unemployment, poverty rate and inflation in %: 1989-2010

non-linear curve, the prevalence of poverty in Jamaica can be best fitted a quadratic Equation.

$$y = 0.0651x_i^2 - 2.4631x_i + 38.477$$

where  $x_i$  represents the year ( $x_1 = 1989, \dots, x_{22} = 2010$ ) and  $y$  means the prevalence of poverty (in %) or the poverty rate (in %):

$$dy/dx = 0.1302 x_i - 2.4631$$

For turning point,  $dy/dx = 0$

So,  $x_i = 19$ , indicating that the poverty rate was at its lowest in 2007.

Figure 4 displays inflation, unemployment and poverty rates in per cent from 1989-to-2010. Inflation, unemployment and the poverty rates peaks in early 1990s (in 1991) has never reached those high rates away.

**Hypothesis 1 (Eq. 2):**

$$\text{Violent crime}_t = \beta_1 \text{Poverty}_t + u_t \tag{2}$$

Testing the hypothesis that violent crime is a function of poverty (Eq. 2), Table 1 shows that this hypothesis is true and that the variables are positively correlated with each other. The Durbin-Watson test (DW) is indicating autocorrelation between or among the regressors (explanatory variables), but in this case there is only one factor, in this case, the DW is testing for misspecification as some variables are omitted from this model. Thirty-eight per cent of the variance in violent crime is explained by a 1% change in poverty in Jamaica.

**Hypothesis 2 (Eq. 3):**

$$\text{Violent crime}_t = \beta_1 \text{Unemployment}_t + e_t \tag{3}$$

Table 2 presents the information on variables used to test hypothesis 2. There is no statistical correlation

between violent crimes and unemployment (F statistic = 0.292,  $p = 0.595$ ). The DW statistic indicates that there is autocorrelation. Even though the DW statistic is designed to test for autoregression errors, in this case, it is examining for misspecification, which shows that there are omitted variable(s).

**Hypothesis 3 (Eq. 4):**

$$\text{Violent crime}_t = \beta_1 \text{Poverty}_t + \beta_2 \text{Unemployment}_t + \beta_3 \text{Inflation}_t + \beta_4 \text{GDP} + \beta_5 \text{Exchange rate} \tag{4}$$

Table 3 presents information that test hypothesis 3 (Eq. 4). Of the five macroeconomic variables that were entered into the model, two emerged as statistically significant which explained violent crimes (F statistic = 10.1, Probability (F statistic) < 0.00001). The two factors of violent crimes are GDP per capita growth ( $p = 0.003$ ) and annual exchange rate ( $p = 0.011$ ). Eighty per cent of the variance in violent crimes is explained by changes in GDP and exchange rate ( $R^2 = 0.795$ ). Based on Table 3, the correlation found in hypothesis 1 is a spurious one, which means that no real relationship exists between poverty and violent crime ( $p = 0.942$ ). The DW statistic value does not state whether there is autoregression, so we need to examine the correlation matrix (Table 4).

Table 4 presents information on the correlation among the studied variables. A moderate correlation exists between violent crimes and 1) poverty ( $r_s = 0.606$ ,  $p = 0.003$ ) as well as 2) exchange rate ( $r_s = -0.679$ ,  $p = 0.001$ ). Strong correlation emerged between 1) poverty and exchange rate ( $r_s = -0.849$ ,  $p = 0.003$ ), and 2) poverty and inflation ( $r_s = 0.723$ ,  $p < 0.0001$ ). A direct association emerged between unemployment and poverty ( $r_s = 0.494$ ,  $p = 0.016$ ), but this is a weak relationship. The gray area that is highlighted by DW statistic is because of the moderate correlation between poverty and exchange rate. Poverty is strongly correlated with inflation ( $r_s = 0.723$ ,  $p < 0.000$ ).

Omission of explanatory variable(s)

$H_0$ : There are no omitted variable, the  $F < F_{table}$

$$F = \frac{[(R^2 \text{ new} - R^2 \text{ old})/\text{number of new regressors}]/[(1-R^2 \text{ new})/n-\text{number of parameters}]}{F = \frac{[(0.795 - 0.378)/2]/ [(1-0.795)/19 - 2]}{F = 0.2085/0.012059}{F = 17.29}{F_{table} = 10.068}$$

Given that  $F > F_{table}$ , the null hypothesis is rejected as currently are omitted variables although the  $R^2$  is 0.795, explained by annual exchange rate and annual GDP per capita growth rate.

Table 1: OLS of violent crimes and logged poverty

Variable	Coefficients	Std. error	t statistic	Prob	CI (95%)	Correlations		
						Zero-order	Partial	Part
Constant	-4411.844	6266.319	-0.704	0.490	-17483.16 - 8659.47			
Lnpoverty	7230.727	2073.445	3.487	0.002	2905.60 - 11555.86			

R<sup>2</sup>: 0.378;  
 Adjusted R<sup>2</sup>: 0.347;  
 Mean dependent variable: 17,300;  
 SD dependent variable: 4,110;  
 F statistic: 12.161;  
 Prob (F statistic): 0.0000;  
 DW statistic: 0.595;  
 Standard error of regression: 3321  
 Dependent variable: Violent crime

Table 2: OLS of violent crime and logged unemployment

Variable	Coefficients	St. error	t statistic	Prob	CI (95%)
Constant	10821.695	12566.843	0.861	0.400	-15481.01 - 37124.40
Lnunemployment	2823.055	5222.683	0.541	0.595	-8108.15 - 13754.26

R<sup>2</sup>: 0.015;  
 Adjusted R<sup>2</sup>: - 0.037;  
 Mean dependent variable: 17,600;  
 SD dependent variable: 3, 962;  
 F statistic: 0.292;  
 Prob (F statistic): 0.595;  
 DW statistic: 0.182;  
 Standard error of regression: 4034;  
 N: 21

Table 3: OLS results for violent crimes equation, jamaica 1989-2010

Variable	Coefficients	Standard error	t-statistic	Prob	CI (95%)	Correlations		
						Zero-order	Partial	Part
Constant	31941.881	13094.556	2.439	0.030	3652.81 - 60230.95			
LnPoverty	-213.505	2886.363	-0.074	0.942	-6449.11 - 6022.10			
Annual Exchange rate	-146.753	49.874	-2.942	0.011	-254.50 -39.01			
Annual GDP per Capita growth	-102429.702	28036.888	-3.653	0.003	-162999.71 - 41859.69			
LnUnemployment	-3839.690	3375.466	-1.138	0.276	-11131.94 - 3452.56			
LnInflation	1003.434	927.788	1.082	0.299	-1000.93 - 3007.80			

R<sup>2</sup>: 0.795;  
 Adjusted R<sup>2</sup>: 0.717;  
 Mean dependent variable: 18, 220;  
 SD dependent variable: 3, 625;  
 F statistic: 10.068;  
 Prob (F statistic)<0.00001;  
 DW statistic: 1.2;  
 Standard error of regression: 1932

Testing for heteroscedasticity  
 Using White's test

$$H_0 \text{ is reject if } nR^2 > \chi^2$$

$$LM = nR^2 = 19(0.795) = 15.1$$

$$\chi^2 =$$

Given that  $LM > \chi^2$ , heteroscedasticity is not present in the data.

**Power of the explanatory variables:** Using stepwise regression analysis, 58% of the explanatory power of the model ( $R^2 = 0.795$ ) is accounted for by the annual

exchange rate ( $R^2 = 0.461$ ) and 42% by annual GDP per capita growth ( $R^2 = 0.334$ ). These findings indicate that 46.1% of the variability in violent crimes can be accounted for by a 1% change in annual exchange rate and 33.4% by annual GDP per capita growth (Or GDP). Both the exchange rate and GDP are inversely correlated with violent crimes.

Table 5 presents information on poverty levels in particular Caribbean nations in 1995, taken from Elsie Le Elsie Le Franc *et al.*, 2000).

Table 6 examines the prevalence of poverty rates for Jamaica from 1995 to 2010, with the associated populations and number of people in poverty.

Table 4: Correlation of test variables

		Violent_crime	Lnpoverty	Exchange rate	GDP per capita	LnUnemployment	LnInflation	
Pearson correlation	Violent crime	1.000						
	lnPoverty	0.606	1.000					
	Exchange rate	-0.679	-0.849	1.000				
	Annual GDP per capita growth	-0.433	0.149	-0.144	1.000			
	lnUnemployment	0.137	0.494	-0.598	0.381	1.000		
	lnInflation	0.469	0.723	-0.581	0.182	0.361	1.000	
	Sig. (1-tailed)	Violent crime	0.003	0.003	0.001	0.032	0.288	0.021
		lnPoverty	0.003	.	0.000	0.272	0.016	0.000
		Annual	0.001	0.000	.	0.279	0.003	0.005
		Exchange rate						
Annual GDP per capita growth		0.032	0.272	0.279	.	0.054	0.227	
lnUnemployment		0.288	0.016	0.003	0.054	.	0.064	
lnInflation		0.021	0.000	0.005	0.227	0.064	.	
nViolent crime		19	19	19	19	19	19	
lnPoverty		19	19	19	19	19	19	
Exchangerate		19	19	19	19	19	19	
Annual GDP per capita growth	19	19	19	19	19	19		
lnUnemployment	19	19	19	19	19	19		
lnInflation	19	19	19	19	19	19		

Annex

Table 5: Poverty levels in the caribbean, 1995

Country	Real growth in GDP	% of persons in poverty
Barbados	4.4	11.6
Belize	1.6	22.6
Jamaica	0.7	27.5
Guyana	1.8	30.5
St. Lucia	2.9	18.8
St. Vincent & the Grenadines	5.7	32.7
Grenada	5.8	31.8

Le Franc *et al.* (2000), Poverty in the Caribbean, Vol. 1 in Henry-Lee (2001)

Table 6: Poverty levels in jamaica

YEAR	Population	% Of persons in poverty	No. of people in poverty <sup>1</sup>
1995	2,498,400	27.5	687,060
1996	2,521,500	26.1	658,112
1997	2,546,700	19.9	506,793
1998	2,566,900	15.9	408,137
1999	2,581,700	16.9	436,307
2000	2,599,100	18.7	486,032
2001	2,612,500	16.9	441,513
2002	2,622,500	19.7	516,633
2003	2,638,300	19.1	506,554
2004	2,650,900	16.9	448,002
2005	2,656,669	14.8	393,187
2006	2,669,542	14.3	381,745
2007	2,682,120	9.9	265,530
2008	2,692,358	12.3	331,160
2009	2,698,810	16.5	445,304
2010	2,705,800	20.3	549,277

Planning Institute of Jamaica (1990-2010); Survey of Jamaica (2004);

<sup>1</sup>:Computed by Author

A description of the incidence of poverty rates for Jamaica from 1993 to 2003 are presented in Table 7.

Table 8 shows the yearly changes in the incidence of poverty rates for Jamaica from 1993 to 2003.

## DISCUSSION

In and outside the Caribbean, poverty is a central theme in the crime discourse (Harriott, 2004; Robotham, 2003; Kelly, 2000; Levy, 1996; Ellis, 1992; Moser, 1999; Moser and Shrader, 1999; Moser and Holland, 1997). Some scholars and institutions have gone further to Planning Institute of Jamaica (1990-2010) and Economic and Social postulate that it is causally related to crime (ECLAC, 2008; Robotham, 2003; Tremblay, 1995), suggesting that all confounding variables have been identified, isolated and the conditions of causality have been met. There is a remarkable distinction between contributing (or contributory, which speaks to association) and causal factors, but Robotham did not make this difference known and he treated both issues so though they are synonymous concepts. Robotham wrote that “The contributory factors to crime can be divided into two groups: background causal factors and specific situational factors” (Robotham, 2003), failing to establish clear conceptual differences between association and causality. Another limitation embodied in Robotham’s work was the non-recognition of confounding factors, specification and multicollinearity which could have existed among some of the identified variables, which Blalock warned against in non-experimental research (Blalock, 1964).

This study will not venture into a discourse of the distinction between association and causation, but needs to point out to its readers that there are clear differences between these concepts, and these can be read in the works of other scholars (Babbie, 2007; Blalock, 1964,1971; Blalock and Blalock, 1968; Selltiz *et al.*, 1959; Simon, 1957). However, for note, readers should be

Table 7: Incidence of poverty by region. 1993 - 2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Urban	16.7	13.8	15.0	17.2	9.3	8.6	10.6	9.9	7.7	10.4	9.5
Periurban	22.9	20.0	22.8	22.0	14.8	13.4	12.1	16.6	13.3	18.7	15.8
Rural	29.6	28.8	37.0	32.8	27.4	19.5	22.0	25.1	24.1	25.1	24.2
Jamaica	24.4	22.8	27.5	26.1	19.9	15.9	16.9	18.7	16.9	19.7	19.1

Planning Institute of Jamaica (Poverty Estimates, 1993-2003), 2003

Table 8: Incidence of poverty by region 1993 - 2003

	Annual % Change										
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Urban		-17.37	8.70	14.67	-45.93	-7.53	23.26	-6.60	-22.22	35.06	-8.65
Periurban		-12.66	14.00	-3.51	-32.73	-9.46	-9.70	37.19	-19.88	40.60	-15.51
Rural		-2.70	28.47	-11.35	-16.46	-28.8	312.82	14.09	-3.98	4.15	-3.59
Jamaica		-6.56	20.61	-5.09	-23.75	-20.10	6.29	10.65	-9.63	16.57	-3.05

Computed by Author

aware that contributing does not denote causation, and like Selltiz *et al.* (1959), three conditions must be fulfilled before causality can be established, while association (relationship, contribution) does not require those conditions. The conditions are:

- concomitant variation or covariation between the dependent and the independent variables
- temporal asymmetry or time ordering between the variables in condition
- the elimination of other possible causal relationship between the variables (Blalock, 1963, 1964)

Those conditions were not identified or discussed by Robotham, which would lay a premise for either association or causation in the crime discourse. This paper revisits crime-and-poverty causal phenomenon and simultaneously forwards another explanation in this discourse.

A discussion of the crime-and-poverty phenomenon must be contextualized with the definition of poverty. The rationale for this paper examining a definition of poverty is to clearly understand its tenets in order not to broadly label issues that are involved therein. Taylor aptly described the value of a definition, when he opined that “Definitions are important because they often promote a particular perspective on controversial issues” (Taylor, 1991). The issue in this research is not about controversy; it is re-visiting an established theoretizing and testing a hypothesis in order to aid policies formulation. The definition that will be used is one by Townsend, that:

Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the kinds of diet, participate in the activities and have the living conditions and amenities which are proved, in the society to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs and activities (Townsend, 1979)

Poverty is, therefore, not only a financial matter, it is the exclusion from socio-political participation, which was expressed by European Union in 1993, that:

The poor shall be taken to mean persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the member states in which they live (Commission of the European Communities, 1993).

There are other definitions of poverty that do not express the social exclusion issue, but they are centered on financial inadequacies such as one by Senate Community Affairs References Committee (SCARC), which states that:

Poverty is essentially the lack of means to live. At the heart of any consideration of poverty lies the issue of what is needed to live “a decent life” and, more fundamentally, what it is to be human (SCARC, 2004).

The epistemological premise upon which the SCARC of the Australian Parliament saw poverty is based on absoluteness. Poverty is categorized in two major heading: (1) absolute and (2) relative poverty (Sen, 1979, 1981). Absolute poverty denotes the lack of particular social necessities that is caused by ‘limited material resource’ in which to function – affordability of meeting basic needs, such as adequate nutrition, clothing and housing. Relative poverty, on the other hand, speaks to the individuals’ low financial resources (money or income) or other material resources relative to other people. The Senate says that “relative poverty is defined not in terms of a lack of sufficient resources to meet basic needs, but rather as lacking the resources required to participate in the lifestyle and consumption patterns enjoyed by others in the society” (p. 6). Such a definition relies on the material aspect to poverty. “Poverty is not just an economic condition: the lack of daily necessities-

of adequate food, water, shelter, or clothing. It is the absence of the capabilities and opportunities to change those conditions” (Inter-American Development Bank, 1998), which is in keeping with the broad definition that is inclusive of social exclusion.

Fields (1980), unlike others, summarized poverty by labelling a face to the phenomenon, that:

...it comes as no surprise that poverty is concentrated among those with certain characteristics, such as poor education, large families, mediocre occupations, rural residence, and lack of land (Fields, 1980).

Further on in the study, he postulated that:

The poor are disproportionately young, female, and in large families. If employed, they are apt to be in agricultural occupations and rural areas or in petty commerce, services, and other backward sectors (Fields, 1980).

The categorization of the poor by Field is equally applicable to Jamaica (Table 5-8, Planning Institute of Jamaica, 1990-2010), with some pertinent additions. In Jamaica, the urban poor dwell in dilapidated buildings, marginal physical milieus, old zinc perimeter fencing and political aligned to one of the major political parties (the Jamaica Labour Party, JLP; the Peoples’ National Party, PNP). If employed, they are engaged in the informal sectors (pedlars, vendors, ‘hustlers’). And those in the formal sector are predominantly domestic helpers, security guards, waiters, stores clerks, cashiers, supermarkets helpers, barmaids, and labourers (painters, mechanics, woodworkers, carpenters, janitors, and repair men).

Although there is a broader definition of poverty that concentration of economics, money and/or material deprivation dominates the discourse. Fields (1980) in *Poverty, Inequality and Development* states that there is dialectic in poverty reduction and income disparity. He cites that “...absolute incomes were growing and absolute poverty was being alleviated, relative income disparities were widening” An aspect to Fields’ monograph is inequality to which this paper will not be privy to analysis. This study will focus on poor and their ability to access tertiary level education. In some countries, despite the widening of the gap between the rich and the poor (Fields, 1980), an empirical analysis of the poor concerning access to tertiary education is timely and this will aid the researcher in understanding educational attainment of the poor. Majid (2003) summarized the poverty and inequality discourse by opining that “...the acceptance of the idea of growth reducing poverty does not mean that better access by the poor to the growth process ...”.

Poverty is not stationary over one’s lifetime, and so any valuation of this construct must change with income and price changes. Once the ‘poverty line’ has been established within a particular time for a particular geopolitical space, it must be updated in order to reflect changes in cost of living and standard of living within that time space. According to the SCARC (2004), “updating by movements in prices adjusts the poverty line for changes in the cost of living whereas updating for movement in incomes adjusts for changes in the standard of living”. Studies have used different approaches in the updating of the poverty lines. These are (1) Consumer Price Index (CPI), (2) average weekly earnings, (3) household disposable income per capita, (4) median equivalent disposable income (SCARC, 2004).

Based on Le Franc *et al.* (2000) in Henry-Lee (2001), in the Caribbean, in 1995, Jamaica experienced the highest poverty compared to Barbados, Belize, St. Lucia, Guyana, St. Vincent and the Grenadines and Grenada (Table 1). Over the last decade, in Jamaica, according Henry-Lee (2001) poverty has been declining (2000). The Economic and Social Survey and the Jamaica Survey of Living Condition (for various years) concur with Le Franc and Henry-Lee (2001) (Annex), but that poverty affects many tenets of the lives of those who are held captive.

Measuring poverty has many approaches, and the first scholar to begin this quantification process of the Jamaican experience was Derek Gordon (Gordon, 1989 in Downes, 2001). He formulated a method that was able to measure ‘absolute poverty’. Over the years, other academics have sought to continue the quantification process. The method of measurement has changed over time with Witter (1994), Henry-Lee (1995), Henry-Lee *et al.* (2001) and King (1998) being among scholars who have aided the conceptual utilization. And in 2007, another Caribbean scholar operationally aided the Planning Institute of Jamaica (1990-2010) by recalculating the poverty line in keeping with contemporary realities.

For years, the Planning Institute of Jamaica has been utilizing the ‘absolute’ approach in measurement of the poverty rates (line). The Institute uses the following component for the quantification of poverty: (1) “annual survey of living conditions, (2) the components of the Kingston Metropolitan Area (KMA) [or urban zones] food basket and cost of the menu prepared by the Ministry of Health (MOH); and (3) the price lists from STATIN used to estimate the differences in the costs of baskets in the other geographical areas - Other Towns [Peri-urban areas] and Rural Areas” (Henry-Lee, 2001). Such an approach has resulted in the establishment of poverty rates since 1989, which is widely used to stipulate discussion on the prevalence and incidence of poverty in Jamaica.

In Jamaica, the quantification of poverty begins with a poverty line followed by the adult equivalent poverty line in a particular geographical space, in addition to the 'reciprocal' food share of the poorest quintile to which is used to times the annual 'cost of the baskets' (Henry-Lee, 2001; Le Franc and Downes, 2001) Despite the terminology used by Gordon (2001), Henry-Lee (1989), Witter (1994), Witter and Anderson (1991) and Sen (1979, 1981), the PIOJ and STATIN, and the Ministry Paper 13/97 as published by the National Poverty Eradication Programme (2005) the construct of poverty still converge with Professor Henderson theorizing. Poverty is measured quantitatively by using a 'poverty line'. The prevalence and incidence of poverty in Jamaica are captured in the Annex as they provide a comprehensive account for the number of Jamaicans who are economically marginalized and social excluded from the many privileges afforded the averaged person.

The standard definition of poverty, within the context of the computation of the Planning Institute of Jamaica, is used in this study and not seemingly living in a particular geo-political area. The discourse on poverty seems to support the common sense notion, unscientific hypothesis, that poverty causes crimes as was purported by Don Robotham in an article entitled 'Crime and Public Policy in Jamaica (Robotham, 2003) and Tremblay (1995). However, the current findings contradict the common sense notion that poverty is a causal factor of violent crimes, and it goes further to establish that the seemingly direct association between poverty and violent crimes is a spurious correlation. This means that the bivariate positive relationship between poverty and violent crime does not exist, which without expanding analysis beyond simple bivariate association this would not have emerged. Simon (1957) had established that spurious relationship can occur because of bivariate analysis, which is a not true statistical association between variables and this forwarded an understanding all bivariate relationship really exists when multiple variables are examined simultaneously on a single dependent phenomenon. It is the bivariate relationship between poverty and violent crimes that Levy observed in his study (Levy, 1996), which should have been examined as specification issues (omitted variables) were not taken into consideration. The true predictive factor of violent crime is the exchange rate. The fact that this was not examined by Levy (1996) and Robotham (2003) meant that the misspecification was not identified in their studies and this is the justification why multiple regressions a tool in econometrics is used to build models instead of bivariate analysis (Griffiths *et al.*, 1993; Gujarati, 1995; Mamingi, 2005; Simon, 1957; Pindyck and Rubinfeld, 1998). Particularly when a researcher needs to examine cause inferences or models, the use of a single bivariate two variable examination is

inadequate as causal explanation requires elimination of other variables as there are assumptions to be tested in order to infer causes which cannot be established with a single two variable bivariate analysis (Blalock, 1964; Neuman, 2003; Asher, 1983; Selltitz *et al.*, 1959).

Unlike Robotham (2003) who spoke about poverty being a causal factor, Anthony Harriott (2003, 2004) and Horace Levy (1996) were less forthright to label it as a factor. The eyeballing of where violent crimes occur may give the impression that it is a factor and that it is a causal one. This research is warning academic scholars and non-academic not to use bivariate correlation and exposing:

- A real association and
- A causal factor, without experimentation and examining of specification

Becker (1968) had already established that many factors simultaneously influence involvement in criminal activities, which would equally apply to violent crimes has provided a rationale for the use of multivariate regression technique. Within the context of Becker's seminal work, a single bivariate examination of two variables should not be used to determine a factor of violent crimes as:

- Omitted variables would not have been tested for
- Autocorrelation cannot be examined
- If the excluded variables are important, the error term ( $e$  or  $u$ ) will be autocorrelated given that the error term incorporates the influence of the omitted variables
- The estimates will be greater than it should because of omitted variables
- The  $\beta$  estimates will no longer be efficient

Levy and Harriott was not able to identify the aforementioned issues because they relied on bivariate relationship analyses, which lack the extent to determine many variables influencing a single dependent variable. It is the weakness in the power of the bivariate analysis technique that prevents an examination of spurious correlation and misspecification and omitted variables.

Robotham (2003), on the other hand, explored many variables from a theoretical perspective, which underpins his interpretation of the crime phenomenon in Jamaica. The use of empirical literatures to argue was a strong point in Robotham's work, but care should be taken in examining such study with the support of current objectivism. Robotham aided the discourse by added different and modified perspectives on crime phenomenon in Jamaica such as the growth of the informal sector, politics, social values, the police and inequalities. Although he did not wholesaley accept the theoretical

perspective forwarded by Tremblay in the 1990s (Tremblay, 1995), Robotham failed to objectively examine specification, omitted variables and the test the established factors. There are works that aid the importance of aforementioned issues in inquiry as well as a justification for causal model in the examination some sociological data (Berry and Feldman, 1985; Blalock, 1967, 1963; Alker, 1969).

Robotham (2003), Moser (1999) and Levy (1996) believed that unemployment is directly correlated with violent crimes as well as poverty, and forward many arguments to support this perspective. According to Levy "In a context of prolonged unemployment and unrelieved poverty, this appeared to many males as the only way to gain respect and status [criminal activities, particularly killing]" (Levy, 1996). Early, he opined that "They [respondents] connect the growth in population ("if anyone breed (i.e., become pregnant) in my house them going to push me off mi bed"), as both effect and cause, to the unemployment trend. Along with people from other areas they point to a direct link between unemployment and crime, to the economic pressure driving violence" (Levy, 1996). The common sense notion of poverty and crime, and unemployment and crime is equally believed by institutions (United Nations and World Bank, 2007), indicating that this aided Horace Levy in formulating a perspective that these were factors of violent crimes in Jamaica. The empirical evidence does not support the common sense perspective held or the empirical work of Ellis (1991), Moser (1999) about 1) poverty and crime and 2) unemployment and crime.

Beckford (1972) and Levy's studies found that economics explains the rise in violent crimes in Jamaica, which concurs with the current study as well as that of Becker's seminal paper. Like Becker who found that crime is an economic issue, which emerged in Levy's work, the present study concurs with the economics of violence. This research found that economic and the macroeconomic environment account for almost 80% of the variability in violent crimes in Jamaica. Such findings explain the inverse correlation between a) GDP per capita growth and violent crimes and b) exchange rate and violent crimes as not only the supply of criminal activities is highly influenced by economics, but that adverse economic deprivation and marginalization are likely to pull people in as a source of economic reprieved and an escape route from the suffering. Hence, when Levy (1996) linked suffering to crime and violence this is understandable as economics is a means of survival and not having it for sustained periods will make it easy for a transition into criminality as did Becker (1968). The pull factor of criminality it not its 'quick money or cash' but its source of relieve from the suffering. So when the World Bank (2003) wrote that:

Between 1998 and 2000, according to police report, drug and gang related murder accounted on average for 22% of total murders. Domestic violence represented about 30% of total murders. The rising severity of the murder problem is highlighted by comparison with New York, a high crime city-while both Jamaica and New York experienced similar rates of murder in 1970, Jamaica's murder rate had increased to almost seven time that of New York's by year 2000 (World Bank, 2003)

The answer to the exponential increases in murder is owed to the economic climate and the opportunity cost of criminal involvement. The opportunity costs of non-criminal involvement for those who are adversely affected by contracted economy are:

- Suffering
- Children not attending school
- High dropout
- Illiterate children
- Increase pregnancy
- Increased health conditions
- Social exclusion

This is weighed against the benefits of involvement, low rate of arrest, sentencing and wider social acceptance, which then makes criminal engagement an economic attraction for the economically marginalized and socially excluded people. This is enveloped in Levy's findings that "All around, the cost of living was more tolerable and certainly not the oppressive burden it is today" (Levy, 1996, 9). Further on he opined that "Encouragement to young girls to 'go get a man' sometimes come from parents without the economic resources to satisfy them (Levy, 1996) and "Economic frustration is also said to be one of the reasons leading especially women to abuse their children". Economic is both a pull and a push factor into criminal activities and violent crimes in Jamaica, which parades under the radar of poverty. It may appear surprising that murder in Jamaica should exceed murders in New York in the late 1990s, but the explanation is simply, economics. This study concurs with Hyacinth Ellis's findings that GDP is inversely correlated with number of crimes (Ellis, 1992, 1991), although this study was on number of violent crimes. And like in Barbados (Albuquerque and McElroy, 1999), the worsen economic conditions in Jamaica influence the number of violent crimes.

Ellis (1991) was not forthright in to link the economic decline in the 1970s to violent crimes in Jamaica, but this study is able to extrapolate from the findings that it was and is. From 1996 to 1999, Jamaica experienced economic recession. This prolong recession translate into economic deprivation, suffering, economic frustration and

made crime a pull phenomenon. The woes of Jamaicans were coupled with the banking crisis of the mid-1990 and the massive growth in the national debt (International Monetary Fund, 2008; Kirkpatrick and Tennant, 2002), which spiralled the social cost of inclusion into criminality and crimes were an avenue of economic escape for some people as the formal economy was unable to provide personal economic development. Economics and the macroeconomic milieu in Jamaica as well as macroeconomic policies were accounts for the violent crimes, which see the criminal disparity between Jamaica and New York in the late 1990s into 2000. Robotham noted that 'economics' and 'macroeconomic policy' in Jamaica will continue to affect violent crimes (Robotham, 2003), which underpins the real crime problem. New York, on the other hand, is not faced with the same set of economic conditions and policy measures that Jamaica experienced in the mid-to-late 1990s, and a political economy which was indirectly creating an alternative industry (read Robert Merton's theorizing in Jones, 2000). The inequality, income inequity, social exclusion and economic marginalization of many Jamaicans made the underground economy an attraction for economically challenged, and activities such as drug (cocaine, ganja trafficking) were a side industry that affect those who were unable to be actively engaged in the formal economy.

The tightly bureaucratic 'bourgeoisie' class in Jamaica has created and continued with a socially exclusivity system that economically marginalized the masses and like in slavery the marginalized majority must create minimal existence from remnants. The establishment of an informal economy is similar to the creation of Kingston by the poor and freed slaves in response to economic survivability. Instead of having an economic transformation that would lead to the economic upliftment of the masses, poverty is labelled as the cause of crime and the structure shows how they have been alleviating this phenomenon, while the real issue is unresolved and unaddressed. The 'ecosocial' stratification created by the economic class in Jamaica has not provided the averaged people with a good economic and social basis that will allow them to feel a part of the social space, Jamaica. It is the persistent economic deprivation and not poverty that made crime a lucrative business in Jamaica as the alternative for the marginalized groups is minimal survivability. The informal economy developed by the masses is in response to the economic challenges levelled on them by the formal system, and if criminality is a part of the some people they will become engaged because it provides economic relief. George Beckford, Richard Bernal, Dereck Gordon, and Carl Stone are among the Caribbean scholars whom have long shown that the economic system coupled with socioeconomic inequalities which are legacies of the plantation system

were found in contemporary Jamaica, and they account for the current society (Beckford, 1972; Bernal, 1986; Gordon, 1987; Stone, 1987). Like in slavery, where there was social deviance which grew out of socioeconomic inequalities (Besson, 1995), violent crimes is the face of the economic frustration of the people and this is read as poverty, which requires alleviation. This is captured in Levy's study, when Horace Levy remarked that a participant opined stealing and other crimes is a means of survival (Levy, 1996). What encapsulates the pull into criminal activity is what Levy forwarded later that "...but listed [them] as the last resort [i.e., criminal engagements]", suggesting that the society has built crime as an alternative source for unwilling people.

When people say that "Crime needs to be reduced urgently not primarily for investment purposes, but because it is destructive of life and poverty, bring grief and terror to individuals and communities, and is morally abhorrent" (Robotham, 2003), it gives a sense that such issues would have reached the consciousness of the economic class to shift the economic situation of the masses. However, the response is to lower poverty, have seasonal activities in marginalized communities, and offer a few menial tasks, which are not addressing the causes of the violence in the society. Violence in Jamaica is fundamentally an economic phenomenon (economic deprivation and marginalization) and we should cease from seeking to solve the unrelated issue if we intend to remedy the crime situation. Violent crimes will continue in Jamaica as long as economic basic of the masses is not substantial incapacitated and they are restricted into a life of meaningless wishes. It is true to postulate that crime rivals and retards economic development (World Bank, 2005); but violent crimes are more than macroeconomic issue, they are the unlawful terminal of human capital, life, future input into the development apparatus, and present destruction of future scientific advancement which are embedded in the lost human capital.

The human sufferings of Jamaicans have intensified since the 1990s as in 1990, the poorest 20% earned 5.8% of the national income at a time when the prevalence of poverty was 28.4% (Planning Institute of Jamaica, 1990-2010). At the ending of 2004, the prevalence of poverty had declined by 40.5% compared to 1990 which corresponds to a 10.3% fall in income for those in poorest 20% (Planning Institute of Jamaica, 1990-2010). Simultaneously, the number of murders for the same period rose by 171.4% and the annual exchange rate grew by 754.3%. The exchange rate translates into higher prices of imported goods, many of which are consumed by the all Jamaicans, indicating that economic hardship would have extended beyond the poorest 20% and that the widespread human suffering which emerged from Powell *et al.* (2007) would have accounted for the drastic escalation in murders as people seek alternative economic

survivorship. The alternative opportunities are related to the informal industry, which embodies criminal and illegal activities as defined by the formal system. This is an avenue of survivorship making criminal activities a pull factor in periods of economic hardship.

Between 1988 and 2011, poverty and unemployment fell by 33.4 and 28.3% in Jamaica and within the context of the crime-and-poverty paradigm crimes should have declined. Although poverty and unemployment has declined in periods, this corresponds to increased cost of living that translates into widespread economic hardship. The statistics on violent crimes in Jamaica fell by 44.4% in the same period, which gives some credence to the crime-and-poverty paradigm. Harriott (2003, 2004) had noted that there is a shift in the typologies of crimes committed, which questions the composition of major crimes. Of the violent crimes, murder that continues to be problematic for Caribbean policy makers to solve, especially Jamaicans, grew by 225.3%, while many of the other crimes declined excluding suicide, rape and canal abuse. During the same aforementioned period, GDP fell by 123.9% which accounts for pull factor in increased criminal activities and resulted in the geometric increase in murders. The experiences of Jamaica are typical to many other nations in Latin America and the Caribbean that evidence dispels the crime-poverty paradigm.

The discourse on development, particularly structural development policies of the World Bank on Third World nations, has shown that these have destroyed the economic base on many developing countries, including Jamaica (Rapley, 2002). The empirical evidence is available to show that following Structural Adjustment Policies (SAP) in the 1980s in Jamaica, inflation and poverty grew to record levels (Planning Institute of Jamaica, 1990-2010 which spelt widespread human suffering. SAPs reshaped the national economy of many Third World nations and by enlarge was a traumatic altering experience. What is omitted outside of the development discourse on SAPs is its contribution to the murders. During the SAP, murders grew to geometrically in Jamaica as the economic suffering discounted the value of human lives and began spiralling murders of the 1980s compared to the 1970s.

Outside of the 1980s, on disaggregating the murder and GDP statistics it was observed that for every time there was an economic recession, murder rose precipitously afterwards. Following the economic recession of 1996-to-1999, murder rose by 4.4% in 2000 and 34.3% in 2001. Explaining rise in GDP is also outside of economic recession to falls in growth. In 2009, GDP fell by 367% compared to the previous year when murders increased by 4.9%. And when Jamaica entered the recession in 1996, GDP declined by 460% compared to 1995, which was associated with an 18.6% rise in murders and 5% reduction in poverty. In fact, during the economic recession with the exception on 1999, fell was

a decreasing slope. Between 1988 and 2011, the highest annual increase in murder took place in 2004 compared to the previous year (50.9%), whilst poverty declined by 11.5% and GDP was stationary.

The historic murderous year of 2009 in Jamaica (1,680 people) corresponds to the most precipitous decline in GDP (567%) and only a 34% rise in poverty. There is now empirical data to substantiate a new paradigm to explain the crime phenomenon in Jamaica as the old, crime-poverty paradigm does not justify the reality. This is also supported by statistical data which revealed that poverty was and is substantially a rural phenomenon (between 50 and 68%), whilst approximately 80% of murders were committed in urban zones, mainly Kingston, St. Andrew, St. Catherine and St. James (Planning Institute of Jamaica, 1990-2010; Statistical Institute of Jamaica, 1989-2009). Murder is not the only violent crime that is mostly committed in the aforementioned parishes; this extends to robbery, rape, carnal abuse, shooting and makes it highly improbable to explain the crime phenomenon using the crime-and-poverty paradigm as those parishes are between 80-100% urban.

## CONCLUSION

Social structure in Jamaica continues to use physical resources and poverty alleviation strategies to address the crime problem. "It would be a tragic mistake to believe, however, that the simple transfer of some physical resources will solve the problem" argued Levy (1996). A part of the tragic mistake is to study poverty and unemployment, implement policies to address those issues because there is a belief that they are causally related to the crime phenomenon. The answer is embodied in the crime statistics as poverty has between 1989 and 2010, poverty declined by 33.4%, yet Jamaica is ranked in the top 10 murderous nations in the world.

The society needs to understand that crime is an economic escape for some people because of the economic frustration and what they are called upon to do by the social structure. The time has come for Jamaicans to recognize that crime problem cannot be fundamentally changed without a change of the economic base of the society, including removing the social exclusivity and economic marginalization. There is that underlining need for social, political and economic transformation of the society that will make Jamaica a place worth being and living for all and not based on a few powerful interests' agenda. Social exclusivity has retarded the human capital from the marginalized people being able to conceptualize and create new frontier in the sciences, sociology, psychology and education.

The platform that should have been used to dispel the common sense notion of crime-and-poverty in Jamaica is the poverty and crime distribution. Two in every 3 poor

Jamaicans live in rural areas (Planning Institute of Jamaica, 1990-2010), and among the poor 1 in every 5 are unemployed (Theodore *et al.*, 2002). If unemployment as well as poverty was causal related to poverty as suggested by Moser (1999), Robotham (2003), ECLAC (2008) and Moser and Shrader (1999), then it would be true to forward that crime would be higher in rural than in urban areas. This reality is not the case in Jamaica. Violence is substantially an urban inner-city phenomenon. Another case postulation that would be equally true within the context of the crime-and-poverty causal relationship is all inner-city communities would have a high crime rate. Again, this is not the case. The present study found that neither poverty nor unemployment is associated with violent crimes, and by extension that poverty and unemployment are not causally related to violent crimes in Jamaica.

Another fact that disproves the crime-and-poverty phenomenon is poverty and inflation. There is a strong bivariate correlation between poverty and inflation ( $r_s = 0.723$ ,  $p < 0.0001$ ), although this does not seek to establish causality, there is no true association between violent crime and inflation in Jamaica. In 1991, when inflation reached its zenith in Jamaica, there were 18,522 cases of violent crimes (561 murders), in 1992 when inflation declined by 49.9% with violent crimes increasing by 8.9% and murders by 12.2%. In 2009, when murders were recorded as the highest in nation's history, inflation was 10.2% and the prevalence of poverty 16.5%. The reality in Jamaica was lower inflation which corresponds to higher murders and lower poverty. In 2007, unemployment was 9.8%, which is the 5<sup>th</sup> lower since 1989; poverty rate was the lowest in 21 years (9.9%; 1989-2010) and in Powell and his colleagues' research majority of Jamaicans (62%) indicated that they were unable to cover their expenses from the attained salary (or wage) and 61% stated that they are worse off or about the same as 12 months ago (Powell *et al.*, 2007). In the same period, violent crimes in Jamaica rose by 8.2% and murders by 17.5%.

The rationale behind supply and demand for violent crimes in Jamaica is an economic matter. The justification of the economics of crimes is well documented in the literature in Jamaica Francis *et al.* (2001) and outside (Becker, 1968). In fact, in Levy's study, the people indicate that involvement in criminal activities in a last resort if they are unable to find alternative economic opportunities. The head of the household is expected to provide for his/her family and if not he/she is judged 'worthless' which makes it increasingly difficult not to have economic resources as there is a social stereotype and stigmatization that no one wants attached to him/herself. This means that no economic resources denotes that you must do something, anything to have it in order to provide, protect and nurture the family. The

crime-and-poverty phenomenon must reclude itself explanatory importance and policy driven direction and allow economic polarization to take its rightful place in explaining the crime situation and aid policy formulation.

In summary, the Jamaican society is called upon to use a new paradigm as the old one has failed to address issues since pre-and-post independence. And there is urgency in having economic transformations that remove social exclusivity and provide a good economic based for the people, and not continues with a society that mainly benefits the economic class. The structure needs to use findings from the current study as well as those which emerged from Powell *et al.* (2007) that found 31 out of every 50 Jamaicans indicated that their salaries (or wages) were unable to cover expenses and only 2 out every 5 of them indicated that they were better off in 2007 compared to 2006. In 2010, 103, 973 more Jamaicans became poor compared to 2009 (Table 2) during a period when murder declined by 252, which indicates that the crime-and-poverty paradigm is not fitted by the data. The poverty paradigm should no longer be used as a means of policy formulation, discourse, thought, and this researcher is recommending an ecosocial paradigm. The ecosocial paradigm encompasses economic marginalization, social exclusivity, deprivation, economic difficulties, human suffering, income inequality, hopelessness, police exploitation of citizens, reform the justice system, educational and training imbalances, language reform, self-esteem issues and political victimization. The ecosocial paradigm fits the data for Jamaica unlike the poverty paradigm that is clearly a far off from the explanation of crime phenomenon.

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