Scopus®

DO THE CRIME AND THE SOCIOECONOMIC STRAIN AFFECT THE ECONOMIC GROWTH? A CASE OF AN EMERGING ASEAN ECONOMY

Somdech Rungsrisawat[1], Kittisak Jermsittiparsert[2], Sattapas Thanetpaksapong[3]

[1]*Faculty of Management Science, Suan Sunandha Rajabhat University, Bangkok, Thailand*
[2]*Social Research Institute, Chulalongkorn University, Bangkok, Thailand*
[3]*Provincial Police Region 2, Royal Thai Police, Chonburi, Thailand*

E-mails: [1]somdech.ru@ssru.ac.th, [2]kittisak.j@chula.ac.th (corresponding author), [3]sattapas19081970@gmail.com

Abstract. The key purpose of this research is to explore the nexus between crime, socio economic strains and the economic growth of Thailand. The study has used the ARDL technique to achieve the objectives of the study. The finding revealed the fact that the roles of crime have been well emphasized in the literature, especially on how it acts as a stoppage on the progress of the economy in terms of growth. A crime committed in the economy incurs more expenditure and causes the mobility of highly skilled labour which is worse than the formal labour market. Socioeconomic strains have similar dimensions of impacts on crime variables regarding the positive relationship based on the above results. Deterrence variables performed as expected on other crime variables except on person's crime. Family instability showed a positive impact on property crime. The extent that socioeconomic strain affects crime variables has shown that the strain of frustration, anger and stress in people are exhibited in the social and economic factors that prevail in Thailand. Individuals facing economic hardships brought by socioeconomic factors would innovate alternative means to survive.

Keywords: crime; socioeconomic strains; economic growth; Thailand.

1. Background

Crime-related issues have been identified as a threat to budget actualisation by the Thailand Government (Suksamran, Trimek, Jermsittiparsert, & Siriattakul, 2017). This threat of crime is manifested in the form of violence, arson, false pretense/cheating, unlawful possession, robbery, assault, murder, theft, destruction, fraud and corruption in the country (Jermsittiparsert, Trimek, & Vivatthanaporn, 2015; Jermsittiparsert & Akahat, 2016; Jermsittiparsert & Ruangsilp, 2017). In the 2014 budget presentation, fraud in pension administration, corruption, destruction of property and theft were seen as the reasons for the increased costs of governance over time. In addition to the direct costs of these various crimes, the government also bore the social costs of crime including arrests, prosecution and fixing of properties. In turn, increased costs of governance may jeopardize development objectives like the drive for economic growth, improving income inequality and alleviating poverty. That is because the business and economic outlook in a crime-prone environment may not promote economic development due to the emigration of investors The United Nations Office on Drug and Crime (UNODC) (2005) asserted that crime is threatening the economic performance of ASEAN countries. This is because various crimes are pervasive across the continent including homicide, harassment and assault, bribery and corruption, and other crimes like armed robbery, fraud and money laundering. Even the rates of suicide are high in Asia. Indeed, the

suicide rate in low and medium-income countries in the ASEAN region increased by 38% (% change in suicide rate per 100,000 population) from 2000 to 2012 (World Health Organization, 2014).

The crime rates in Thailand and other ASEAN countries seem to confirm the UNODC (2005) view on the reporting of crimes in ASEAN countries, which is crime victims are often reluctant to report crime. For instance, a survey carried out on the national level in Thailand by the National Bureau of Statistics (NBS) in 2007 showed that the majority of crime victims believed that it was not worth reporting crime to the police. Furthermore, crimes are underreported because crime cases are not handled properly by the police in Thailand (Ayodele & Ogunjuyigbe, 2015; Okenyodo, 2016; Ab Rashid, Supian & Bojei, 2018) and of fear of retaliation by the offenders on the victims (Ayodele & Ogunjuyigbe, 2015). Nonetheless, the fact that crime is underreported in Thailand does not prevent this study from examining crime based on the available data. There are four reasons: firstly, crime contributes to a high number of death rate in the country (Nwankwo & James, 2016; Ojedokun, 2014) and this culminates to wastage of resources and human potentials. For instance, the number of killings due to armed robbery activities contributed 50% of 8,516 deaths in 3,840 lethal incidents from 2006 to 2015 in Thailand (Nwankwo & James, 2016; Abdulrasheed, 2017). Likewise, many news have affirmed that crime and conflict cause an average death per person of 1,655 between 2006 and 2011. In addition, several number of policemen were murdered by militants and armed bandits (Ojedokun, 2014).the crime rate in Thailand is second highest among the ASEAN countries as shown in the figure1.
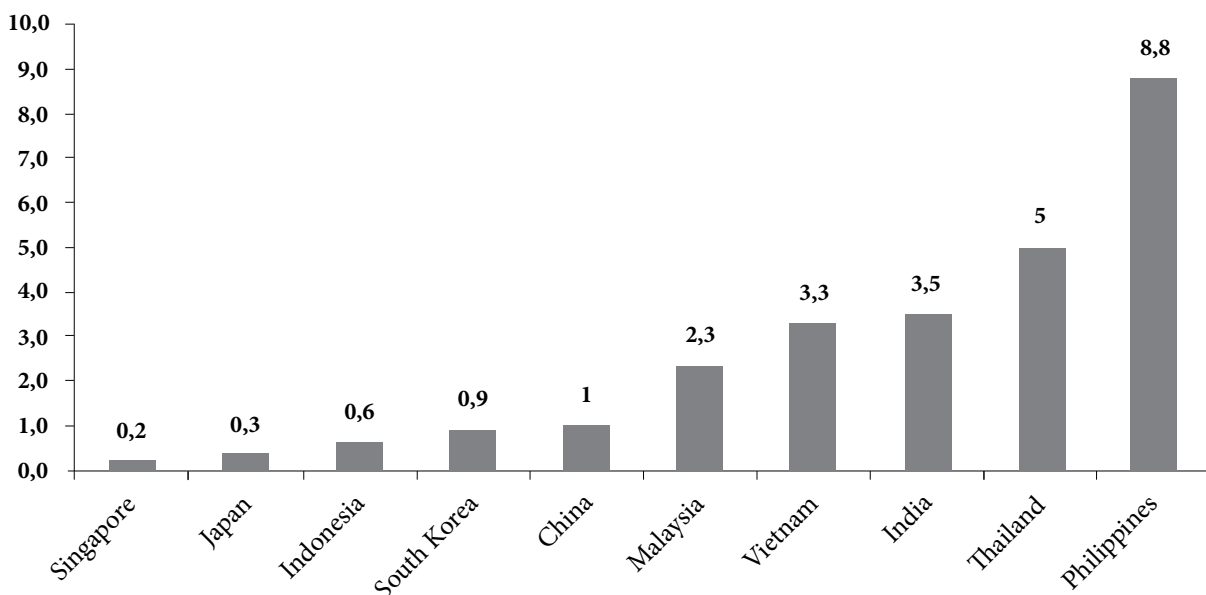

Figure 1. Crime rate per 100000 population.

Source: Source UN office of Drugs and crime

Secondly, the shocks caused by criminal activities spate up insecurity and threats to citizens and properties in the country (Ayodele & Ogunjuyigbe, 2015; Krakrafaa-Bestman, 2018). As the oil exploration investment in the region is affected by the threat of extortions, killings, raping and abduction of foreign and local people with payment of ransom (Krakrafaa-Bestman, 2018). To add, the criminality in unrest and insecurity pervaded the north-eastern part of the country caused destruction of infrastructures and by extension of anxiety to the whole country. Local businesswomen suffered a high level of crime victimization which involve rape and theft of money, food items and moveable economic items (Ayodele & Ogunjuyigbe, 2015).

Thirdly, crime stigmatises the nation internationally which portray the country as unsafe for investors (Adekoya, 2017; Kordík, Kurilovská, 2017; Adisetiawan, 2018). Since theft, cyber-crime, advance fee fraud and false pretence/cheating create loss of confidence. False pretence/cheating constitutes 49.57% of cases convicted by the Economic and Financial Crimes Commission (EFCC) in 2013 (EFCC, 2013). Lastly, crime increases

the cost of governance in the country (FMFN, 2014). This is because needed resources that should have been invested to boost output, health, agriculture and other welfare programmes are diverted to crime control and prevention (Petreski et al., 2018). For example, from 2010 to 2013, the government expenditure on internal security was 7.43% while that of education and health stood at 7.96% and 4.72%, agriculture was 2.21% as road and construction remained at 5.70%. Expenditure on internal security in this period was almost equal to education, but outweighed agriculture and health if put together, and also more than road and construction. The diversion of fund from health, agriculture and other crucial area in the country is disadvantageous to national development (Petreski et al., 2018).

Thus, the means to increase the peace and welfare of citizens required an examination of the root causes of that crime so that it might be reduced. The crime ascribed to the above mentioned reasons are overall crime, person's crime (murder, felonious wounding and other crime against persons which include rape, kidnapping and others) and property crime (armed robbery which include robbery and extortion, burglary which include house/store breaking, and false pretense/cheating).

2. Theoretical and Empirical Review

The socioeconomic strain was conceptualized as a structural framework to examine how the strain of living in a community can adversely affect their overall quality of life, work and living conditions (Adekoya, 2017; Naushad et al., 2018; Kowo et al. 2019; Prakash, Garg, 2019). A lack of jobs, poor earnings and limited opportunities accompanied by a high level of poverty are considered symptoms of socioeconomic strain. Thus, symptoms of socioeconomic strain manifest themselves more in less advantaged groups of people. This is because less advantaged group of people have low physical, emotional and behavioral health due to more stress and fatigue when compared with their counterparts that are more advantageous in status wise. This study considers socioeconomic strain as the existence of factors that encourage envy, stress, fatigue and low morale in the economy. Among these factors are the interrelated factors of unemployment, income disadvantage and poverty (Adekoya, 2017; Sriyana, 2019). Persistent unemployment leads to a whole cascade of negative consequences. One of these is that persistent unemployment is related to an ultimate reduction in skills and knowledge, and low education is linked to continued poverty (Horan & Widom, 2015; Ahmad, 2018). Also, it increased financial adversity and in turn, made family to experience instability. The family instability manifested in the form of separation and divorce which further led to poor parenting (Smith, Crosnoe, & Cavanagh, 2017). This disadvantage begins early in life, income disadvantage families have lowered probabilities of good educational opportunities for their children (Merrifield, 2017). Thus, children from poor households are educationally disadvantaged compared to those from wealthier households (Hall & De Lannoy, 2015; Caplinska, Ohotina, 2019). Children from income disadvantage families start school late, which reduces their ultimate educational outcomes (Merrifield, 2017).

Poverty of resources and consumption opportunities force poor households to engage in the low-level employment in order to meet their daily needs. This is because consumption is used to measure the material well-being in developing countries. Most people from income disadvantage families have access only to lower quality health care, which, in turn, results in higher mortality (Schmeer & Yoon, 2016; Ali, 2017). Thus, income disadvantage is taken as an inverse of the logarithm average income per population (Adekoya, 2017). The prevalence of socioeconomic strain of stress, fatigue and pressure that citizens face as challenged in their daily lives is pronounced in Thailand. For instance, Ibikunle, Umeadi, and Ummunah (2012) said that a low level of satisfaction existed among workers due to poor salaries, which made workers emotionally exhausted. Author said that decreasing economic opportunities and the build-up of heterogeneity of the high- and medium-rent areas led some migrants in Lagos to commit crime. Migrants facing economic deprivation resided mostly in income disadvantage residences, and they found more incentives to commit crime in the residential areas of medium- and high-income residents. Alabi and Durowaiye (2018) concluded that unemployment causes criminal behaviour. Also, Adekoya (2017) established that the involvement of young adults in criminal undertakings is encouraged by their high level of poverty, poor employment opportunities and income, and low family values.

Besides, Torruam and Abur (2014) argued that unemployment lowers people's morale in the economy structure, and the low morale induces them to source for alternative means of income legally or illegally. Thus, the evidence of teenagers and young adults committing crime due to socioeconomic issues in Thailand has been challenging (Adekoya & Razak, 2016). To address those challenges of socioeconomic strain, research is required. This study examines unemployment, income disadvantage and poverty as socioeconomic strain factors in relationship to criminal activities in Thailand. The investigation of these factors is based on four principal reasons. First, a growing population in Thailand is facing economic hardship and deprivation due to poor employment income. Second, a vast number of the working age population that are either unemployed or underemployed may have their children denied good access to education. Third, denying children access to education ensures the continuation of poverty in the country, and last, the consequences of socioeconomic strain must be avoided if possible or at least minimised for sustainable security, peace and welfare of the Thailand citizens.

Economic growth has been traditionally conceptualized as an increase in per capita income, but the means to achieve economic growth has remained the subject of contentious debate in the literature. The contention has been centered on the sufficiency of investment to drive growth rate. Berg (2016) and Khandelwal and Joshy (2017) gave priorities to capital accumulation as a major drive of a nation's economic growth due to its dualistic role in the economy. That is, capital accumulation is used to generate income and increase productive capacity in the economy. While income generated creates more demand in the short run, the productive capacity expands the supply in the long run. A necessary condition required for economic growth is that income generated through spending should adequately clear the generated output through an increase in capital stocks to avoid idle production capacity. Fulfilling this necessary condition would guarantee full employment, and consequently, steady growth would be achieved in the long run.

2.1. Socioeconomic Strain and Crime

In establishing the link between socioeconomic strain and crime, some economic variables can be adequately measured directly while others would have to be considered more indirectly. In this study, socioeconomic variables are considered in terms of their influence in causing various types of crime. The idea of strains is that an economic variable may exert pressure on individuals to commit a crime, and, at the same time, an economic variable may serve as a motivational incentive to commit a crime. This is in relationship to that fact that the cultural values in Merton strain theory are economically driven based on the American Dream. Thus, a high probability that socioeconomic variables induces crime is based on the available literature discussed below.

2.2. Unemployment and Crime

Researchers have examined various means to increase the opportunity costs of crime. One of the identified means of increasing the opportunity costs of crime is labour market income (Ciocchini, 2017). The argument is that a higher probability of better income in the market would prevent people from committing crime. Also, other works have devoted their time to exploring economic factors that reduce the opportunity costs of crime, especially the time spent not engaging in any meaningful work. They identified reducing unemployment as a means of reducing the opportunity costs of crime (Blasio, Maggio, & Menon, 2016).

Previous studies that have explored unemployment and the relationship with crime have had mixed results. While some researchers obtained a positive relationship between unemployment and crime, others have produced negative (Müller-Buschbaum, 2018) or no results (Tarling & Dennis, 2016). For example, the relationship between unemployment and crime in Italian provinces. The study used a panel data from 2000 to 2005, the panel data estimated with the Generalised Methods of Moment (GMM). Speziale established a positive link between unemployment and total crime with respect to theft, fraud and robbery. The study outcomes showed that juvenile unemployment was positively and significantly related with theft, fraud and robbery. The results, according to Speziale, revealed two things. One, previous experience in criminal activity influenced the decisions to become involve in crime; and two, a low efficiency of the legal system encouraged the increase in criminal activities.

Thus, Speziale's study provided support for the rational choice theory in two areas. First, efficient deterrence to crime is required increase the opportunity costs of crime. Second, unemployment served as motivational factor for crime. Other researchers have also examined the relationship between crime and unemployment, but the results have been mixed. Müller-Buschbaum (2018) found a negative significance between some types of crime and unemployment. Tarling and Dennis (2016) could not find a link between unemployment and crime in Scotland.

The reciprocal relationship between unemployment and crime has received the attention of the researchers (Ambrose, Etim, & Enagu, 2016; Shah, Soomro, & Mirjat, 2019). The nature of the argument is that unemployment might increase crime and that the effects of crime might likewise increase unemployment. Thus, criminal activities might increase unemployment in the market when offenders find it difficult to find a job or employment after being discharged from the prison. For example, Shah et al. (2019) argued that unemployment may be increased if convicts find no reason to engage in legal work. Also, crime may discourage the development of new firms, thus limiting the growth of employment in a crime-ridden area. Similarly, firms in crime areas pays high wages to sustain their workers as compensation. Shah et al. (2019) believed that endogeneity issues must be resolved to make estimates valid. Although a positive link between unemployment and crime is possible by controlling for endogeneity, this depends on the choice of control variables included in the model. Shah et al. (2019) examined the relationship between unemployment and crime in the United States. Shah et al. (2019) looked at unemployment and seven felony offenses in the United States with panel data from 1971 to 1997. They found significant positive effects of unemployment on property crime rates and that a substantial part of the decline in property crime rates was due to the decline of the unemployment rate. Rape was weakly related to the employment prospects of males. Similarly, studying unemployment and crime in the United State with panel data from 1974 to 2000, a positive and significant relationship between unemployment and property crime, and other of property crime including burglary and larceny. But, Lin results on rape differed from that of Raphael and Winter-Ebmer because Lin found that unemployment reduced rape.

2.3. Income Disadvantage and Crime

The labour market provides an opportunity to receive an income for individuals who engage in legal work. This income could serve as an incentive to discourage people from committing crimes or, at least, to increase the opportunity costs of crime in society. However, labour market income could be either high or low. High incomes create less of a problem with respect to crime for society when compared to income disadvantages. Rueda and Stegmueller (2016) developed a market model of crime in relationship with income inequality in which a labour market with high inequality ends up creating incentives for a income disadvantage worker to engage in illegal activities. Thereafter, researchers began to focus on the relationship between income distribution and crime. However, rather than focusing on the income gap per se, this study focused on income disadvantage for four main reasons. First, income disadvantage workers have little saving as backup to cope with economic fluctuations. Second, income disadvantage among workers reduces the opportunity costs of crime. Third, few studies have paid attention to income disadvantage and crime and, lastly, limited data on income inequality is available in the country.

The discourse on income disadvantage and crime considers a threshold or benchmark for categorizing income as low. The threshold is then examined with those below it to draw conclusions. Such conclusions have not been definitive due to the divergent results across various studies, and income is sometimes not standalone. Suitable and effective public security are required to complement income policy in the labour market (Yildiz, Ocal, & Yildirim, 2013; Anthony, Osho & Sen, 2017, Tung 2019). For instance, Carneiro, Soares, and Ulyssea (2018) specified a structural crime model with consideration given to inequality in Colombia. The study demonstrated how crime was proportionate to the number of various income ranges in the income distribution. The model described the part of the income distribution, which provided more explanation on the disparity of crime occurrence with OLS estimation.

However, Carneiro et al. (2018) concluded that people with an income below the threshold of 80% of population

mean in the seven main cities of Colombia were mostly involved in crime. The translation of this is that a high probability exists for households with a income disadvantage-capita to commit a crime. Similarly, examined the strength of an alternative measure with respect to income inequality. That measure was the ratio of income of the rich-to-poor population. The benefit of this measure is that it captures the lowest income in the quintile and not the gap. A panel data is estimated with GMM using non-overlapping averages of 5-year for 39 nations through 1965–95 for homicide and 37 nations through 1970–94 for robberies. The results showed that countries with higher inequality suffer from more violent crime, which leads to the conclusion that reducing the income ratio would cause a reduction in those crimes. Thus, the means of analysis made it is possible to evaluate a reduction effect of crime when income inequality is reduced and proffers appropriate measures on how to reduce crime in the most countries. This is because a poor income ratio increases homicide and robbery in both the short and long run.

Yildiz et al. (2013) studied three levels of income, which were the lowest income (proxied as minimum wages), middle income and high income. Panel data from 2002 to 2009 was used and panel GMM system estimation was utilized. The results indicated that all the three levels of income were positive and significantly related with crime. The marginal effect suggested that increasing income would reduce crime rate. Thus, the marginal effect suggested that income disadvantage workers engage in more crime compared with workers with high incomes. By implication, then, income disadvantage serves as an incentive to increase crime. Also, the clearance rate was an efficient tool because it was negative and significant with the crime rate. However, the clearance rate is of small value because the study affirmed that this was due to the non-disclosure of crime statistics to the public. Nonetheless, examining the association of various income levels with crime is a remarkable step, providing a clearer understanding of the link between income and crime but poverty was not examined in the model. However, due to unavailability of data in Thailand. This current study is confined to the relationship between income disadvantage and crime.

Unfortunately, studying income disadvantage by previous research without paying attention to the strain cause by income disadvantage to workers misses a key a point in the analysis. Although the economic approach to crime affirmed that income reduces crime, further classifications of income into low and high groups have shown that income disadvantage does serve as incentive to commit crime (Aregbeyen & Fasanyan, 2017; Carneiro et al., 2018). Also, the indefinite findings in Carneiro et al. (2018), Machin and Yildiz et al. (2013) demonstrate that more studies are required to clarify the divergent results. However, previous studies have provided justification for crime deterrence as a support to labour market policy for crime reduction in society.

2.4. Poverty and Crime

The assertion that poverty is positively related to criminal activities has been established by the criminologists (McKeown, 1948). Poverty limits the opportunities for an individual to achieve basic needs and goals. As poverty becomes more pronounced, it weakens social institutions, which, in turn, attracts people to crime and creates further disruptions in society (Hawkins & Weis, 2017). The Becker-Ehrlich economic approach to crime rationalizes this positive relationship as poverty encourages people with poor income to commit crimes (Rueda & Stegmueller, 2016). Subsequently, Hirschi and Gottfredson (2017) noted that the crime rate is higher among the poor due to a high number of arrest among the poor, which is especially true in instances in which where the poor have few or no safety nets. Thus, resource deprivation resulting to poverty encourages the poor to engage in crime if no social protection is provided (Kwon & Cabrera, 2019). Nonetheless, further studies are required to create better strategies for crime-reduction poverty programmes. Strategic crime-reduction poverty programme should be sustainable and move beyond mere strategy (Hirschi & Gottfredson, 2017; Kwon & Cabrera, 2019). Therefore, a study on poverty and crime in Thailand is a necessity to fill the gaps in the literature.

Hirschi and Gottfredson (2017) discussed the results of The Transitional Aid Research Project (TRAP), which was designed to create better prospects for exprisoners and to reduce economic hardships prisoners usually faced after they were released from prison. The Transitional Aid Research Project (TARP), begun in January 1976, in which approximately 4,000 ex-felons (2,000 each in Texas and Georgia) were made eligible for

short-term unemployment benefits to ascertain if limited financial aid would affect recidivism. A structural equation system of 3SLS was used to analyses the data because 3SLS is known to have less specification errors. However, TARP payments, as administered in Georgia and Texas, did not fulfil expectations that they would lower recidivism, but they had a strong negative impact on work-incentive. However, he results also suggest that the payments did work to some degree as intended by subsidizing a more effective job search. Hirschi and Gottfredson (2017) contended that the TARP experiment policy implications lend considerable support to an income-maintenance strategy to reduce arrest recidivism among released prisoners.

Adekoya (2017) studied the long-term impact of unemployment compensation on ex-offenders in California, and evidence suggested that recidivism among exoffenders could be reduced by providing unemployment compensation available immediately after their release from prison. Using a 5-year follow-up and a failure time model of a program in California conducted during the 1970s and 1980s, they showed how recidivism among those receiving aid was consistently lower over those 5 years than for those not receiving aid. The results in Adekoya (2017) showed that a fairly small unemployment compensation does not increase crime among released prisoners.

The implications of Hirschi and Gottfredson (2017) and Adekoya (2017) is that prolonged unemployment generates a high level of poverty, thereby, causing poverty to increase crime. Moreover, tested employment, basic needs of salary with poverty on crime and the results provided support to Adekoya (2017). That is, reducing income or in cases in which employment is not sustained would increase further deprivation of poverty. Following the harmful effect of 1998-2002 depression in Argentina, tested the efficacy of government means of reducing poverty. The alleviation was done through the unemployed heads of household programme, which involve cash transfers. A panel data set of 23 district in Argentina from 2002 to 2005 was utilized using the Generalized Method Moments (GMM) to provide the statistical relationships. The GMM tool revealed that poverty relief measured reduces total crime, total property crime, robbery, larceny and aggravated assault but was not significant with respect to murder. Thus, poverty (household below the poverty line) increased total crime, robbery while it not significant with respect to property crime, larceny and aggravated assault. Welfare spending has two major roles in Argentina as observed. First, it helps in reducing poverty among the household facing economic deprivation thereby increasing the opportunity cost of crime. Second, strain is reduced due to improvement in household welfare, and, once strain is reduced, crime is lowered. However, the measure of deterrence (real public expenditures per capita) in the study was not significant with any of the crime variables. Consequently, the study suggested that further studies should investigate a better investment option between poverty relief and spending on police to reduce crime.

2.5. Crime and Economic Growth

Adekoya and Razak (2017) demonstrated a link between crime and economic growth based on Becker (1968) theory of rational choice . Prior to Adekoya and Razak (2017), has theoretically linked crime rate with social loss per capita as an improvement on Becker. Other empirical studies like the World Bank (2006) and Dijk (2007) have also lent their support to this assertion. However, this current study differs from Adekoya and Razak (2017), the World on crime and economic growth in terms of time series data employed, and the addition of policy variables that may promote to deterrence to crime. Adekoya and Razak (2017) had considered growth in their work, but their results between crime and economic growth were mixed. Thus, this current study would further provide empirical evidence about the relationship between crime and economic growth. That is, the relationship between crime and economic growth follows Adekoya and Razak (2017).

The roles of crime have been well emphasized in the literature, especially on how it acts as a stoppage on the progress of the economy in terms of growth (Aziz, Manab & Othman, 2016; Ganau & Rodríguez, 2018). A crime committed in the economy incurs more expenditure and causes the mobility of highly skilled labour which is worse than the formal labour market (Adekoya & Razak, 2017). This is because engagement in criminal activities would make the income gains of high human capital workers to be stolen and create fear in them. This fear would not prevent them from participating in the labour market and, by doing so, the anticipated

yield to formal employment would be reduced. Besides, the literature has affirmed that a link between crime and economic growth, but the investigation needs more clarification. Also, the mixed findings in the link between crime and growth make the inference inconclusive. That is, while some available findings have proffered a robust relationship between crime and growth (Enamorado, López-Calva, & Rodríguez-Castelán, 2013; Ganau & Rodríguez, 2018). Adekoya and Razak (2017) found mixed results using two different growth measurements found a contrary result. Thus, this current study presents empirical evidence on the relationship between crime and economic growth. Author noted the high crime rates in the inner city and the trend of workers moving away from the inner city to suburban areas in the southern states of the United States. Moreover, they observed that the suburbs were becoming better places in which to live as personal safety became a source of concern in the inner city, a situation they claim may worsen the growth of income in all the urban regions. This development spurred them to investigate inner-city crime patterns using offence per capita and suburban income growth in the southern states of the United States from 1982 to 1997. The study used both cross-sectional and time series data with 2SLS to resolve the issue of simultaneity. They found that central city violent crime rates and real personal income growth at the county level were inversely correlated (–0.084). Likewise, central city property crime rates and real per capita county income growth rates were inversely correlated (–0.168). Moreover, the robust 2SLS estimation indicated that violent crime in the inner city had a negative effect on nearby suburbs, and the negative effects on suburbs were reduced the further they were from the metropolitan city. In contrast, property crime failed to show the same significant trend as violent crime. Thus, the study provided a weak result, which was not robust significantly, consequently suggested that more studies were required to clearly provide more understanding of how crime impacts growth.

Thus, the approach of Enamorado et al. (2013) to observe the effects of crime at various municipals in Mexico pinpoints a direction in which the government can channel public expenditure to control crime. Also, showing the homicide caused by the drug dealers' activities proves that the activities of the drug dealers must be curtailed if Mexico is to improve economically. But, the year sample size from 2005 to 2010 used by the study is rather short to provide a detailed conclusion to be drawn on. This limited year sample size was also noted by the study. Similarly, Ganau and Rodríguez (2018) studied the effects of crime on the economic performance of regions in Italy. This was done by using a state space model to evaluate the impact of crime on the Italian economy using a monthly data from January 1979 to September 2002, which was analysed by the OLS estimator. This allowed crime to be specifically examined across time over the various regions in Italy. They found that the effect of crime was greater when a slowdown in economic growth was present because of the need to divert resources required for repositioning the economy so as to control crime. For instance, the study showed that crime reduced economic growth monthly by 0.00041% in the recession period and by 0.00039% in the expansion time. In addition, the long-run exogenous variable of homicide rate reduced the GDP growth as well. This is because in the recession period when crime increased by 1%, the average change in annual GDP growth was -0.00022%. Also, there is a wider distortion of the economy during the recession period than the expansion time at the 5% level of significance, which was due to the high costs of the legal activities imposed by crime.

Thus, Ganau and Rodríguez (2018) study provided more insight on the effects of crime on growth by separating the sample into two different periods of the business cycle. Thus, the performance of the economy, especially in recessionary times, indicates that the economy would need more crime control measures to reduce crime. Nevertheless, the study did not control for other costs of crime like deterrence measures to actually see if the impact would be more (Bruce et al., 2017; Carter et al., 2017). That is, the efforts of public on crime control were not considered in this study to see how they impacted growth along with crime itself. The result in fluctuation in the economy considered with crime in Ganau and Rodríguez (2018) is supported in a similar study related of economic fluctuations by Goulas and Zervoyianni (2015).

2.6. Causality Evidence Socioeconomic Strain, Crime and Economic Growth

Many studies have examined individual social factors with respect to crime and economic growth while testing for Granger causality. Among them, Sghari and Hammami (2016), are related to the socioeconomic strain discussed in this study. Their studies serve as a basis to show that crime study needs to move beyond causation

of crime as endogeneity may exist between variables under investigation. The causality studies considered in this study are presented below. The Granger causality is used to examine the socioeconomic determinants of crime by Sghari and Hammami (2016) in Australia, which was based on time series data from 1963 to 1990. The socioeconomic factors included urbanisation, divorce, police strength, youth male unemployment and dwelling commencements (as a proxy for wealth). Consequently, the Johansen-Juselius cointegration test was used to determine the joint movement of these variables before applying VECM to test for Granger causality. The result showed that the crime of homicide is jointly determined by socioeconomic factors in long-run temporal causality. Besides, the short-run Granger causality showed unidirectional causality from the crime of homicide, robbery, serious assault to youth male unemployment. Also, a unidirectional Granger causality ran from divorce to the crimes of serious assault and fraud and from the crimes of homicide and motor vehicle theft to divorce. While a unidirectional causality ran from dwelling commencements to the crime of fraud and ran from homicide and motor vehicle theft to dwelling commencements. Further, a unidirectional causal relation existed which ran from urbanisation to crime of burglary, and, similarly, from the crime of homicide to police strength. The result shows those types of crime that require concern of the government; for instance, the cause of homicide must be determined to reduce the cost of policing because homicide investigations require more police attention.

In examining the temporal causality in the context of crime dynamism in Turkey, scholar considered socioeconomic factors and crime. The socioeconomic factors were per capita income, unemployment, divorce, urbanisation and public security expenditure. The causality test made use of time series data from 1965 to 2009. The data were subjected to cointegration test in the ARDL model, and consequently the Granger causality was analysed with the VECM. The results showed that socioeconomic factors jointly determined overall crime, non-violent and violent crime in a Granger long run temporal causality. In the short-run, a bidirectional causality existed between per capita income and overall crime, and unidirectional causality existed from per capita income to urbanisation. The causality ran from unemployment to non-violent and per capita income; from per capita income to unemployment, urbanisation and divorce, and from non-violent crime to unemployment and divorce when non-violent crime is considered. That is, a bidirectional causality existed between unemployment and non-violent crimes, and unemployment and per capita income. In violent crime, a short run causality ran from violent crime and per capita income to urbanisation, and from unemployment to per capita income. While the result of the Granger causality showed a unidirectional causality from violent crime to urbanisation in the short run, it runs from urbanization to public security expenditure.

The recommendations of the study were that to reduce crime in Turkey, public cooperation would help make police expenditures more effective is crime reduction. This is based on the community's awareness and their participation in providing useful information to the police while on patrol. This assertion justifies the causality result with respect to urbanisation and public security expenditure. The result on violent crimes has no links with types of violent crimes in Sghari and Hammami (2016). Similarly, Author considered the Granger causality among social factors and crime in Malaysia. The social factors were fertility rate, GDP growth rate, unemployment and population size, and crime included total crime, property crime and violent crime. Hamzam and Lau used the VECM approach to establish Granger causality based on annual data from 1973 to 2008. In the VECM, the results indicated the existence of long-run temporal causality (Tanaka, 2017). The results showed a unidirectional long-run temporal causality from total crime, property crime and other social factors to population. In the short-run Granger causality on total crime, causality existed from the fertility rate to GDP and total crime; from population to fertility, GDP, unemployment and total crime (Hussain et al., 2018). Also, in property crime, the causality ran from population to GDP, unemployment and property crime. But in violent crime, causality ran from fertility to population and violent crime; unemployment to GDP, and violent crime to GDP.

3. Data Model Estimation and Estimation Technique

The data of 32 years form 1985 to 2017 is gathered form the official sources. The model in this work starts from the work of Becker (1968) on crime and punishment. In determining crime, Becker (1968) specified the supply of crime in society as follows in equation

$$CRI_t = f(PRAR_t, PCO_t, V_t) \dots\dots\dots (1)$$

In equation 1, CRI_t is the total number of offences which depends on $PRAR_t, PCO_t$ and $,V_t,$. The $PRAR_t$ shows the probability of arrest and prosecution of criminal, while PCO_t is the punishment for committing offense and V_t indicates other variables that influence the act of crime. Moreover, Ehrlich (1973) extended the crime model to include income inequality and other variables in the model as presented in equation 2:

$$CRI_t = f(PRAR_t, PCO_t, RF_t, RFI_t, PUN_t, W_t, Z_t) \dots\dots\dots (2)$$

Where, RF_t is returns from illegal activity as incentive to commit crime, and RFI_t is the legal existing gap in income, PUN_t is probability of unemployment, $,W_t,$ is the vector of environmental variables while Z_t capture the psychic effect and other unquantifiable variables on the rate of crime.

Virén (2001) added demographic variables (DG_t) to the crime model of Becker-Ehrlich as presented in equation 3

$$CRI_t = f(PRAR_t, PCO_t, RF_t, RFI_t, WT_t, IT_t, SE_t) \dots\dots\dots (3)$$

$WT_t, IT_t,$ and DG_t are the working time, income transfers and the possible demographic variables, which include other accounted variables for crime respectively?

In examining how socio macroeconomic variables affect crime in Malaysia, Hamid, Habibullah, and Noor (2013) restructured the crime model based on Virén (2001). The restructuring of the crime model in equation 4 shows that both socio factors and macroeconomic factors were considered in their work. The model is specified as follows in equation 4:

$$CRI_t = f(V_t, SE_t, ME_t) \dots\dots\dots (4)$$

In the crime model specified in Hamid et al. (2013), SE_t are socioeconomic variables that cause strain in the economy, ME_t are macroeconomic variables that exert undue strain on the people, while V_t are other variables in the model. This research work employs the crime model in 3.4 with inclusion of family instability and deterrence variable (security expenditure) which are not considered in Hamid et al. (2013). Moreover, Becker (1968) theoretically examined the consequences of crime on society; the consequences were viewed as a cost of crime to society. Thus, Becker came up with the following model to examine the social loss of crime on the society.

$$CRI_t = f(PRAR_t, PCO_t, COR_t, D_t) \dots\dots\dots (5)$$

Where, COR_t cost from crime and D_t is the damage from crime

Moreover, this model of social loss function by Becker (1968) was modified by dividing the social loss due to crime into three components. These components are: PN_t the cost of pain that is associated with economic cost of crime as which is seen as the direct cost of crime in terms of physical and psychological pain borne by the victims; 2) the cost of preventing crime and the cost incurred on judicial system and 3) the implicit cost of sanctions to criminals who were convicted and this represents the forgone earnings due to imprisonment. Thus, Hamid et al. (2013) concluded that the social loss per capita was associated with the crime rate which can be expressed as follows

$$CRI_t = f(PN_t, PRAR_t, PCO_t, CR_t) \dots\dots\dots (6)$$

In the two models, Mauro and Carmeci (2007) took into consideration the effect of poor income and income growth as a poverty trap in the society due to crime rates (CR_t). This is because crime was proven to be detrimental to income due to the taxation that crime imposed on society. That is, an increase in crime return reduces permanently the rate of growth in the economy. The consequence of crime is poor growth which

encourages a poverty trap in society, and this is represented in equation 7 as follows

$$CRI_t = f(ROA_t, RUNE_t, CR_t) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(7)$$

Thus the econometric model of the current study will be as below

$$\ln CR_t = a_0 + a_1 RUNE_t + a_2 IDA_t + a_3 ROP_t + a_4 FMI_t + a_5 ANSE_t + \varepsilon_t \dots\dots\dots\dots\dots(8)$$

In equation 8 CR_t is the annual crime activities in the country, $RUNE_t$ is the annual unemployment rate, IDA_t is the income disadvantage rate, ROP_t is the poverty rate, FMI_t is the family instability, $ANSE_t$ is the annual security expenditure, ε_t is the white-noise term.

Where variables are endogenous the ARDL OLS method may provide valid estimates. This is because ARDL OLS uses lagged of the dependent variable as regressors. But it estimates would only be valid provided that the residual is not serially correlated (Pesaran & Shin, 1997). With absence of serial correlation in the residual of ARDL OLS, it can be taken or assumed that there is no endogeneity problem (Pesaran & Shin, 1997). Besides, if endogeneity problem comes up after using ARDL OLS and the variables in the model are indeed endogenous, then the ARDL IV would be used to address this problem of simultaneity (Pesaran & Shin, 1997).Thus explaining equation 8 as follow.

$$\ln CR_t = \frac{a_0}{\mu(1)} + a_1\, RUNE_t + a_2\, IDA_t + a_3\, ROP_t + a_4\, FMI_t + a_5\, lnANSE_t$$
$$+ \frac{1}{\mu(1)} \sum_{i=1}^{m_1-1} a_1\, \Delta RUNE_{t-1} + \frac{1}{\mu(1)} \sum_{i=1}^{m_2-1} a_2\, \Delta IDA_{t-1} + \frac{1}{\mu(1)} \sum_{i=1}^{m_3-1} a_3\, \Delta ROP_{t-1}$$
$$+ \frac{1}{\mu(1)} \sum_{i=1}^{m_4-1} a_4\, \Delta FMI_{t-1} + \frac{1}{\mu(1)} \sum_{i=1}^{m_5-1} a_4\, \Delta lnANSE_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots(9)$$

The ARDL IV combined the short-run and the long-run in the same model. When it is used to model variables, the problem of simultaneity bias is avoided, and a further test for exogeneity is not required. That is, making relevant adjustment to ARDL orders, ARDL model is adequate to simultaneously correct for the serial correlation in the residual and further problems in endogenous regressors (Pesaran & Shin, 1997). This process allows endogenous variables to be estimated with ARDL IV. The ARDL OLS is transformed to Bewley's equation of 1979 and thus, estimated with Instrumental Variables method by using 2SLS (Pesaran & Shin, 1997).

4. Results and Discussions

The results of the correlation test between dependent variable and independent variables proved to be very useful in pre estimation analysis especially as regards potential relationships suggested by theories. Therefore prior to the econometrics analysis, the statistical correlation of the variables are examined which helped in determining the statistical relationships between and amongst the variables.

Table 1. Correlation Analysis

	CO2	FD+	FD-	GDPG	EC	
CR	1.00					
	--					
RUNE	0.15	1.00				
	(0.41)	--				
IDA	0.20	0.13	1.00			
	(0.27)	(0.48)	--			
ROP	0.26	-0.13	0.41	1.00		
	(0.15)	(0.46)	(0.02)	--		
FPI	0.03	-0.12	0.43	0.03	1.00	
	(0.87)	(0.52)	(0.01)	(0.88)	--	
ANSE	0.53	0.42	0.51	0.29	0.72	1.00
	(0.71)	(0.59)	(0.21)	(0.48)	(0.38)	--

ASEAN's optimum models selection was undertaken as depicted by Table 2 And the table 3 The selected models are ARDL (2,1,0,0,1)), ARDL (1,1,0,2,1,1,2,0,0,0)

Table 2. ARDL long term OLS estimation.

Variables	Coefficients	Standard Error	*t*-statistics	*p-Value*
ARDL (1,1,0,0,1)				
RUNE	0.415	0.142	1.522	0.008
RUNE (-1)	0.455	0.147	3.090	0.006***
IDA	0.010	0.019	1.427	0.024
IDA (-1)	0.000	0.201	5.938	0.000***
ROP	-0.477	-0.137	-3.498	0.002*
FMI	0.001	0.001	4.202	0.243***
lnANSE	-0.023	-0.043	0.526	0.604
lnANSE (-1)	-0.065	-0.037	3.763	0.092**
C	7.406	2.882	2.570	0.018*
T	0.045	0.009	4.731	0.000*
Table 2. ARDL IV Long-run Estimates				
ARDL (1,1,0,2,1, 0,2,0,0,0)				
RUNE	0.425	0.183	2.327	0.031*
RUNE(-1)	0.340	0.173	1.959	0.065
IDA	0.000	0.000	1.401	0.177
IDA (-1)	0.000	0.000	4.338	0.000*
ROP	-0.428	0.195	2.201	0.040*
FMI	0.045	0.056	0.795	0.437
FMI (-1)	0.033	0.057	0.570	0.575
FMI (-2)	0.103	0.062	1.675	0.110
lnANSE	0.033	0.048	0.689	0.499
lnANSE (-1)	0.097	0.053	1.831	0.083**
⊿RUNE	0.429	0.118	3.624	0.001*

$\varDelta$IDA	0.000	0.000	4.158	0.000*
$\varDelta$IDA (-1)	0.000	0.000	1.902	0.070**
$\varDelta$IDA (-2)	0.000	0.000	3.352	0.003*
$\varDelta$ROP	-1.214	0.380	3.194	0.004*
$\varDelta l$nANSE	-0.291	0.076	3.854	0.001*
$\varDelta$FMI	0.418	0.113	3.709	0.001*
C	25.974	6.203	4.188	0.000*

The main difference is that family instability is significant in the property crime model. Property crime are armed robbery which include also robbery and extortion, burglary and false pretense/cheating crimes. Unemployment increases property crime at the 5% level of significance. Increasing unemployment by 1% would increase property crime by 0.05%. This means improving labor policy would cause a crime reduction in property crime. A similar result is presented in Blasio et al. (2016). Also, income disadvantage encourages the poor to engage in property crime at the 10% level of significance. An increase in income disadvantage by 1% would increase property crime by 1.066%. This means an increase in the number of people with disadvantaged incomes would cause crime to increase. Perhaps, increasing income disadvantage even further would intensify more strain on the income disadvantage earners and this would eventually lead them to engage in property crime (Tarling & Dennis, 2016). To add, financial gain serve as incentive to the criminals to commit property theft as stolen property could be resold to the market for income gain (Sidebottom, Ashby, & Johnson, 2014). Poverty is not significant in this model. The deterrence variable showed an adverse effect on property crime at the 1% level of significance. With an increase in security expenditure by 1% property crime would be reduced by 0.209%. The result supported the overall crime rate but differed from the person's crime rate because it was not significant in the person's crime model. A similar result was found in Coccia (2017) as police expenditures have a stronger effect on property crime than on violent crime. Family instability showed a positive relationship with property crime at the 1% level of significance. This means any increase in family instability results in a property crime increase. Thus, the failure to improve conditions that stimulate family instability would encourage children from families experiencing instability to engage in crime. These conditions includes emotional disturbance in children due to family structure, family breakup and the poverty rate (Coccia, 2017). Results presented here support Coccia (2017) on property crime, but Kelly's work is more robust because family instability was found to be positively related with violent and property crime. With the measure of divorce rate for family instability, Halicioglu, Kiki, and Yavuz (2012) found a positive relationship between family instability and property crime, including robbery and larceny.

5. Conclusion

Socioeconomic strains have similar dimensions of impacts on crime variables regarding the positive relationship based on the above results. Deterrence variables performed as expected on other crime variables except on person's crime. Family instability showed a positive impact on property crime. The extent that socioeconomic strain affects crime variables has shown that the strain of frustration, anger and stress in people are exhibited in the social and economic factors that prevail in Thailand. Individuals facing economic hardships brought by socioeconomic factors would innovate alternative means to survive. These alternatives are described as being illegal in Becker (1968). Other means are to engage in property crime and person's crime including assassination/murder, rape, kidnapping, felonious wounding, burglary, armed robbery and false pretense to complement their earnings. The results showed that unemployment affects the person's crime rate and property crime rate positively at various significance levels both in the long run and the short run. This may be not a surprise because high unemployment exists in Thailand. The high unemployment rate includes graduates and non-graduates who are produced from educational institutions looking for jobs but are unable to find ones. Those who found jobs might not be fully engaged with the nature of the work that they are doing if those jobs do not take into consideration their qualifications. These young graduates and non-graduates should be able to contribute meaningfully to the country.

References

Ab Rashid, N., Supian, K., & Bojei, J. (2018). Relationship between Halal Traceability System Adoptions on Halal Food Supply Chain Integrity and Performance. *International Journal of Asian Social Science,* 8(8), 569-579. https://doi.org10.18488/journal.1.2018.88.569.579

Abdulrasheed, B. (2017). Causality between government expenditure and government revenue in Nigeria. *Asian Journal of Economics and Empirical Research,* 4(2), 91-98. https://doi.org/10.20448/journal.501.2017.42.91.98

Adekoya, A. F. (2017). *Socioeconomic strain, crime and economic growth: evidence from Nigeria.* Universiti Utara Malaysia.

Adisetiawan, R. (2018). Does Stock Split Influence to Liquidity and Stock Return? (Empirical Evidence in the Indonesian Capital Market). *Asian Economic and Financial Review*, 8(5), 682-690.

Ahmad, S. D. (2018). Legal Protection Carried Out by the Financial Service Authority in a Dispute between Consumers and Insurance Companies in Indonesia. *International Journal of Social and Administrative Sciences*, 3(1), 55-61. http://everant.in/rajournals.com/index.php/raj/article/view/9

Ali, H. E. (2017). Phase Transfer Synthesis of Novel Based Surfactants: Role of Biocorrosion Inhibition. *Global Journal of Social Sciences Studies*, 3(1), 43-55.

Ambrose, A. O., Etim, I. E., & Enagu, F. M. (2016). The Role of Community Development Programmes in Poverty Aleviation in Nigeria: Lessons from Onelga, Rivers State, Nigeria. *American Journal of Social Sciences and Humanities*, 1(2), 72-83.

Anthony, M., Osho, G. S., & Sen, L. (2017). An Econometric Planning Model of Urban Forestry as a Measure of Sustainability: A Matrix of Action and Change. *International Journal of Sustainable Development*, 6(1), 9-32.

Aregbeyen, O., & Fasanyan, I. O. (2017). Oil price volatility and fiscal behaviour of government in Nigeria. *Asian Journal of Economic Modeling*, 5(2), 118-134. https://doi.org/10.2478/sbe-2018-0018

Aziz, N. A. A., Manab, N. A., & Othman, S. N. (2016). Sustainability Risk Management (SRM): An extension of Enterprise Risk Management (ERM) concept. *International Journal of Management and Sustainability*, 5(1), 1-10.

Adekoya, A. F., & Razak, N. A. A. (2016). Effect of crime on poverty in Nigeria. *Romanian Economic and Business Review, 11*(2), 29. http://www.rebe.rau.ro/RePEc/rau/journl/SU16/REBE-SU16-A3.pdf

Adekoya, A. F., & Razak, N. A. A. (2017). The dynamic relationship between crime and economic growth in Nigeria. *International Journal of Management and Economics, 53*(1), 47-64. https://doi.org/10.1515/ijme-2017-0004

Alabi, J. O., & Durowaiye, E. B. (2018). Economic Incentives as a Motivation for Crime in Nigeria: Study of Inmates in Oke-Kura Prison Ilorin, Kwara State, Nigeria. *Online Journal of Arts, Management & Social Sciences, 3*(2).

Ayodele, T., & Ogunjuyigbe, A. (2015). Prediction of monthly average global solar radiation based on statistical distribution of clearness index. *Energy, 90*, 1733-1742. https://doi.org/10.1016/j.energy.2015.06.137

Becker, G. S. (1968). Crime and punishment: An economic approach *The economic dimensions of crime* (pp. 13-68): Springer. https://www.nber.org/chapters/c3625.pdf

Berg, H. (2016). *Economic growth and development*: World Scientific Publishing Company. https://doi.org/10.1142/9058

Blasio, G., Maggio, G., & Menon, C. (2016). Down and out in Italian towns: measuring the impact of economic downturns on crime. *Economics Letters, 146*, 99-102.

Bruce, A.K. and A.G. Susan, 2017. Effective literacy instruction for all students: A time for change. International Journal of Innovation, Creativity and Change, 3(1): 65-86.

Carter, M.A., P. Pagliano, A. Francis and M. Thorne, 2017. Australian university students and mental health: Viewpoints from the literature. International Journal of Innovation, Creativity and Change, 3(3): 1-25. file:///C:/Users/Manuela/Downloads/carter_australian_2017.pdf

Carneiro, R., Soares, R. R., & Ulyssea, G. (2018). Economic shocks and crime: Evidence from the brazilian trade liberalization. *American Economic Journal: Applied Economics, 10*(4), 158-195. https://doi.org/10.1257/app.20170080

Caplinska, A., Ohotina, A. (2019). Analysis of financial literacy tendencies with young people. *Entrepreneurship and Sustainability Issues, 6*(4), 6(4) 1736-1749. http://doi.org/10.9770/jesi.2019.6.4(13)

Ciocchini, P. L. (2017). The Relevance of Criminal Courts in the Global South. *Laws, 6*(4), 29. https://doi.org/10.3390/laws6040029

Coccia, M. (2017). A Theory of general causes of violent crime: Homicides, income inequality and deficiencies of the heat hypothesis and of the model of CLASH. *Aggression and Violent Behavior, 37*, 190-200.

Ehrlich, I. (1973). *The deterrent effect of capital punishment: A question of life and death*: National Bureau of Economic Research Cambridge, Mass., USA.

Enamorado, T., López-Calva, L. F., & Rodríguez-Castelán, C. (2013). *Crime and growth convergence: Evidence from Mexico*: The World Bank. http://documents.worldbank.org/curated/en/441081468299351843/Crime-and-growth-convergence-evidence-from-Mexico

Ganau, R., & Rodríguez, A. (2018). Industrial clusters, organized crime, and productivity growth in Italian SMEs. *Journal of Regional Science, 58*(2), 363-385. https://doi.org/10.1111/jors.12354

Goulas, E., & Zervoyianni, A. (2015). Economic growth and crime: Is there an asymmetric relationship? *Economic Modelling, 49*, 286-295.

Halicioglu, K., Kiki, A., & Yavuz, İ. (2012). Subjective symptoms of RME patients treated with three different screw activation protocols: a randomised clinical trial. *Australian Orthodontic Journal, 28*(2), 225. PMID: 23304972

Hall, K., & De Lannoy, A. (2015). Children's access to education. *ChildGauge*. file:///C:/Users/Manuela/Downloads/carter_australian_2017.pdf

Hamid, B. A., Habibullah, M. S., & Noor, Z. M. (2013). Crime and its socio-macroeconomics determinants: a panel-error-correction cointegration analysis. *Jurnal Ekonomi Malaysia, 47*(2), 13-24. http://www.asean-cites.org/index.php?r=articles%2Fpublic-view&id=296993

Hawkins, J. D., & Weis, J. G. (2017). The social development model: An integrated approach to delinquency prevention *Developmental and Life-course Criminological Theories* (pp. 3-27): Routledge. https://doi.org/10.1007/BF01325432

Hirschi, T., & Gottfredson, M. R. (2017). The distinction between crime and criminality. *The Craft of Criminology* (pp. 187-202): Routledge. https://www.taylorfrancis.com/books/e/9781315131511/chapters/10.4324/9781315131511-14

Horan, J. M., & Widom, C. S. (2015). Cumulative childhood risk and adult functioning in abused and neglected children grown up. *Development and Psychopathology, 27*(3), 927-941. https://doi.org/10.1017/S095457941400090X

Hussain, H.I., Sallehuddin, S., Shamsudin, M.F. & Jabarullah, N.H. (2018) Debt Maturity Structure and Shari'ah Compliance: Evidence from Malaysia, *European Research Studies Journal*, 21 (1), 179 – 189. https://www.ersj.eu/dmdocuments/2018_XXI_1_16.pdf

Ibikunle, P., Umeadi, O., & Ummunah, J. (2012). Predictors of burnout syndrome among Nigerian physiotherapists. *African Journal of Physiotherapy and Rehabilitation Sciences, 4*(1-2), 1-7. http://dx.doi.org/10.4314/ajprs.v4i1-2.1

Jermsittiparsert, K. & Akahat, N. (2016). Fear of Crime among Students of Kalasin Rajabhat University. *Research Journal of Applied Sciences, 11*(2), 54-61.

Jermsittiparsert, K. & Ruangsilp, A. (2017). Fear of Crime among People in Thailand's Southern Border Provinces. *Asian Political Science Review, 1*(1), 32-40. http://dx.doi.org/10.12778/235108617X15452339029608

Jermsittiparsert, K., Trimek, J., & Vivatthanaporn, A. (2015). Fear of Crime among People in Muang-Ake, Lak-Hok, Muang, Pathumthani. *The Social Sciences, 10*(1), 24-30.

Khandelwal, A., & Joshy, K. (2017). Private Savings and its Influence on Economic Growth in India in the Post Reform Period. *Artha-Journal of Social Sciences, 16*(4), 79-96. https://doi.org/10.12724/ajss.43.5

Kordík, M., Kurilovská, L. (2017). Protection of the national financial system from the money laundering and terrorism financing. *Entrepreneurship and Sustainability Issues, 5*(2), 243-262. http://doi.org/10.9770/jesi.2017.5.2(7)

Kowo, S. A., Adenuga, O. A. O., Sabitu, O.O. (2019). The role of SMEs development on poverty alleviation in Nigeria, *Insights into Regional Development, 1*(3), 214-226. https://doi.org/10.9770/ird.2019.1.3(3)

Krakrafaa-Bestman, D. (2018). *The History of Terrorism in Nigeria: Examining the Relationship between Colonialism and Terrorism in Postcolonial Nigeria*. Texas Southern University.

Kwon, R., & Cabrera, J. F. (2019). Socioeconomic factors and mass shootings in the United States. *Critical Public Health, 29*(2), 138-

145. https://doi.org/10.1080/09581596.2017.1383599

Mauro, L., & Carmeci, G. (2007). A poverty trap of crime and unemployment. *Review of Development Economics, 11*(3), 450-462. https://doi.org/10.1111/j.1467-9361.2006.00350.x

Merrifield, C. (2017). Improving Reading Comprehension: For Children Living in Poverty in a Tier 3 Response to Intervention Group. https://digitalcommons.brockport.edu/cgi/viewcontent.cgi?article=1816&context=ehd_theses

Müller-Buschbaum, P. (2018). Probing Organic Solar Cells with Grazing Incidence Scattering Techniques. *Synchrotron Radiation in Materials Science: Light Sources, Techniques, and Applications, 1*, 191-238.

Naushad, M., Faridi, M.R., Malik, S., A. (2018). Economic development of community by entrepreneurship: an investigation of the entrepreneurial intent and the institutional support to the local community in Al-Kharj region. *Entrepreneurship and Sustainability Issues,* 5(4), 899-913. http://doi.org/10.9770/jesi.2018.5.4(14)

Nwankwo, U. V., & James, O.-O. (2016). Prevalence of lethal and non-lethal crimes in Nigeria. *Journal of Advanced Research in Humanities and Social Science, 3*(1), 10-25. http://www.nigeriawatch.org/media/html/Nwankwo-James2016.pdf

Ojedokun, U. A. (2014). Contributing factors to police homicide in Nigeria. *The Police Journal, 87*(1), 41-48. https://doi.org/10.1350/pojo.2014.87.1.651

Okenyodo, O. (2016). Governance, Accountability, and Security in Nigeria. *Africa Security Briefs*(31), 1. https://css.ethz.ch/en/services/digital-library/articles/article.html/9bdc6b96-6eed-41dc-ba94-6e1fd402dd0a/pdf

Pesaran, M. H., & Shin, Y. (1997). Testing for Unit Roots in Heterogeneous Panels', University of Cambridge. *Revised version of the DAE working paper*(9526).

Petreski, M., Petreski, B., Tumanoska, D., Narazani, E., Kazazi, F., Ognjanov, G., . . . Kochovska, T. (2018). The Size and Effects of Emigration and Remittances in the Western Balkans. A Forecasting Based on a Delphi Process. *Südosteuropa, 65*(4), 679-695.

Prakash, R.. Garg, P. (2019). Comparative assessment of HDI with Composite Development Index (CDI). *Insights into Regional Development,* 1(1), 58-76. https://doi.org/10.9770/ird.2019.1.1(5)

Rueda, D., & Stegmueller, D. (2016). The externalities of inequality: Fear of crime and preferences for redistribution in Western Europe. *American Journal of Political Science, 60*(2), 472-489. https://doi.org/10.1111/ajps.12212

Schmeer, K. K., & Yoon, A. (2016). Socioeconomic status inequalities in low-grade inflammation during childhood. *Archives of disease in childhood, 101*(11), 1043-1047. https://doi.org/10.1136/archdischild-2016-310837

Sghari, M. B. A., & Hammami, S. (2016). Energy, pollution, and economic development in Tunisia. *Energy Reports, 2*, 35-39. https://doi.org/10.1016/j.egyr.2016.01.001

Shah, N., Soomro, B. A., & Mirjat, A. J. (2019). An Investigation of the Impact of Poverty and Unemployment on Criminal Behaviour among Youths: An Empirical Approach. *Pakistan Journal of Criminology, 11*(1). http://www.pjcriminology.com/wp-content/uploads/2019/06/5.Criminal-behaviour.pdf

Sidebottom, A., Ashby, M., & Johnson, S. D. (2014). Copper cable theft: Revisiting the price–theft hypothesis. *Journal of Research in Crime and Delinquency, 51*(5), 684-700. https://doi.org/10.1177/0022427814521216

Smith, C., Crosnoe, R., & Cavanagh, S. E. (2017). Family instability and children's health. *Family relations, 66*(4), 601-613. http://dx.doi.org/10.1111/fare.12272

Suksamran, S., Trimek, J., Jermsittiparsert, K., & Siriattakul, P. (2017). Crime Victimization Surveys of 2016. *RSU International Journal of College of Government, 4*(1), 1-7.

Sriyana, J. 2019. What drives economic growth sustainability? Evidence from Indonesia. *Entrepreneurship and Sustainability Issues,* 7(2), 906-918. http://doi.org/10.9770/jesi.2019.7.2(8)

Tanaka, K. (2017). *Time series analysis: nonstationary and noninvertible distribution theory* (Vol. 4): John Wiley & Sons.

Tarling, R., & Dennis, R. (2016). Socio-Economic Determinants of Crime Rates: Modelling Local Area Police-Recorded Crime. *The Howard Journal of Crime and Justice, 55*(1-2), 207-225. https://doi.org/10.1111/hojo.12157

Tung, L. T. (2019). Role of Unemployment insurance in Sustainable development in Vietnam: Overview and policy implication. *Entrepreneurship and Sustainability Issues*, 6(3), 1039-1055. http://doi.org/10.9770/jesi.2019.6.3(6)

Torruam, J. T., & Abur, C. (2014). The relationship between unemployment, inflation and crime: An application of cointegration and causality analysis in Nigeria. *Journal of Economics and Sustainable Development, 5*(4), 131-137. https://pdfs.semanticscholar.org/0982/3dc4177f51058c54423780f7be3aaead64ac.pdf

Virén, M. (2001). The Okun curve is non-linear. *Economics Letters, 70*(2), 253-257. https://doi.org/10.1016/s0165-1765(00)00370-0

Yildiz, R., Ocal, O., & Yildirim, E. (2013). The Effects of Unemployment, Income and Education on Crime: Evidence from Individual Data. *International Journal of Economic Perspectives, 7*(2).

Somdech RUNGSRISAWAT holds Ph.D. in Communications from University of Westminster, UK. He is currently the Vice President for Academic Affairs and Associate Professor at Suan Sunandha Rajabhat University. His areas of expertise are Communication, Public and Business Administration, Education, and Interdisciplinary Research in Social Sciences.

Kittisak JERMSITTIPARSERT holds Ph.D. in Social Sciences (major in Political Science) from Kasetsart University, Thailand. He is currently a researcher at Chulalongkorn University Social Research Institute, a part-time researcher at Ton Duc Thang University, and the secretary general of Political Science Association of Kasetsart University. His areas of expertise are Political Science, Public and Business Administration, and Interdisciplinary Research in Social Sciences.

Sattapas THANETPAKSAPONG hold M.A. in Political Science from Ramkhamhaeng University, Thailand. Additionally, he is studying PhD in Management at Siam University, Thailand. Currently, he is a policeman in the Provincial Police Region 2, Royal Thai Police, Chonburi, Thailand. His main research areas are Management, Political Science, and Criminology.