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Examining the Linkages between Street Crime and Selected State Economic Variables in Malaysia: A Panel Data Analysis

(Memeriksa Hubungan antara Jenayah Jalan dan Pembolehubah Ekonomi Negeri Terpilih di Malaysia: Analisis Data Panel)

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ABSTRACT

In this paper, the authors use dynamic panel data in order to assess the linkages between the cost of living, income inequality, gross domestic product (GDP) per capita, population and unemployment rate with respect to the street crime rate in Malaysia. More specifically, the investigation considers whether the following could be capable of generating any difference in the crime rate observed across many types of street crime. The F-test, Breusch-Pagan Lagrange Multiplier test and Hausman tests affirm the most preferred model to explain criminal behaviour is by using Fixed Effects Model almost for all types of street crime. The findings of the estimated coefficients reveal that the cost of living is negatively related to all street crime types and not significant as well as unemployment rate. There is a motivation towards street crime not to earn a living or jobless, but other motivating push factors that relate to the personalities of the offenders such as drug addiction. Moreover, income inequality is only significant in terms of total street crime and unarmed robbery gang estimation models as well as GDP per capita and population in snatch and theft estimation models. Interestingly, we extend the by changing the definition of crime into percentage and the results show that the cost of living is significant with the correct sign and has a positive relationship with all types of street crime rates except for snatch and theft estimation models. The GDP per capita is also a main influencer on all types of street crime rates and has a negative relationship. Finally, the unemployment rate is only significant in the unarmed robbery estimation models and has a positive relationships as well as income inequality variable in total street crime and unarmed robbery gang estimation models. This street crime has been shown to be sensitive to the change in unemployment rate and income inequality and also have positive linkages.

Keywords: Cost of living; income inequality; panel data; street crime

ABSTRAK

Dalam kajian ini, penulis menggunakan data panel dinamik untuk menilai hubungan antara kos sara hidup, ketidaksamaan pendapatan, keluaran dalam negara kasar (KDNK), populasi dan kadar pengangguran dengan kadar jenayah jalanan di Malaysia. Lebih khusus lagi, siasatan mempertimbangkan sama ada perkara berikut dapat menghasilkan sebarang perbezaan dalam kadar jenayah yang dinilai di antara jenis-jenis jenayah jalanan. Ujian F, ujian Breusch-Pagan Lagrange Multiplier dan ujian Hausman mengesahkan model yang paling sesuai untuk menjelaskan tingkah laku jenayah adalah dengan menggunakan Model Kesan Tetap hampir untuk semua jenis jenayah jalanan. Dapatan koefisien yang dianggarkan mendedahkan bahawa kos sara hidup berkait negatif dengan semua jenis jenayah jalanan dan tidak signifikan termauk juga kadar pengangguran. Terdapat motivasi terhadap jenayah jalanan untuk tidak mencari sara hidup, tetapi faktor-faktor penolak lain yang berkaitan dengan keperibadian pesalah seperti penagihan dadah. Selain itu, ketidaksamaan pendapatan hanya signifikan dalam model jumlah jenayah jalanan dan model geng rompakan tanpa bersenjata, dan juga KDNK dan pupulasi dalam model anggaran jenayah ragut dan curi. Menariknya, kami melanjutkan kajian dengan mengubah definisi jenayah ke dalam bentuk peratusan dan hasil kajian menunjukkan bahawa kos sara hidup adalah signifikan dengan tanda yang betul dan mempunyai hubungan positif dengan semua jenis kadar jenayah jalanan kecuali model anggaran ragut dan curi. KDNK juga merupakan pengaruh utama kepada semua jenis kadar jenayah jalanan dan mempunyai hubungan yang negatif. Akhir sekali, kadar pengangguran hanya signifikan dalam model angggaran rompakan tidak bersenjata dan mempunyai hubungan yang positif serta pembolehubah ketidaksamaan pendapatan dalam model anggaran jumlah jenayah jalanan dan geng rompakan tidak bersenjata. Jenayah jalanan ini telah terbukti sensitif terhadap perubahan kadar pengangguran dan ketidaksamaan

pendapatan dan juga mempunyai hubungan yang positif. Jenayah jalanan ini telah menunjukkan sensitiviti terhadap perubahan ketidaksamaan pendapatan dan mempunyai hubungan yang positif.

Kata Kunci: Kos sara hidup; ketidaksamaan pendapatan; data panel; jenayah jalanan

INTRODUCTION

Positive economic growth and a low unemployment and poverty rate according to current data statistics as well as a stable inflation rate compared to earlier accelerating markers, all suggest that Malaysia is still indicating the right pace and track to become a high income country. The rising cost of living in order to be a developed nation in the year 2020 has become a major challenge for Malaysia in the short period of years remaining. Moreover, certain crime rates have become critical, particularly for snatch theft and robbery which implies there is pressure on the rising cost of living in Malaysia. With the current economic situation, it is tempting to link crime with the high cost of living. According to Baharom and Habibullah (2009b), the unemployment and crime rate have an effect on economic activities and more generally on the quality of life of people. Cebula (1980) and Roback (1982) also categorised the unemployment and the crime rate as amenities[1] and indirectly affect the cost of living.

In 2009, a total of 38,323 street crime[2] cases were reported which represents 18 per cent of the total crime. This reduced to 16,034 cases based on investigation papers in 2015 or 13.9 per cent. The decrease of four per cent in street crime within six years is not something that society can be proud of, but shows the effort of the government and enforcement authorities to reduce the criminal rate to be as low as possible. Other than that, the theft crime rate recorded based on investigation papers in 2015 was 18,078 cases or 15.6 per cent of the total, and 19,286 cases of burglary and theft (also known as break-ins) or 16.7 per cent of the total crime were documented (see Table 1).

The temptations and pressure as a result of the rising cost of living may contribute as a push factor for crime activities and more specifically for street crime, other than the factor of being jobless over a long period time. A study by Sinclair (1987) indicated that unemployment furnishes both the opportunity and the motive for crimes such as robbery, assault, burglary, theft, murder and rape. Meanwhile, Becker (1968) and Cantor and Land (1985) argued that the crime rate is determined by high or low criminal motivations. Apparently there are several contributing factors to crime such as desperation for money, insufficient income or basic needs not being accommodated in order to survive due to the rising cost of living which can also be motivation for criminals to turn to crime. Income may be insufficient for those living in large cities such as Kuala Lumpur and Johor Baharu due to the high cost of living. A study by Chien and Mistry (2013) indicated that living in an area with a high cost of living will put more stress on a family, even if two families have the same income but live in different areas.

Due to the high cost of living, members of households that have insufficient income and live in the major cities have a higher probability of being convicted of a crime. This statement is supported by and is in line with the Economic Theory of Crime. However, in this paper analysis the authors only concentrate and focus on the linkages between street crime, the cost of living and

TABLE 1. Criminal Index in Malaysia, 2009 to 2015

Criminal	2009	2010	2011	2012	2013	2014	2015
Murder	601	568	530	602	627	510	499
Rape	3,840	3,693	3,270	2,964	2,718 98	2,289 89	2,047
Armed Robbery Gang	815	1,809	318	110	16,647	13,671	62
Unarmed Robbery Gang	23,722	15,809	16,084	16,738	21 3,565	23 3,250	10,718
Armed Robbery	155	309	52 3,871	17 3,275	5,699	5,600	14 2,954
Unarmed Robbery	4,862	3,834	6,537	6,244	21,405	19,664	5,516
Injuries	8,370	8,111	30,502	24,299	16,733	13,407	18,078
Theft	40,864	36,406	16,110	16,196	49,133	43,025	12,049
Vehicles Theft	14,222	15,290	50,896	51,259	4,981	4,076	38,565
Motorcycle Theft	61,394	54,557	4,472	4,526	2,118	2,379	3,395
Van/Lorry/Heavy Vehicles Theft	5,524	4,774	3,453	2,500	23,317	20,587	2,362
Snatch Theft	9,739	5,950	30,200	24,939			19,286
Burglary and Theft	38,570	35,052					
Total of Index Crimes	212,678	186,162	166,295	153,669	147,062	128,570	115,545
Total of Street Crimes[1]	38,323	25,593	23,408	22,513	22,330	19,300	16,034

Note: [1]Includes unarmed robbery gang, unarmed robbery and snatch theft.
Source: Ministry of Home Affairs (2017)[3]

income inequality. As is known based on previous studies, the relationship between crime and economic condition is undeniable (Humphries & Wallace 1980; Loftin & Hill 1974; Smith & Parker, 1980; Baharom et al. 2013). The authors strongly agree with the statement made by Baharom et al. (2013) that suggests recession is believed to be able to cause economic adversity and encourages criminal activity. Further, the high cost of living necessary in order to be a developed nation contributes to an increase in crime, particularly in urban areas. However, a study by Long and Witte (1981) and Chiricos (1987) insisted that the relationship between economic condition and the crime rate remains ambiguous. The authors feel that it is not necessary to run analysis on unemployment since this variable and the crime rate have a closed relationship and in order to avoid any serial correlation problems that may exist. For example, theft crimes and break-ins are common amongst individuals who are unemployed.

Therefore, it is important for this study to shed some light on this subject for the policymakers, authorities and governments in formulating policies as well as a precaution and to create public awareness in order to minimise the impact of the rising cost of living in Malaysia. The structure and remainder of this paper is organised as follows. In Section 2, the previous literature is briefly discussed, followed by Section 3 that will explain the data and methodology used in this study. The empirical results are reported in Section 4 and Section 5 concludes the study.

LITERATURE REVIEW

Many empirical studies have been carried out concerning the linkages between crime and its determinants. The results of these empirical studies are quite mixed and show there are various factors responsible for promoting crime such as unemployment, poverty, inflation, economic growth and conditions, income inequality and other factors. As a precaution before any researchers conduct an analysis of crime, there is a need to distinguish the reason why certain people have a tendency to commit crime and why the crime rate differs from one place to another (Toch 1969). According to Toch (1969), the first statement concerning why people commit crime requires a comparison of the characteristics and experiences of a person who may have been convicted or not-convicted of a crime. Meanwhile, for the second statement concerning different crime rates in different places, this forms the focus of this study and refers to the question of what are the social conditions that cause people to commit crime. This could be because of the inequalities of income and economics, the high cost of living, being unemployed for too long or other factors.

There are three theories relevant to the issue of crime as developed by Shaw and McKay (1942), Merton (1938) and Becker (1968). The Social Disorganisation Theory was introduced by Shaw and McKay (1942) and indicates that crime only occurs when there are weakened mechanisms of social control. According to Shaw and McKay (1942), poverty is the most important factor and is a root of crime together with heterogeneity and mobility, particularly in the urban areas. They came up with the notation that areas with high inequality or too many poor families tend to have a high crime rate. Secondly, the Strain Theory by Merton (1938) fits and explains violent crime, including the role of inequality and race. This theory indicates that individuals who are unsuccessful feel frustration when faced with the relative success of others around them. It is considered that the higher the inequality, the greater the strain and tendency for low-status individuals to commit crime. Lastly, Becker (1968) introduced the Economic Theory of Crime which has become a main reference for researchers, particularly for property crime. According to Becker (1968), the amount of time allocated to criminal activity will increase if there are areas of high inequality where poor individuals have low returns from market activity and live next to high income individuals who have goods worth taking. This economic theory of crime is fundamentally based on the expected utility that they will gain if involved in crime activities or otherwise. The model proposed by Becker (1968) is based on costs and benefits. Further, Cantor and Land (1985) also introduced the Criminal Opportunity[4] Theory and argued that the crime rate is determined by high or low criminal motivations[5] (Becker 1968).

A study by Blau and Blau (1982) indicated that criminal violence is related to location, proportion of blacks, poverty, socioeconomics inequality between races and economic inequality generally and thus, increases the rates of criminal violence. There are four types of violence under the study, namely murder, rape, robbery and assault. Blau and Blau found that urban poverty and economic inequality are major sources of criminal violence and raises the crime rate in metropolitan areas. By using the Gini coefficient[6] to represent income inequality, the results are concurrent with previous empirical studies by Eberts and Schwirian (1968), Krohn (1976), Mathur (1978), Braithwaite (1979), Kelly (2000) and Fajnzylber et al. (2002). According to Krohn (1976) income inequality is the best predictor for national homicide rates in the United States of America. As pronounced by Becker (1968), an increase in income inequality has a big and robust effect in increasing crime rates (Madden & Chiu 1998; Kelly 2000; Maria & Meloni 2000; Fajnzylber et al. 2002; İmrohoroğlu et al. 2006). More specifically, Kelly (2000) concluded that violent crime (robbery, assault and aggregate levels of crime) are all influenced by income inequality. Further, Madden and Chiu (1998) mentioned that there is a potential link between income inequality and increases in the number of burglaries and the level of crime. Moreover, a study by Rufrancos et al. (2013) found that property crime

increases with rising income inequality and specific measures of violent crime, such as homicide and robbery. In contrast, a study by Baharom and Habibullah (2009a) concluded that income inequality is not related to crime (Choe 2008) in Malaysia. Economic inequality, which is usually represented by inequality in income, has long been considered an important determinant of crime.

Furthermore, a study by Devine et al. (1988) intended to examine economic health influences in annual fluctuations in rates of homicide, robbery and burglary. Economic health or economic distress is represented by unemployment and inflation. The results of the study indicated that changes in the homicide[7] rate seem to be responsive to inflation. However, the results have become the subject of discussion regarding the relevancies of homicide, inflation and crime theories or motivation for crime. The results of concurrent studies and supported by a previous study by Brenner (1976) found that there is a positive relationship between the homicide rate and inflation. The results of research undertaken by Land and Felson (1976) and Cohen and Felson (1979) found that there is a positive relation between inflation and the property crime rate, which is in line with the Theory of Crime. However, a study by Long and Witte (1981) produced a theorem that when there is an increase in inflation there will be a corresponding increase in the crime rate (Coomer 2003) as well because hard times motivate criminal behaviour in general. A study by Gillani, Rehman and Gill (2009) supported the results with their findings that there is a long term cointegration relationship between crime and inflation.

Meanwhile, Chor and Md. Darit (2015) found that the inflation rate is not a significant factor to influence the crime rate in Malaysia. Apart from that, a study by Alwee et al. (2013) found that the consumer price index (CPI) is the most influential economic indicator in the United States of America, but such results do not well represent the whole crime rate because the researcher only selected the CPI for all urban consumers (CPI-Apparel) (16 to 24 years) and concluded that it is more influential in property crime.

The result indicated strong collinearity between inequality, inflation, unemployment and other measures (Land et al. 1990) which may have been contributed by several factors. First, as indicated by the Philips curve, there is a trade-off between unemployment and inflation in the short term but not over the long term, and running the estimation model as a single equation may create a multicollinearity problem. However, a study by Chor (2009) indicated that inflation can cause the crime rate to increase over the long term (Baharom et al. 2013), and not in the short term in Malaysia because it takes time for inflation to gradually reduce the purchasing power of people. In comparison with the findings by Rattner (1990), there are more opportunities for criminals offered by rising inflation, and this would directly increase the property crime rate. The truth is that the lead or period of time and the type of crimes are caused by different factors and each has their own characteristics.

Secondly, since the unemployment rate is based on aggregate data, the effect of the unemployment rate on homicide is unclear and beyond the prediction of prior researchers. The unemployment variable is supposedly more significant compared to inflation. In contrast, Chor (2009) revealed that the unemployment rate is statistically significant (Maria & Meloni 2000; Coomer 2003; Gillani et al. 2009; Alwee et al. 2013; Baharom et al. 2013; Torruam & Abur 2014; Chor & Md. Darit 2015) and positively related to the crime rate in the short term and supports the presence of criminal motivation effect as introduced by Becker (1968). Moreover, as revealed in a study undertaken by Alwee et al. (2013) and Torruam and Abur (2014), the results obtained are acceptable although the interpretation of the results should be carefully considered. This is because crime activities take place without regard to age or race. By selecting the unemployment rate for 20 to 24 year olds as an indicator to represent the whole unemployment rate does not always reflect that the unemployment rate increases if the opportunities for earning income decrease which instigates individuals to commit crime. However, by relying on the concept that the relation of unemployment to crime only exists in terms of the motivational component of unemployment is not enough and produces inconsistent results. Although the data is usually not readily available, only if there is cyclical[8] unemployment will the results be more accurate and consistent. This is because cyclical unemployment will cause more social problems such as increasing the crime rate. According to Habibullah and Law (2007), long term unemployment and insufficient income[9] can create tension in society, leading to self-abuse, violence and crime. Moreover, as indicated by Masih and Masih (1996), and Narayan and Smyth (2004) it is observed that in Australia the unemployment rate is not an important determinant of crime because the Granger causality test tends to show neutral causal effect results even though the issue of an increasing crime rate is often linked to unemployment in the literature.

Therefore, this analysis will focus more on street crime instead of property or violent crimes. Commonly, street crime is usually committed outdoors or originates in a public place, such as robbery, pickpocketing and theft from victims in the street where their belongings are snatched and the victim is not assaulted. Street crimes are not considered as organised crime due to the random nature of the crimes themselves that are initiated by criminals seeking quick financial gain. Usually, street crimes are carried out by hastily and loosely formed groups of individuals. This analysis will also involve all states in Malaysia by examining the linkages between street crime, the cost of living and income inequality. The introduction of the cost of living and the type of crime related to economic conditions included in the model

specification may shed some light on the implication of using the cost of living as a policy instrument to reduce the street crime rate in Malaysia. There are other reasons living in major cities are related to crime other than the high cost of living, namely routine activities theory would predict this to be the case (Bennett 1991; Cohen & Felson 1979; Cole & Gramajo 2009), but this research is more focus on the economic indicator. As the crime rate data is not sufficient and not linearly distributed, the authors propose to use static panel data analysis to capture the objective of the analysis.

METHODOLOGY

The authors employ panel data analysis to examine the linkages in street crime in 14 Malaysian states for the period 2009 to 2015. The motivation of this analysis also arises from an argument by Humphries and Wallace (1980) and Smith and Parker (1980) that suggests that in order to understand crime from the economic perspective, regional influences on crime are proposed as in the work of Blau and Blau (1982). Further, this analysis also selects street crime that focuses on the motivation of the criminal because of economic conditions in Malaysia such as the high cost of living and income inequality which are well explained by the Economic Theory of Crime, Strain Theory and the Social Disorganisation Theory. There are three types of street crime in Malaysia, which are unarmed robbery gangs, unarmed robbery and snatch thefts. Moreover, two independent variables in this analysis are the cost of living index and income inequality.

Since Malaysia does not have an official cost of living index, the use of the CPI as a proxy is acceptable because it is estimated based on the Laspeyres method. Statisticians frequently employ the Laspeyres index because it is much easier to calculate, where the denominator needs to be computed only once and has been classified as a good index. Further, the Laspeyres index is in common use to measure the cost of living (Blanciforti & Kranner 1997; Renwick 1998; Triplett 2001) and is the best measure interpreted within the conditional cost of living index framework according to Gillingham and Greenlees (1987). To represent income inequality, the Gini coefficient will be used as a proxy as applied in previous studies. Furthermore, the crimes data was downloaded from the Ministry of Home Affairs, and also derived from Economic Reports, the Economic Planning Unit (EPU), and the Department of Statistics.

The general functions of total street crimes are as bellow:

$$SCRI = f(COL, IEq, GDP, Pop, UnEmp) \quad (1)$$

where:
SCRI = street crime (number of street crime)
COL = cost of living index (2010 = 100)
IEq = income inequality (percentage)
GDP = gross domestic product per capita (RM)
Pop = population (person)
UnEmp = unemployment rate (percentage)

Equation (1) could be expanded to:

$$\ln SCRI_{it} = \beta_0 + \beta_1 COL_{it} + \beta_2 IEq_{it} + + \beta_3 GDP_{it} + \beta_4 Pop_{it} + + \beta_5 UnEmp_{it} + u_{it} \quad (2)$$

where:
i = the cross sectional dimension for states
t = the time series dimension

Besides, there are 3 estimate equations will be run based on type of crimes that categorized under street crime, which is unarmed robbery gang (URG), unarmed robbery (UR) and snatch theft (ST) as follows:

$$\ln URG_{it} = \beta_0 + \beta_1 COL_{it} + \beta_2 IEq_{it} ++ \beta_3 GDP_{it} + \beta_4 Pop_{it} ++ \beta_5 UnEmp_{it} + u_{it} \quad (3)$$

$$\ln UR_{it} = \beta_0 + \beta_1 COL_{it} + \beta_2 IEq_{it} ++ \beta_3 GDP_{it} + \beta_4 Pop_{it} ++ \beta_5 UnEmp_{it} + u_{it} \quad (4)$$

$$\ln ST_{it} = \beta_0 + \beta_1 COL_{it} + \beta_2 IEq_{it} ++ \beta_3 GDP_{it} + \beta_4 Pop_{it} ++ \beta_5 UnEmp_{it} + u_{it} \quad (5)$$

The data is annual data, $T = 7$ and $N = 14$ as well as represented in long format, where one row holds one observation per time. Since the dependent variable is not dynamic and the past values do not affect the present criminal activity according to the crime theories, a static panel data approach can be applied. Moreover, the number of T in this analysis is smaller than N or micro-panel data analysis.

Next, we will run 3 different methods of analysis, namely the Pooled OLS analysis, Fixed Effect and Random Effect models. If the individual effects do not exist, the ordinary lease squares (OLS) produce an efficient and consistent parameters estimate. The pooled OLS models are as follows:

$$Y_{it} = \alpha + X_{it}'\beta + u_{it} \quad ; u_{it} = \mu_i + \lambda_t + v_{it} \quad (6)$$

where:
α = same intercept
u_{it} = random error term where $E(u_{it}) \sim N(0, \sigma^2)$
μ_i = individual effects
λ_t = time effects
v_{it} = white noise

In this case, $\mu_i + \lambda_t = 0$. The dependent variable (Y_{it}) have their own characteristics (individual effect) and dynamic or changes10 (time effect). To estimate with this technique, we have pooled all the observations and estimate the regression model. Thus, the linear econometric model for pooled OLS are as follows:

$$y_{it} = \beta_0 + \beta_1 X_{it} + u_{it} \quad (7)$$

Other than that, the Fixed Effect model (FEM) is estimated by OLS with a set of dummies and within effect estimation methods. In this method, the individual effects and time effects is not equal to zero since an individual specific effect is time invariant. Hence, the FEM are as follows:

$$Y_{it} = (\alpha + \mu_i + \lambda_t) + X_{it}'\beta + v_{it} \quad ; u_{it} = v_{it} \quad (8)$$

For FEM as shown by equation (16), the intercepts $(\alpha + \mu_i + \lambda_t)$ are for each entity. The linear econometric model for FEM are as follows:

$$y_{it} = \beta_{0it} + \beta_1 X_{it} + v_{it} \quad ; \beta_{0it} = \alpha + \mu_i + \lambda_t \quad (9)$$

Lastly, the Random Effect Model (REM) assume that individual effects or heterogeneity are not correlated with any regressor, and estimate error variance specific to groups or times. Thus, is an individual specific random heterogeneity (component of the composite error term). Hence, the REM are as follows:

$$y_{it} = \alpha + \beta_1 X_{it} + \mu_i + \lambda_t + v_{it} \quad (10)$$

The intercept and slopes of regressors are the same across individuals. The difference among individuals or time periods lies in their individual specific errors, not in their intercepts. In other words, the individual effects and time effects behave randomly. The linear econometric model for REM are as follows:

$$y_{it} = \beta_0 + \beta_1 X_{it} + [\mu_i + \lambda_t + v_{it}] \quad (11)$$

After running all the analysis, we will select the appropriate model between Pooled OLS, FEM and REM. To select the appropriate model between Pooled OLS and FEM, the partial *F*-test are needed. To choose the best model between Pooled OLS and REM, we will use Breusch-Pagan Lagrange Multiplier test (BP LM-test) on testing the assumptions of variance of individual effect. Finally, the Hausman test is used in order to detect on the significant of difference between two estimators, which is FEM and REM.

EMPIRICAL RESULTS AND DISCUSSION

The summary statistics for the total street crime (SCRI), unarmed robbery with gang (URG), unarmed robbery (UR), snatch theft (ST), cost of living (COL), income inequality (IEq), GDP per capita, population and unemployment rate are presented in Table 2. The measures of central tendency for the variables are positive and SCRI has the largest dispersion or spread. The skewness denotes the existence of positive peaks for all variables. In addition, the kurtosis indicates that the distribution is peaked (leptokurtic) relative to the normal for all variables.

The simple correlation between the variables is low (see Table 3). Roughly, there is a negative correlation between street crime, cost of living and unemployment rate, but a positive correlation with income inequality

TABLE 2. Descriptive Statistics

	SCRI	URG	UR	ST	COL	IEq	GDP	Pop	UnEmp
Mean	1,463.00	1,046.27	226.73	190.00	106.95	38.91	29,248.06	2,104.52	3.04
Median	829.50	461.00	127.00	101.50	105.45	38.65	25,826.00	1,695.55	3.00
Maximum	7,238.00	5,812.00	1,049.00	845.00	111.60	45.50	94,856.00	6,178.00	5.60
Minimum	57.00	19.00	12.00	5.00	98.40	31.60	8,421.00	2,330.00	0.50
Std. Dev.	1,949.39	1,523.48	264.72	219.03	3.562	3.7316	16,137.10	1,359.29	1.02
Skewness	2.0191	2.0669	1.9486	1.6179	–0.6033	0.1551	1.9361	1.2714	0.1756
Kurtosis	5.7615	6.0803	5.5869	4.8061	2.8849	2.2674	7.6467	4.4779	3.8651

TABLE 3. Correlation between Variables

Correlation	ln SCRI	ln URG	ln UR	ln ST	COL	IEq	GDP	Pop	UnEmp
ln SCRI	1.0000								
ln URG	X	1.0000							
ln UR	X	x	1.0000						
ln ST	X	x	x	1.0000					
COL	–0.1239	–0.0409	–0.0411	–0.3530	1.0000				
IEq	0.0058	0.0211	-0.0023	–0.0037	0.1017	1.0000			
GDP	0.5333	0.5159	0.5509	0.3151	0.1668	0.0415	1.0000		
Pop	0.6422	0.6243	0.5983	0.5246	0.0343	0.0328	0.0442	1.0000	
UnEmp	–0.1913	–0.2228	–0.1823	0.0736	–0.1463	0.0561	–0.1900	0.1781	1.0000

proxies by the Gini coefficient, GDP per capita and population.

TOTAL STREET CRIME (SCRI)

The total crime (SCRI) estimation model based on Pooled OLS (POLS), FEM and REM are presented in Table 4. To select the appropriate model between POLS and FEM, the authors ran the partial *F*-test for a fixed effect with null hypothesis that all dummy variable parameters[11] are equal to zero or in other words, the POLS model is preferred. Meanwhile, the alternative hypothesis is that at least one dummy parameter is not zero or the FEM is preferred. The result indicates that the null hypothesis can be rejected at 1 per cent (see Table 4) and it is concluded that there is a significant fixed effect in the FEM. Hence, the FEM is better than the POLS.

Next, a test is performed of the REM against the POL model using a BP LM-test. The null hypothesis is that the individual effect does not exist and the POLS are preferred , while the alternative hypothesis is the REM is preferred . As illustrated in Table 4, the LM-test can be rejected at 1 per cent and it is concluded that there is an individual effect and the REM are preferred.

Since both tests, namely the *F*-test and the BP LM-test reject the POLS model the estimation model for SCRI is a heterogonous model. There is a need to perform the Hausman test for random effects to choose the appropriate model between FEM and REM. The null hypothesis implies that the REM is correct . If the null hypothesis is rejected, then the FEM is a correct specification. The results show that the null hypothesis is rejected based on the Hausman test (see Table 4), and it can be concluded that the FEM is preferred compared to REM. This means that the fixed effects are constant across individuals.

TABLE 4. Total Crime Estimation Model

Variables	ln(SCRI)		
	POL	FEM	REM
C	13.043	10.628	11.178
COL	-0.0749	-0.0371	-0.0562
	(-4.9961)***	(-4.588)***	(-9.3284)***
IEq	0.0003	0.0022	0.0022
	(0.0883)	(2.3882)***	(2.4148)***
GDP	3.7030	-5.0129	9.4583
	(9.2612)***	(-0.7666)	(1.7271)**
Pop	6.0416	-1.3308	4.8805
	(12.658)***	(-0.0496)	(4.4704)***
UnEmp	-0.2924	0.0269	0.0242
	(-4.677)***	(0.5085)	(0.4942)
F-test		81.272***	
BP LM-test		147.59***	
Hausman test		24.773***	

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

From the results indicates that there is a negative relationship between cost of living and total street crime around Malaysia. The contrary results to the Economic Theory of Crime have proved that the cost of living is not the main influential factor in the street crime in Malaysia. In other words, there is low criminal motivation to do street crime due to the high cost of living. Further, income inequality is significant at 5 per cent and the results indicate that there is an increase of 0.22 per cent in street crimes if income inequality rises by 1 per cent. The results are in agreement with previous empirical studies and in line with the Strain Theory. There is a potential link between income inequality and an increase in street crime in Malaysia and can be considered as an important determinant of street crime. Meanwhile, the state economics condition variable, which is GDP per capita, population and unemployment rate are statistically insignificant.

We also extend the study by conducting the analysis once again by changing the interpretation of dependent variables to ensure the accuracy of the analysis and results. Therefore, the street crime dependent variables (SCRI) will be measured in terms of street crime rates, which can be computed as a number of street crimes in state *i*, divided by the number of population in state *i*, and multiplied by 100. A total of three models are formed and will be analyzed as follows:

$$SCRI = f(COL, GDP, UnEmp) \quad (12)$$

$$SCRI = f(IEq, GDP, UnEmp) \quad (13)$$

$$SCRI = f(COL, IEq, GDP, UnEmp) \quad (14)$$

where:
SCRI = street crime rate

From the analysis, the FEM is preferred compared to REM and POLS (see Table 5 and Appendix 1 for full results). From Table 5, the results obtained differ by comparing with the number of crime as a dependent variable as shown in Table 4. The cost of living has a positive sign for both models and significant, which is an increase in the cost of living will increase the total street crime rate by 0.001 per cent. This kind of results supported by the Economic Theory of Crime has proven that the cost of living is a major factor influencing street crime in Malaysia. There is a criminal motivation to do street crime due to the high cost of living. Other than that, income inequality is also significant in the second model when omitted the cost of living variable and the results indicate that there is an increase of 0.0002 per cent in street crime if income inequality rises by 1 per cent. Furthermore, the GDP per capita and unemployment rates are also significant in all running models and indicate that if there is an increase in the GDP per capita will decrease the street crime rates by

TABLE 5. Total Crime Estimation Model

Variables	Model 1 FEM	Model 2 FEM	Model 3 FEM
C	0.1537	0.2981	0.1540
COL	0.0009 (1.8316)**	-	0.0009 (1.8085)**
IEq	-	0.0002 (1.7813)**	9.4526 (1.2764)
GDP	-5.3389 (-10.273)***	-6.7167 (-12.119)***	-5.3806 (-10.379)***
UnEmp	-0.0081 (-1.9769)**	-0.0099 (-1.5045)*	-0.0076 (-1.8711)**

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis

5.3 to 6.7 per cent. Unfortunately, the unemployment rate has shown an adverse effect on street crime and with wrong sign, which is not support by the Economic Theory of Crime.

UNARMED ROBBERY WITH GANG (URG)

The analysis begins by comparing three different estimates of the URG as shown in Table 6, POLS, FEM and REM. The results show that the *F*-test and BP LM-test reject the null hypothesis if all dummy variable parameters are equal to zero and there is an individual effect at 1 per cent (see Table 6) and hence, the FEM and REM are preferred. Inversely, the FEM is more appropriate in explaining unarmed robbery with a gang estimation model according to the Hausman test.

TABLE 6. Unarmed Robbery with Gang Estimation Model

Variables	ln(URG) POL	FEM	REM
C	10.971	7.6568	8.3675
COL	-0.0616 (-3.0168)***	0.0099 (0.8423)	-0.0325 (-3.7773)***
IEq	0.0011 (0.2455)	0.0033 (2.4566)***	0.0036 (2.6542)***
GDP	4.1426 (7.6004)***	-2.3746 (-2.4809)***	3.0562 (0.3942)
Pop	7.1152 (10.936)***	-8.8275 (-2.2469)**	4.7934 (3.2867)***
UnEmp	-0.3849 (-4.5176)***	-0.0347 (-0.4481)	-0.0042 (-0.0596)
F-test		69.809***	
BP LM-test		138.69***	
Hausman test		36.921***	

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

From the FEM coefficient, the cost of living and unemployment rate variable are statistically not significant as well as population with wrong sign. More on, if there is an increase of income inequality by 1 per cent, this will raise unarmed robbery with gang by 0.33 per cent in Malaysia. There are also decreases in unarmed robbery with gang by 2.37 per cent if there is an increase in GDP per capita. From the analysis, it can be concluded that the income inequality and GDP per capita are factors influencing unarmed robbery with gang but the interpretation should be carefully made with regard to the location and further analysis needs to be done to reveal the characteristics behind unarmed robbery with gang.

For further analysis, we measured unarmed robbery with gang crime in percentage, which can be computed as a number of unarmed robbery with gang crimes in state *i,* divided by number of population in state *i,* and multiplied by 100 and run as in equation [12], [13] and [14]. From the analysis, the FEM is preferred (see Table 7 and Appendix 2 for full results). From Table 7, the cost of living has a positive sign for both models and significant, which is an increase in the cost of living will increase the total crime rate by 0.001 to 0.01 per cent as supported by the Economic Theory of Crime, and there is a criminal motivation to do crime due to the high cost of living. Other than that, income inequality is also significant where there is an increase of 0.0001 to 0.0002 per cent in unarmed robbery with gang crime if income inequality rises by 1 per cent. Meanwhile, the GDP per capita results indicate that if there is an increase in the GDP per capita will decrease the crime rate by 3 to 3.4 per cent. Unfortunately, the unemployment rate is not significant due to wrong sign in this analysis.

TABLE 7. Unarmed Robbery with Gang Estimation Model

Variables	Model 1 FEM	Model 2 FEM	Model 3 FEM
C	0.0690	0.1689	0.0694
COL	0.0082 (1.5637)*	-	0.0008 (1.5427)*
IEq	-	0.0002 (1.9664)**	0.0001 (1.6501)*
GDP	-3.0085 (-5.5783)***	-3.3695 (-8.8214)***	-3.0639 (-5.7402)***
UnEmp	-0.0070 (-1.6561)*	-0.0081 (-1.7900)**	-0.0064 (-1.5314)*

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

UNARMED ROBBERY (UR)

Unarmed robbery is performed by a single person without any weapons. FEM is the most appropriate model to

TABLE 8. Unarmed Robbery Estimation Model

Variables	ln(UR)		
	POL	FEM	REM
C	8.4182	6.1510	6.9478
COL	-0.0467	-0.0010	-0.0312
	(-2.8476)***	(-0.8578)	(-3.9739)***
IEq	-0.0008	0.0010	0.0009
	(-0.2168)	(0.7743)	(0.7278)
GDP	3.55476	-7.5042	1.1202
	(8.1168)***	(-0.8373)	(1.6024)*
Pop	5.2011	-9.2959	4.5212
	(9.9694)***	(-0.0253)	(3.6325)***
UnEmp	-0.2359	0.0048	-0.0046
	(-3.4534)***	(0.0664)	(-0.0710)
F-test		49.813***	
BP LM-test		147.07***	
Hausman test		15.817***	

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

represent the unarmed robbery estimation model after a comparison with POLS and REM through the *F*-test, BP LM-test and Hausman test. Referring to the results (see Table 8), all estimation techniques indicate that there is a negative relationship between the cost of living, GDP per capita and population, and a positive relationship with income inequality and unemployment rate. According to the results based on FEM estimation, the estimated coefficients all variables are not significant. This may indicate that there are other push factors that cause unarmed robbery crime to occur and not as explained by the Strain theory. Therefore, the social factors that involve individual personalities such as drug addiction contribute to unarmed robbery crime because these criminal activities are carried out individually and without weapons.

Due to the insignificant of all variables, we extend the study by measured unarmed robbery crime in percentage, which can be computed as a number of unarmed robbery crimes in state *i,* divided by number of population in state *i,* and multiplied by 100 and run as in equation [12], [13] and [14]. From the analysis, the FEM is preferred for all three models (see Table 9 and Appendix 3 for full results).

The cost of living and unemployment rate has a positive sign and significant. An increase in the cost of living and unemployment rate will increase the unarmed robbery crime rate by 0.0003 and 0.002 per cent, respectively. This result is supported by the Economic Theory of Crime, which is there are criminals motivation to do crime due to the high cost of living and

TABLE 9. Unarmed Robbery Estimation Model

Variables	Model 1	Model 2	Model 3
	FEM	FEM	FEM
C	-0.0032	0.0173	-0.0032
COL	0.0003	-	0.0003
	(2.0224)**		(1.9972)**
IEq	-	9.7941	1.6523
		(0.3954)	(0.7594)
GDP	-7.3245	-4.1729	-7.3973
	(-4.8333)***	(-4.0164)***	(-4.8567)***
UnRate	0.0015	0.0021	0.0016
	(1.2589)	(1.6972)**	(1.3147)*

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

unemployment rate. Other than that, the GDP per capita also statistically significant with correct sign, an increase in the GDP per capita will reduce the percentage of crime rate particularly for unarmed robbery as high as 7 per cent. Meanwhile, the income inequality is statistically not significant.

SNATCH THEFT (ST)

The REM is the most appropriate and preferred model to represent and explain the snatch theft model estimation compared to POLS and FEM based on the *F*-test, BP LM-test and the Hausman test results (see Table 10). Once again,

TABLE 10. Snatch and Theft Estimation Model

Variables	ln(ST)		
	POL	FEM	REM
C	16.806	14.957	16.252
COL	-0.1329	-0.1308	-0.1253
	(-5.5836)***	(-5.0429)***	(-7.6996)***
IEq	0.0007	0.0008	0.0003
	(0.1203)	(0.2626)	(0.0774)
GDP	2.9333	3.9619	1.8173
	(4.6196)***	(0.1888)	(1.4007)*
Pop	5.1601	1.5851	5.8079
	(6.8081)***	(1.8400)**	(3.0693)***
UnEmp	-0.0195	0.0143	-0.0342
	(-0.1967)	(0.0845)	(-0.2439()
F-test		16.006***	
BP LM-test		101.14***	
Hausman test		3.3873	

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

the cost of living and GDP per capita are not significant with wrong sign. Furthermore, income inequality and unemployment rate is also not significant to influence snatch theft criminal activity. The results also indicate that snatch theft crimes are caused by several factors that have tendencies towards drug addiction motivations, and not caused by the higher cost of living, being jobless or others, even though there are linkages between these indicators. Only population statistically significant and can explained the snatch and theft crime activity in Malaysia based on this analysis. An increase in the number of population will increase the snatch and theft crime by 5.81 per cent.

We compute the snatch and theft crime as a percentage in state *i,* divided by number of population in state *i,* and multiplied by 100 and run as in equation [12], [13] and [14] for further analysis. From the analysis, the FEM is preferred for all three models (see Table 11 and Appendix 4 for full results). The cost of living, income inequality and unemployment rate statistically are not significant. Moreover, the GDP per capita statistically significant with correct sign at 1 per cent, an increase in the GDP per capita will reduce the percentage of snatch and theft crime rate by 1 to 3 per cent.

TABLE 11. Snatch and Theft Estimation Model

Variables	Model 1 FEM	Model 2 FEM	Model 3 FEM
C	0.0529	0.0943	0.0528
COL	5.2184 (0.1396)	-	5.6209 (0.1494)
IEq	-	6.1303 (0.7790)	-2.4426 (-0.4419)
GDP	-1.6579 (-4.3193)***	-2.8135 (-8.5236)***	-1.6472 (-4.2577)***
UnRate	0.0005 (0.1788)	0.0002 (0.0505)	0.0004 (0.1398)

Note: ***, ** and * indicate significance at 1%, 5% and 10%, respectively.
t-value is in the parenthesis.

CONCLUSION

The aim of this paper was to examine the linkages between street crime and selected economic variables which is the cost of living, income inequality, GDP per capita, population and unemployment rate in Malaysian states through panel data analysis. A number of important findings are extracted from the analysis. First, the FEM is the best estimation model and much preferred in explaining street crime in Malaysia. Second, there are linkages between the type of street crime, the cost of living, income inequality, GDP per capita, population and unemployment rate. As summary, the cost of living and GDP per capita are two important street crime criminal motivation factors in Malaysia. The most important finding is the linkages of the positive relationship between the cost of living and all types of street crime except for snatch and theft model. It indicated that there is high criminal motivation to do street crime due to the high cost of living. According to the Social Disorganisation Theory, street crime occurs due to the poverty factor as a root of crime particularly in urban areas. Thus, the results should be interpreted carefully, and not be compounded by a higher cost of living which may finally cause people to resort to crime to make ends meet, which would appear to not be the nature of street crime. For example, snatch thefts are not synonymous to a particular race or class of people but are committed by people of all backgrounds. The snatch thieves can strike at anytime, anywhere if there is an opportunity to carry out crime. The snatch thefts or other street crimes almost exclusively target women, walking alone and in a public area. Thus, there is a motivation to do street crime not only to earn a living but due to other push factors that relate to their personalities such as drug addiction. With the current economic situation, the authors are tempted to link crime with the high cost of living.

Furthermore, no doubt that the GDP per capita is one of the main influencer to raising the crime rate in Malaysian states with negative relationship. For states recorded higher GDP per capita will have a lower street crime rates according to the results. Moreover, the empirical evidence implies that the findings concerning income inequality and type of street crime differ considerably to those regarding income inequality, total street crime, unarmed robbery with gang, unarmed robbery and snatch theft crime. According to the Strain Theory, crime is related very strongly to changing income inequality. There is a potential link between income inequality and increases in street crime in Malaysia. For instance, total street crime and unarmed robbery with gang have been shown to be sensitive to changes in income inequality and have positive linkages, while unarmed robbery and snatch theft seem to vary in ways unrelated to income inequality. A main finding of this analysis is that different types of criminal activity need to be considered separately and linked with other criminal motivations such as drug and substance abuse. Lastly, this study also shows the importance of policy makers and authorities in drafting and executing crime prevention strategies, particularly for street crime. A more visible police presence is needed to combat and prevent street crime. For example, providing more safety security net programmes that included the allowances and insurance coverage for jobless. The state and federal governments must be proactive and create joint efforts to reduce the street crimes. Being a developed nation, we have to dealt with 2 distinctions, which is high inequality and high crime rates.

NOTES

1 An amenity is a something that makes it comfortable or enjoyable to live or work somewhere. With low crime rate and low unemployment of areas are amenities that make it desirable to live there.

2 Includes unarmed robbery by a gang, unarmed robbery and snatch theft.

3 The crimes data were downloaded from the Ministry of Home Affairs, at http://www.data.gov.my/data/ms_MY / organization/ministry-of-home-affairs

4 For example, a higher unemployment rate is not a guarantee of safety and other aspects.

5 Such as lack of job opportunities, a higher inflation rate, poverty and other aspects.

6 The Gini coefficient is one of the useful measurements of income inequality because it does not take into account wealth accumulation or additional earned income from jobs (Fajnzylber, Lederman and Loayza, 2002).

7 Murder, killing, slaughter and other similar cases.

8 People willing and able to work but could not find any work especially when there is an economic recession, where many of the workers lose their jobs.

9 Perhaps caused by the high cost of living which affects their ability to survive and meet their basic needs.

10 Behave differently or behavior change.

11 Except for the omitted variable.

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APPENDIX A

Variables	Model 1			Model 2			Model 3		
	POL	FEM	REM	POL	FEM	REM	POL	FEM	REM
C	0.5379	0.1537	0.3741	-0.0492	0.2981	0.1785	0.5344	0.1540	0.3700
COL	-0.0054 (-4.5650)***	0.0009 (1.8316)**	-0.0024 (-5.6529)***	-	-	-	-0.0054 (-4.4823)***	0.0009 (1.8085)**	-0.0024 (-5.504)***
IEq	-	-	-	0.0005 (1.3834)*	0.0002 (1.7813)**	0.0003 (2.4287)***	-8.4377 (-0.3083)	9.4526 (1.2764)	5.2058 (0.7046)
GDP	3.8604 (12.179)***	-5.3389 (-10.273)***	-9.2941 (-2.4427)***	3.9965 (8.6200)***	-6.7167 (-12.119)***	-3.2877 (-7.0534)***	3.8642 (12.114)***	-5.3806 (-10.379)***	-1.0434 (-2.725)***
UnEmp	-0.0045 (-0.9172)	-0.0081 (-1.9769)**	-0.0071 (-1.8997)**	-0.0003 (-0.0423)	-0.0099 (-1.5045)*	-0.0040 (-0.6748)	-0.0043 (-0.8854)	-0.0076 (-1.8711)**	-0.0069 (-1.8550)**
F-test		81.173***			52.605***			81.936***	
BP LM-test		84.544***			23.857***			83.843***	
Hausman test		161.94***			134.32***			161.22***	

APPENDIX B

Variables	Model 1			Model 2			Model 3		
	POL	FEM	REM	POL	FEM	REM	POL	FEM	REM
C	0.2887	0.0690	0.02535	-0.0388	0.1689	0.1014	0.2887	0.0694	0.2549
COL	-0.0030 (-3.4547)***	0.0082 (1.5637)*	-0.0020 (-4.9727)***	-	-	-	-0.0030 (-3.4149)***	0.0008 (1.5427)*	-0.0021 (-5.0725)***
IEq	-	-	-	0.0003 (1.3651)*	0.0002 (1.9664)**	0.0002 (2.4669)***	7.4368 (0.0037)	0.0001 (1.6501)*	8.8600 (1.1663)
GDP	2.7088 (11.649)***	-3.0085 (-5.5783)***	7.7353 (2.3954)***	2.7812 (9.3841)***	-3.3695 (-8.8214)***	-1.4808 (-4.5711)***	2.7087 (11.569)***	-3.0639 (-5.7402)***	7.4487 (2.3256)**
UnRate	-0.0024 (-0.6794)	-0.0070 (-1.6561)*	-0.0052 (-1.4685)*	0.0002 (0.0505)	-0.0081 (-1.7900)**	-0.0043 (-1.0435)	-0.0024 (-0.6735)	-0.0064 (-1.5314)*	-0.0050 (-1.4169)*
F-test		37.915***			44.384***			39.071***	
BP LM-test		90.301***			43.728***			90.314***	
Hausman test		84.616***			89.031***			88.727***	

APPENDIX C

Variables	Model 1			Model 2			Model 3		
	POL	FEM	REM	POL	FEM	REM	POL	FEM	REM
C	0.0654	-0.0032	0.0422	-0.0089	0.0173	0.0067	0.0645	-0.0032	0.0451
COL	-0.0007 (-2.9373)***	0.0003 (2.0224)**	-0.0004 (-3.0122)***	-	-	-	-0.0007 (-2.8628)***	0.0003 (1.9972)**	-0.0004 (-3.4074)***
IEq	-	-	-	4.3521 (0.7838)	9.7941 (0.3954)	2.0154 (0.8156)	-2.2631 (-0.4146)	1.6523 (0.7594)	5.3943 (0.2488)
GDP	6.9679 (11.018)***	-7.3245 (-4.8333)***	1.2907 (1.3098)*	6.7445 (9.7799)***	-4.1729 (-4.0164)***	-5.6109 (-0.6467)	6.9779 (10.970)***	-7.3973 (4.8567)***	1.8118 (1.9145)**
UnRate	-0.0006 (-0.6318)	0.0015 (1.2589)	0.0010 (0.9781)	2.1825 (0.0200)	0.0021 (1.6972)**	0.0021 (1.8539)**	-0.0006 (-0.5946)	0.0016 (1.3147)*	0.0010 (0.9475)
F-test		35.180***			30.808***			34.924***	
BP LM-test		95.018***			69.075***			94.059***	
Hausman test		60.705***			45.703***			67.276***	

APPENDIX D

Variables	Model 1			Model 2			Model 3		
	POL	FEM	REM	POL	FEM	REM	POL	FEM	REM
C	0.1571	0.0529	0.1538	-0.0084	0.0943	-0.0021	0.1551	0.0528	0.1515
COL	-0.0015 (-4.8935)***	5.2184 (0.1396)	-0.0015 (-5.8476)****	-	-	-	-0.0015 (-4.7784)***	5.6209 (0.1494)	-0.0014 (-5.6398)***
IEq	-	-	-	0.0002 (1.3424)*	6.1303 (0.7790)	0.0002 (1.9521)**	-4.9548 (-0.6923)	-2.4426 (-0.4419)	-4.4809 (-0.8172)
GDP	4.7143 (5.6744)***	-1.6579 (-4.3193)***	3.3353 (2.8714)**	5.7307 (3.7614)***	-2.8135 (-8.5236)***	3.1290 (2.3986)***	4.7362 (5.6785)***	-1.6472 (-4.2577)***	3.2287 (2.6728)***
UnRate	5.7303 (0.0045)	0.0005 (0.1788)	0.0002 (0.1385)	0.0008 (0.3450)	0.0002 (0.0505)	0.0013 (0.6707)	7.4609 (0.0582)	0.0004 (0.1398)	0.0002 (0.1386)
F-test		5.5839***			11.680***			5.4706***	
BP LM-test		5.0296**			0.3009			5.0632**	
Hausman test		30.965***			117.92***			30.079***	