

The Relationship between Female Labour Force Participation and Violent Crime in Malaysia: An ARDL Approach

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Abstract

Crime has been on the rise in Malaysia, and this can pose a great challenge for the country to attract more tourist arrivals and even foreign direct investment. Numerous studies have investigated various factors in crime in Malaysia. However, none of them focused on female labour force as a potential determinant. Hence, it is vital to understand the effects of female labour force participation on violent crime in Malaysia. Therefore, this study aims to delve into the effects of the female labour force on Malaysia's violent crime using economic approach, namely as ARDL bounds testing approach. This study analyses annual data ranging from 1982 to 2017. The results demonstrate that the female labour force can negatively affect violent crime in the long run while it has an insignificant effect on violent crime in the short run. Thus, this study offers some important insights into formulating female participation policies in the labour force to combat violent crimes in Malaysia. Further research can be strengthened by having panel approach of cross-states analysis on these two variables for a more comprehensive perspective on violent crime in Malaysia.

Keywords: Violent Crime, Female Labour Force, ARDL, Routine Activity Theory, Malaysia

Introduction

The world is facing a problem in criminal and violent behaviour over time. This matter poses an even more significant challenge as illegal activity is a complex phenomenon strongly influenced by many socio-economic determinants. Therefore, the issue of crime needs to be understood. Violent crime is called a crime against persons, and it is more on expressive crime or called a random act of anger or frustration (Loughran et al., 2016). Crime is a challenging problem for developed countries and even hard-hitting for developing countries, including Malaysia, because crime prevention requires the government to spend a massive amount of money on establishing and maintaining the police and judicial system.

Moreover, the effects of violent crime on victims are more severe and long-lasting than the impacts of property crime in which victims suffer very minimal effects. Indirect victimization refers to a feeling of insecurity with people who are strictly related to victims, such as families,

friends, and colleagues (Shapland & Hall, 2007). Regardless of the seriousness of the effects, victims and non-victims of crime will inevitably suffer lower happiness levels, and thus a drop in the well-being index ensues. Apart from that, violent crime can harm economic affluence in several ways. It may distort long-run investment, freedom of movement of the workforce and emphasize crime control expenditure than economic prosperity (Debnath & Das, 2017).

In Malaysia, the crime index composition is divided into two, which are property crime (crime against property) and violent crime (crime against persons). Violent crime refers to callous offences involving the loss of lives, property, and happiness. There are seven categories of violent crime; mainly are murder, rape, assault, armed robbery with and without firearms, robbery with and without firearms. Violent crime comprises 20 per cent of total crimes in Malaysia. Meanwhile, the bulk of crimes are property crime that accounts for more than 80% of all crimes. Figure 1 shows the trend in the total crime surged over the past decades, and the highest crime case was found in 2009 in which property crime declined, but violent crime increased by 12.02% from 37817 cases to 42365 cases from 2008 to 2009.

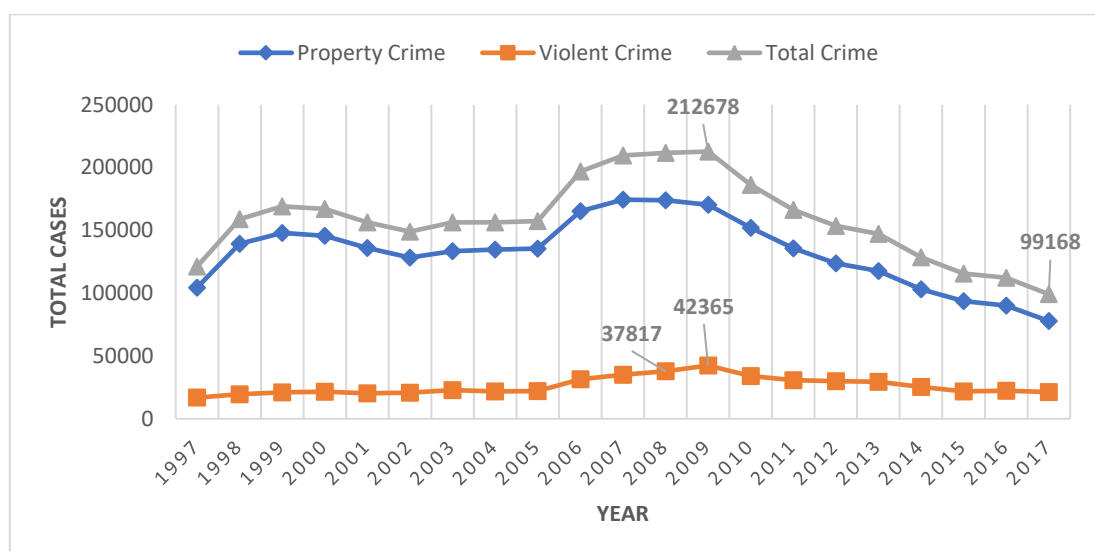


Figure 1: Cases of Crime in Malaysia (1997 to 2017); Source: Royal Malaysian Police

In total, there is a persistent decline in crime after 2009, from 212,678 cases in 2009 to 99,168 cases in 2017. Although there was an overall reduction, violent crimes rose by 516 cases or 2.4 per cent (21,810 cases in 2015 to 22,326 in 2016). Given this fluctuating trend, research on the determinants of violent crime in Malaysia is crucial for effective crime prevention strategies. As Malaysia aspires to achieve high-income countries' status by 2025, the study on the prevalent factors behind the fluctuation pattern of crime is crucial due to its harmful effects on the private and public sectors. Despite the detrimental effects of crime on the country's economic performance, satisfaction, and social well-being, crime studies still do not prevail among economists in Malaysia.

Crime is inevitably a result of many rapidly changing social and economic problems. There are many controversial and unresolved issues linked to the impact of social and economic factors on crime. Today, social conditions have improved as tremendous changes are consistently influencing them in the 21st century. There is a profound change in the routine activity structures due to the socio-economic transformation and technological advancement. The

increasing trends in female employment led to favourable changing trends in routine activity structure. This situation can improve the Malaysian economy to achieve sustainable development. Nevertheless, the ever-shifting trends of the crime index is still a hindrance to achieving it. Ironically, the chance of criminal violations can also be increased by the same factors that enhance the ability to enjoy life's rewards.

Numerous studies have been carried out to investigate the factors influencing violent crime such as unemployment, income, deterrence, etcetera (see, for example, (Asghar et al., 2016; Ishak & Bani, 2017; Omotor, 2010). The routine activity theory asserted that an increasing number of female labour force participation tends to increase victimization rates for violent crimes due to the lack of capable guardian for themselves during their way to and from work. On the other hand, today, females are considered a catalyst for economic growth and development due to socio-economic status changes. Remarkably, the female labour force is the primary key to the solution. However, there is little attention to female labour forces as a potential factor contributing to violent crime. Hence, it motivates us to treat female labour forces as a potential factor influencing violent crime. Why does working female potentially can affect crime? Females can be seen as a suitable target for the provider for a criminal opportunity because of their vulnerability. Rennison and Melde (2014) argued that females are generally viewed as passive victims who lack guardianship, such as unlikely to carry weapons or put up much of a physical fight, thus quickly being a criminal target.

In their routine activity theory, Cohen and Felson (1979) asserted that increasing number in female labour force participation tends to increase higher rates of victimization for both violent and property crimes due to lack of capable guardians for themselves during their way to and from work. Simultaneously, their home and other properties will be less guarded and provide an opportunity for illegal entry. Besides, Mutalib and Othman (2017) reveal that even though both women and men commit and are victims of crime, women lack awareness about crime compared to men. Hence, it is believed that a rise in the female labour force can increase violent crime. Thus, this study aims to shine new light on these debates by examining the female labour force. Meanwhile, unemployment, economic growth, inflation, security expenditure and education are regarded as controlled variables.

Literature Review

Theoretical review: Routine Activity Theory

Crime economic model assumptions are the same as any other economic model. Economic theory predicts that when the maximized expected utility is highest, individuals will participate in illegal activities. Moreover, the economic approach on crime delivered by Becker (1968) showed that the probability of arrest and the severity of punishment had a strong deterring effect on crime. However, social globalization and socioeconomic injustice are also potential determinants of crime. For example, routine activities also bring together people of different backgrounds, sometimes with equipment, tools, or weapons that monitor commissions or discourage criminal acts (Cohen & Felson, 1979).

The theories of sociological crime are more diverse than the economic approach to crime. The theories of strain, ecology, and opportunity relate to adverse socio-economic conditions that affect the social structure to the incentives and opportunities for criminal behaviour (Allen, 1996). Cohen and Felson (1979) were the first to look at macro - level criminal activities and

their dynamics by explaining changes in crime rate levels through a routine activity approach (RAA). A routine activity approach", Cohen and Felson (1979) pointed out that structural changes in routine activity pattern can influence crime rates as the three minimal following elements converge: (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians against a violation. **Error! Reference source not found.** displays the application of routine activity theory on crime. This theory implies that crime will only occur if these three elements are met.



Figure 2: Application of Routine Activity Theory in Crime

Source: Choo, (2011; as cited in Samonas, 2014)

Cohen and Felson (1979) explained that the prominent indicators of well-being and socio-economic conditions such as poverty, lack of education, and unemployment, which had been considered causes of violent crime, had generally improved in the 1960s. Nevertheless, reports of crime rates indicated that there was a significant increase in crime during these years. Hence, to further investigate the contradiction, they focused on changes in structural patterns of people's routine activity and how the new configuration provided significant criminal opportunities. Therefore, it could influence the trends observed in rates of certain types of crime, in particular crimes against persons or property (Miró, 2011).

Empirical Review

Previous scholars from various fields have argued the determinants of violent crimes. Generally, three categories of determinants are commonly used during the last criminometrics studies: economic, deterrence, and socio-economic. The first and the second categories of variables are theoretically underpinned by the economic crime theory (i.e. Becker, 1968; Ehrlich, 1973). The third category is theoretically underpinned by sociological theories such as routine activity theory, anomie or strain theory, social disorganization theory, etcetera. Notably, socio-economic factors are the crucial determinants of criminal activities (Adewale et al., 2017). Hence, most previous studies have focused on various factors such as unemployment, income and inflation, deterrence, and social variables ((Engelen et al., 2015; Ishak & Bani, 2017; Khan et al., 2020; Lau et al., 2019). The majority of them used unemployment and income as the prominent variables in their studies. However, their findings are still mixed, and most of them focused on total crime rather than disaggregate crime.

Besides, this paper concerns the effects of the female labour force on violent crime because it is believed that females and families are inseparable. The routine activities done by a female can impact the family structure and socioeconomic status. This issue has sparked interest in the community on the effects of female labour force participation on crime. Cohen and Felson (1979) used this household activity variable to measure family structure's effect on the criminal opportunity. It has produced a statistically significant positive effect on crime in studies by Cohen and Felson (1979); Cohen (1981). Witt and Witte (1998) also achieve a similar result used female labour force participation as a proxy for the myriad changes in the US family since 1960. They employed the unrestricted VAR approach of Johansen and asserted that the female labour force's short-run impact on crime is greater relative to the long-run effect.

In contrast, A feminist scholar such as Kvist (2015) holds a shared belief that female labour force participation would contribute more or less directly to women's financial freedom, empowerment, and economic prosperity. This scenario is the one most likely to cause a crime reduction. This issue has been summarised by Goel (2020), and several reasons from the results of past studies generally seem to support how female labour force participation can reduce crimes. Firstly female labour force participation will increase competition in the labour market (Linsley, 2005). As a result, men will need to invest in education and human capital investment. This study also aware that an increase in education can significantly reduce crime because greater participation by women in the labour force enables women to report crime regularly (Iyer et al., 2012). Higher crime reporting will increase the probability of arrest and prosecution and increase illegal activities' potential cost, reducing the crime.

Therefore, female employment should not be omitted in the model of crime in Malaysia. However, the effect of female employment and crime rates is not fully understood in Malaysia's criminal studies. Even if it appears reasonable to look for a relationship between crime and total female labour force participation, very few studies on female employment affect violent crime in the main literature. None of Malaysia's studies used a crime model that explores the relationship between female employment and crime in Malaysia to the best of our knowledge. Hence, this present study is novel in using female employment for understanding the reason behind the ever-shifting trend of violent crime trend in Malaysia.

Methodology

This study uses annual time series data for 30 years, starting from 1982 to 2017. Data on the violent crime index ratio (VC), unemployment rate (U), Gross Domestic Product (GDP), consumer price index (CPI), the female labour force (FL), and the number of labour force with tertiary education (EDU). The variables were obtained from the official website of the Department of Statistic Malaysia (DOSM). The model specification is as follows:

$$VC_t = \alpha + \beta_1 LNU_t + \beta_2 GDP_t + \beta_3 CPI_t + \beta_4 FL_t + \beta_5 EDU_t + \varepsilon_t \quad (1)$$

Whereby VC represents the violent crime index ratio, U is the unemployment rate, GDP represents legal income opportunities, CPI represents inflation, FL indicates the total female labour force, and EDU represents the labour force with tertiary education. α is the intercept, and ε is the random error term, and t is the number of years. All the variables must be

transformed into natural logarithms to achieve the aim of this study. Thus, a new model specification is as follows:

$$LNVC_t = \alpha + \beta_1 LNU_t + \beta_2 LNGDP_t + \beta_3 LNCPI_t + \beta_4 LNFL_t + \beta_5 LNEDU_t + \varepsilon_t \quad (2)$$

Whereby LNVC represents the log of the violent crime index ratio, U represents unemployment rate, LNGDP represents the log of GDP, LNCPI represents the log of consumer price index, LNFL represents the log of the total female labour force, and LNEDU represents the total labour force with tertiary education, β represents the intercept and represents the random error term.

Several tests need to be conducted to answer the aim of this study. Firstly, it is vital to test for unit roots in all selected variables to avoid spurious regression. Even though this test is not a prerequisite for the bounds testing approach, but it is noteworthy to determine the integration level whether the variables are $I(0)$ or $I(1)$ because to ensure that the variables are not $I(2)$ stationary to avoid erroneous results. Secondly, autoregressive-distributed lag (ARDL) need to be conducted because this approach by Pesaran et al. (2001) provides the short-run and long-run estimates simultaneously. Finally, a diagnostic test is performed to ensure the model robustness. This study chooses ARDL or bounds test method because it allows the co-integration and does not require the pre-testing of our variables included in the model for unit roots as other techniques such as the Johansen approach. It is valid if the variables are purely $I(0)$, purely $I(1)$ or mutually co-integrated. However, the method will crash in the presence of $I(2)$. Thus, the test on the unit root in each of the variables in this study based on the auxiliary regressions;

$$\Delta y_t = \beta_1 + \beta_2 t + \delta y_{t-1} + \alpha_i \sum \Delta y_{t-1} + \varepsilon_t \quad (3)$$

Y_t represents the variable of interest, t is the time trend, and ε is the white noise residual of zero mean and constant variance. β_1 , β_2 , δ and α_i are the set of parameters to be estimated, and y_{t-1} is the lagged first differences to accommodate serial correlation in the error μ_t and white noise residual of zero mean and constant variance. The null and alternative hypothesis applied to the unit root is the null hypothesis, $H_0: Y_t = 0$ (non-stationary time series), while the alternative hypothesis is $H_1: Y_t > 0$ (stationary time series). If there is a rejection of the null hypothesis, it indicates that the series is stationary or does not exhibit unit root.

Moreover, the bounds approach has several advantages compared to alternatives such as the Engle and Granger (2015) two-step residual-based procedure and Johansen-Juselius test, which cannot be used to estimate series with a mixed order of integration such as $I(0)$ and $I(1)$. The Johansen-Juselius test can be used for a large span of a series. Still, the ARDL approach can accommodate small sample observation provided its superiority over another approach to co-integration (Nayaran, 2005). Therefore, the estimation equation is specified respectively, as follows:

$$\begin{aligned} \Delta \ln VC_t = & \alpha_0 + \alpha_1 \ln VC_{t-1} + \alpha_2 \ln U_{t-1} + \alpha_3 \ln GDP_{t-1} + \alpha_4 \ln CPI_{t-1} + \alpha_5 \ln FL \\ & + \alpha_6 \ln EDU_{t-1} + \sum_{i=1}^p \beta_1 \Delta \ln VC_{t-i} + \sum_{i=1}^p \beta_2 \Delta \ln U_{t-i} + \sum_{i=1}^p \beta_3 \Delta \ln GDP_{t-i} \\ & + \sum_{i=1}^p \beta_4 \Delta \ln CPI_{t-i} + \sum_{i=1}^p \beta_5 \Delta \ln FL_{t-i} + \sum_{i=1}^p \beta_6 \Delta \ln EDU_{t-i} + \varepsilon_t \end{aligned}$$

(4)

where Δ is the first difference operator and p is the optimal lag length with α_1 to α_6 represents the long-run relationship and β_1 to β_6 represents the short-run dynamics of the model. Next, the null hypothesis will be tested by conducting F-test in observing the long-run relationship. Hence, the following null and alternative hypotheses for each model are:

$H_0: \alpha_1, \alpha_2, \dots, \alpha_6 = 0$

$H_A: \text{at least one of } \alpha_1 \text{ or } \alpha_2 \dots \text{ or } \alpha_6 \neq 0$

The null hypothesis indicates no long-run relationship among the variables for each model shown in equation 4. This hypothesis will be tested using The F- test (a test with non-standard distribution depends upon the non-stationarity properties of data, the number of independent variables and the sample sizes). Therefore, in deciding between null and alternate hypotheses, F- statistics will be compared with the critical values available in Pesaran et al. (2001) is 1000 observations. However, since this present study involves relatively small sizes (35 observations), this study will use Narayan's critical values (2005). Suppose the calculated F- statistic is higher than the upper critical value. In that case, $I(1)$, in that case, the null hypothesis of no long-run relationship can be rejected without knowing the order of integrating the regressors. Alternatively, suppose the calculated F- statistic is smaller than the lower critical value, $I(0)$. In that case, the null hypothesis of no co-integration is accepted without knowing the order of integrating the regressors. When the calculated F- statistic falls inside the upper and the lower critical value, a conclusive inference cannot be made.

The long-run relationship among the variables will allow this study to proceed with the short-run estimation test. The error correction model within the ARDL framework used in equation (4) where α_1, β_1 to α_6, β_6 denote the short-run dynamics coefficients, and ψ denotes the speed of adjustment in equation (5). The error correction term (ECT) can be derived from the following equation:

$$\begin{aligned} \ln VC_t = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta \ln VC_{t-i} + \sum_{i=1}^p \beta_2 \Delta \ln U_{t-i} + \sum_{i=1}^p \beta_3 \Delta \ln GDP_{t-i} \\ & + \sum_{i=1}^p \beta_4 \Delta \ln CPI_{t-i} + \sum_{i=1}^p \beta_5 \Delta \ln FL_{t-i} + \sum_{i=1}^p \beta_6 \Delta \ln EDU_{t-i} + \psi \text{ect}_{t-i} \\ & + \varepsilon_t \end{aligned} \tag{5}$$

whereby the coefficient of ect_{t-1} is the error correction model and shows how much drift from equilibrium will be corrected. This coefficient should be negative to ensure the stability of the

model. And hence, the violent crime rate and its explanatory variables will sustain long-term relationships.

Findings

The results of unit root tests are reported in Table 2. The results show that all the selected variables such as LNCPI, LNGDP, LNFL, LNU, LNEDU and LNVC are not stationary at level (I0) for the model with intercept. All the variables become stationary at the first difference (I1) for the model with intercept. As for the model with intercept and trend, LNFL is significantly stationary at 5% at the level and 1% at first difference. The remaining variables are only stationary at first difference. These findings indicate that the ARDL method can be used because no variables are stationary at the second difference (I2).

Table 2

Unit Root Test of Augmented Dickey-Fuller (ADF)

Variables	Intercept		Intercept and Trend	
	Level	First Difference	Level	First Difference
LNU	-1.4003	-4.0732*	-2.1380	-4.0004*
LNGDP	-0.5401	-4.9218*	-1.6863	-4.8495*
LNCPI	-0.4010	-4.4318*	-1.4444	-4.3325*
LNFL	-0.0285	-6.2489*	-4.2160**	-6.1943*
LNEDU	-1.3947	-5.0873*	-1.4060	-6.2433*
LNVC	-1.5750	-3.7934***	-0.6966	-3.8301**

Note: *, ** and *** are significant at 1%, 5% and 10%, respectively

The results of the bound test are presented in Table 3. The finding shows that there is a long-run co-integration between violent crime and the independent variables. It can be inferred that a co-integrating relationship between the variables is significant at 1%. The value of the F-statistic is 5.3661, and this value is higher than the critical value of the upper bound, 4.68. Hence, the null hypothesis is rejected, and it can be concluded that there is a long-run co-integration among the variables.

Table 3

Bound Test

	F-statistic	
	5.36661*	
Critical Value	Lower Bound	Upper Bound
1% significance level	3.41	4.68
5% significance level	2.62	3.79
10% significance level	2.26	3.35

Note: * indicates a significance level of 1%.

Table 4 reported that only the female labour force (LNFL) and labour force with tertiary education (LNEDU) are significant at 1% and 5%, respectively. The coefficient value for LNFL is -6.35, and this means that a 1% increase in the female labour force can cause the violent crime rate to decrease by 6.35%. The findings also show that the coefficient value for LNEDU is 4.03 and thus means a 1% increase in the labour force with tertiary education leads to an

increase in the violent crime rate by 4.03%. However, the other variables such as unemployment, gross domestic product and inflation (CPI) are insignificant in the long run. The coefficient value for LNU, LNCPI, LNGDP are -0.600350, -1.356926 and -1.215729, respectively. It means an increase in all these factors cannot affect the violent crime rate.

Table 4

Estimated Long -run Coefficients using ARDL Approach

Variable	Coefficient	Std.Error	Prob.
LNU	-0.600350	0.475209	0.2203
LNCPI	-1.356926	3.007689	0.6565
LNGDP	-1.215729	1.491557	0.4242
LNFL	-6.345866*	1.109092	0.0000
LNEDU	4.029701*	1.087560	0.0013
C	67.276162	11.099470	0.0000

Note: *, **, *** rejected null at 1%, 5 % and 10% significant level, respectively.

Table 5 shows the results for short-run estimations using the ARDL approach. The results show that LNU is significant at 10%, and the coefficient value is 0.564105. It means that the unemployment rate can affect the violent crime rate. A 1% increase in the unemployment rate leads to an increase in the violent crime rate by 0.56% in the short run. As for LNCPI, LNGDP, LNFL, and LNEDU are insignificant. This can be inferred that a change in the consumer price index, gross domestic product, female labour force and labour force with a tertiary education will not affect the violent crime rate in the short run. The coefficient value for ECT is 0.53012, and it is negatively significant. This means that the disequilibrium, in the long run, can be corrected by 53.02%.

Table 5

Estimated Short-run Coefficients using ARDL Approach

Variable	oefficient	T-Statistic	Prob.
D(LNU)	0.564105	2.021119	0.0562**
D(LNCPI)	-0.719336	-0.486026	0.6320
D(LNGDP)	-0.644484	-0.730798	0.4730
D(LNFL)	-0.632391	-0.674362	0.5074
D(LNEDU)	0.859030	1.040241	0.3101
ECT(-1)	-0.530122	-2.890861	0.0087
R ² =0.9741 Adjusted R ² =0.9606 DW= 2.206328			

Note: **denote significance at 5%

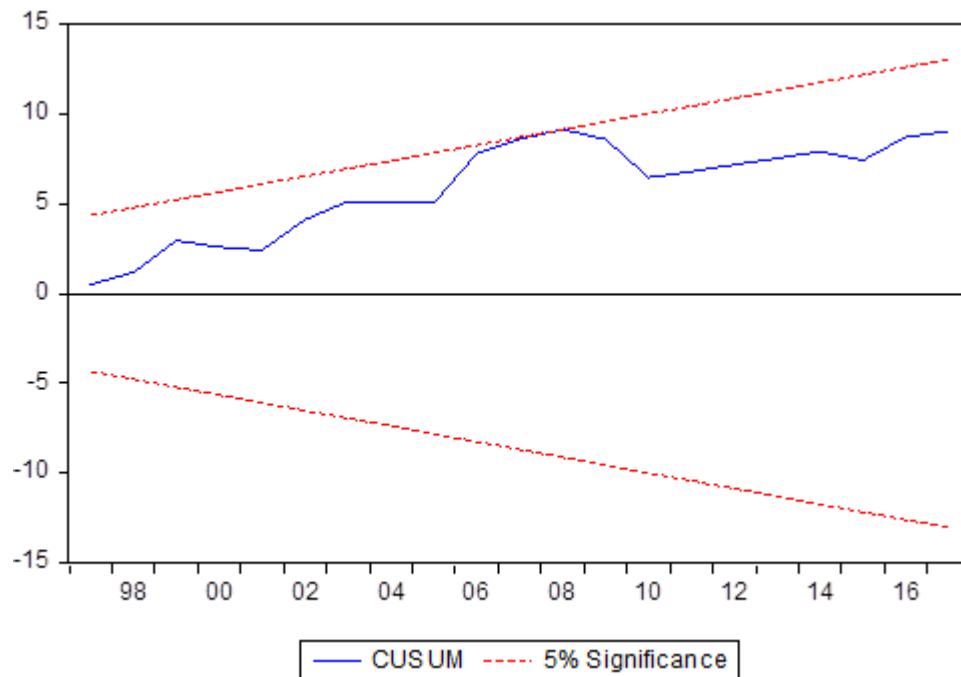
Table 6 presents the results of diagnostic tests. It can be inferred that the model is reliable and fit because there are no diagnostic problems. Some diagnostic tests such as Jarque-Bera, Breusch-Godfrey Serial Correlation, heteroskedasticity test, and Ramsey RESET stability are shown in table 6.

Table 6

Diagnostic Tests

Test statistic	F-statistic	Probability
Jarque - Bera	1.834195	0.3996
Breusch-Godfrey Serial Correlation LM	0.385290	0.6854
Ramsey RESET Test	0.014525	0.9053
Heteroskedasticity Test	2.557728	0.3039

Figure 1 shows the results of stability tests for CUSUM and CUSUM of squares. Based on the two graphs, it can conclude that the model used is stable at 5% and the graphs plotted within the boundaries.



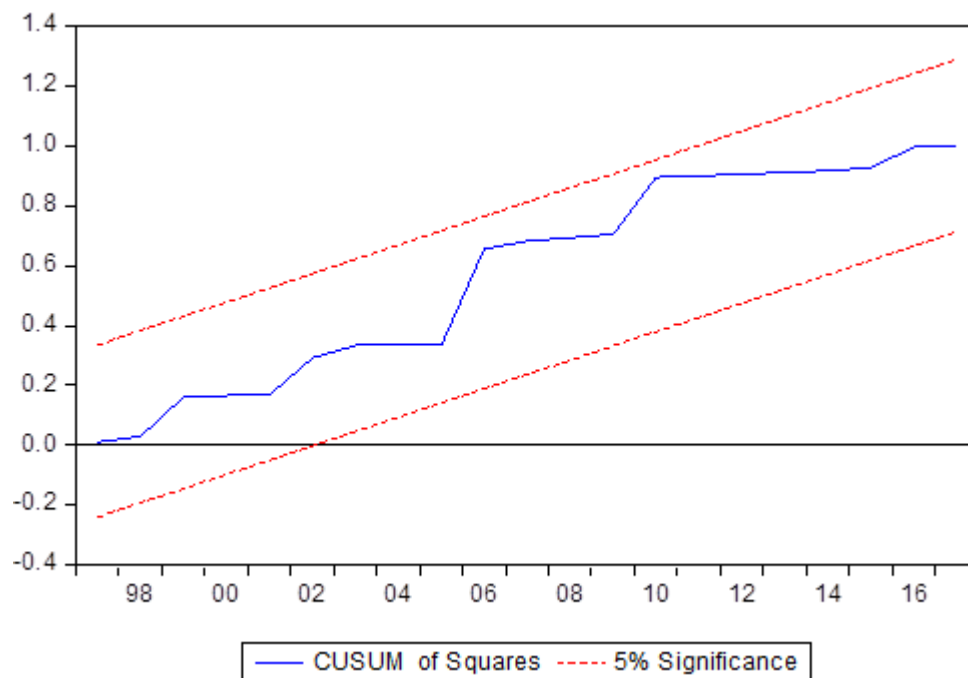


Figure 3: (a) Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Square of Recursive Residuals (CUSUMSQ)

Discussion and Conclusion

This study aims to investigate the effect of female labour force participation on violent crime in Malaysia using a dataset from 1982 to 2017. Such investigation was conducted using five explanatory variables (unemployment rate, gross domestic product, consumer price index, total female labour force participation and total labour force with tertiary education). To the best of our knowledge, this is the first to include the female labour force as one of its determinants in Malaysia. Interestingly, the findings suggest that an increase in the female labour force can reduce violent crime. The results support Kvist (2015) belief, stated that the impact of female labour market participation would contribute directly to women's financial freedom, empowerment, and economic prosperity. It contradicts the routine activity theory that asserts the female labour force could increase violent crime. The results demonstrate that the female labour force can negatively affect violent crime in the long run while it has an insignificant effect on violent crime in the short run. The routine activity theory points out that structural changes in routine activity can influence crime rates as the three minimal following elements are met: (1) motivated offenders, (2) suitable targets, and (3) the absence of capable guardians against a violation. Thus, this finding implies that female labour force participation today plays a better role in reducing violent crime. Possibly, females may no longer be a suitable target for offenders because their knowledge and awareness of crime prevention have increased.

Apart from that, the expansion of post-primary education among females and the emergence of a white-collar service sector offers new, attractive employment opportunities. Consequently, the decline in fertility, the increasing availability of part-time jobs, and greater access to child-care facilities enable women to combine work outside the home with raising children. Several studies on the relationship between fertility and female labour force participation revealed a negative relationship between these two variables (Bakar & Abdullah, 2010). Furthermore, Malaysia has experienced a decline in the total fertility per woman from

4 persons in 1980 to 2 persons in 2015. Hence, the reduction in total fertility is believed to reduce violent crime in Malaysia, as Hamzah and Lau (2011) explained that a decline in total fertility would reduce the population and result in a low crime rate.

Furthermore, Malaysia has experienced a decline in the total fertility per woman from 4 persons in 1980 to 2 persons in 2015. Hence, the reduction in total fertility is believed to reduce violent crime in Malaysia, as Hamzah and Lau (2011) explained that a decline in total fertility would reduce the population and result in a low crime rate. Due to the importance of female labour force participation in reducing violent crime, it is suggested for policymakers to encourage more female to participate in the labour force but at the same time to provide full support for the female labour force to plan for having an adequate number of babies because it is also important to tackle the problem of the aging population. Therefore, it is hoped that these findings can help policymakers to strategize social investment and return, particularly when it is related to female labour force participation.

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