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The Impacts of Poverty, Unemployment, and Divorce on Child Abuse in Malaysia: ARDL Approach

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Abstract: The increasing number of reported child abuse cases in Malaysia is alarming, with more than 1000 cases reported every year. If this trend continues, it may have detrimental effects on children's mental development, and far-reaching negative effects for wider society. Examining whether there is some relationship between divorce, unemployment, poverty, inflation, economic growth, and child abuse in Malaysia may help shed some light on the issue and any potential solutions. This study employs the ARDL approach by using data from 1989 to 2019. The results reveal that unemployment, inflation, and economic growth have significant relationships with reported child abuse cases in the long run. However, divorce and poverty do not affect the number of reported child abuse cases in the long run. In the short run, the results show that divorce, economic growth, and unemployment can positively affect the number of reported child abuse cases. Poverty, on the other hand, has a significant and negative relationship with the number of reported child abuse cases in the short run. Family stress originating from economic and social distress and the potential inability of couples to manage stress may exacerbate the risk of child abuse in Malaysia. Social programs are likely needed to help couples handle stress at home, in the form of state-sponsored counselling, educational programs for parents, the provision of social support for an increasing number of dual-career couples, assistance for spouses dealing with divorce, and the protection of children from hostile environments at home, as well as general approaches to the alleviation of poverty.

Keywords: child abuse; divorcement; unemployment; poverty; inflation; economic growth

1. Introduction

Child abuse is a major global issue that needs to be swiftly addressed. About 40 million children across the globe between 0- and 14-years old need protection (Antai et al. 2016). The growing number of reported child abuse cases in Malaysia may pose a great challenge to the country's sustainable development goal. According to the Malaysian Ministry of Health (2022), child abuse refers to the physical and emotional mistreatment, sexual abuse, neglect and exploitation, and negligent treatment of children. The Malaysian definition of child abuse is based on the World Health Organization's (WHO) definition, which includes all forms of abuse, such as physical abuse, emotional abuse, sexual abuse, and negligence. Child abuse takes place worldwide, including in Malaysia. However, the number of confirmed and reported cases is just the tip of the iceberg, and there are likely many unreported cases. Figure 1 shows Malaysia's reported child abuse cases increased significantly from 1988 to 2019. In 1989, the number of recorded cases stood at 276 and increased by more than 2000% to 6061 cases in 2019. Child abuse cases increased by almost 22 times in that period. Since 1995, more than 1000 cases have been reported every year,

except for 2000, with a marked decline of 27% compared with the previous year. The data is based on every child abuse incident reported to police within this period, and no significant changes were made to recording methods or child abuse definitions.
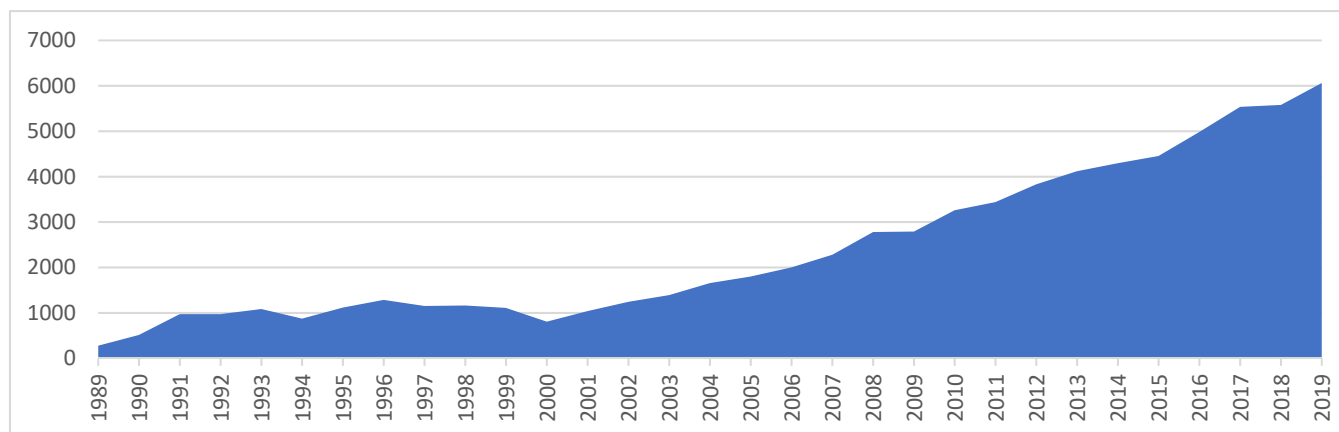

Figure 1. Total Child Abuse Cases in Malaysia between 1989 and 2019. Source: Department of Social Welfare Malaysia.

In the absence of effective policies, more children suffer from the consequences of this abuse. This indirectly harms society and the country's economy. According to the World Health Organization (2017), abuse can have an array of negative impacts on children's health, ranging from low self-esteem to brain injuries, permanent disability, and even death. Additionally, abused children have a greater likelihood of involvement in crime in the future, thus impacting the country's finances through the costs of combatting crime (National Institute of Justice 2017).

Simply put, children are the future of any society, and their protection and support should always be prioritized to prevent needless suffering and to allow for the development of happy, healthy, and productive adults. From an economic perspective, children ensure a country has abundant talent, labour, and consumers to draw on as invaluable parts of future success and economic growth. Children are the most important national asset, as they are the ones who will continue the current development that the government has arranged. They will ensure that a country will not run out of skilled and talented labour to generate future economic growth (Carleton 2013). As stated in the national policy on children, children are a vital part of society, an asset of the country, and the future lifeblood of the nation's development. Therefore, the National Child Protection Policy emphasizes that children are human capital, and ought to be developed to an optimal level by providing a safe and conducive environment. Children will also determine the harmony and peace of our country in the future, and they will replace the older generation to administer the country. Hence, their development without disruption due to abuse is indispensable to ensure the stability of the future economy, society, and political environment. For these reasons, protecting children from neglect, abuse, violence, and exploitation is of utmost importance (Usher et al. 2020).

Children under 18 are most likely to be victims of abuse, especially children from low-income families (Griffith 2022). Therefore, an investigation into the factors influencing child abuse is required. Previous studies have found several important factors, such as poverty, divorce, unemployment, etc. Poverty can lead to children's emotional and physical abuse, suggesting that low-income families may find themselves unable to fulfil children's basic needs, such as education, health, and protection (Mohd Jazid and Ibrahim 2020). Children from low-income families are also more likely to be neglected or to have been abandoned by either parent. A higher cost of living might increase pressure on parents, as they are unable to afford necessities, have less time to spend with children, have increased stress which affects their children, and so forth. Additionally, unemployment has also been

found to contribute strongly to confirmed cases of child abuse. This has been evidenced in Lawson et al.'s (2020) research that investigated the impact of high unemployment during an economic recession on child abuse. The market's failure to provide enough job opportunities might put people who have lost their jobs, and thus their incomes, under increased stress and general hardship, leaving individuals incapable of providing sufficient care and protection to their children.

As a further factor, child abuse might stem from divorce. As noted in (Shaari et al. 2021), divorces increased by 12% to 56,975 in 2019 compared to 50,862 in the previous year, and the main cause of divorce is family economic pressure. Couples that experience a high degree of conflict are more likely to create hostile environments at home (Paquin-Boudreau et al. 2021), which may increase the risk of child abuse and mistreatment. When a marriage ends in divorce, custody over children is granted to the father or mother. Subsequently, children are at higher risk of being abused due to the absence of support and help from spouses (Shaari et al. 2022). In addition, Faller (2000) stated that when a marriage fails, the parents are generally emotional and unable to control their anger, which may result in increased maltreatment of children. Inflation can also cause parents to experience stress due to a higher cost of living. This can also embroil them into financial problems. Hence, Shaari et al. (2022) found that a higher inflation rate can result in child abuse cases escalating.

Past studies sparsely explored the impacts of divorce, unemployment, and poverty on child abuse using an econometric approach (Van Dolen et al. 2013). In line with the family stress theory, tensions at home derived from poverty, unemployment, economic stress, parental conflict, and divorce can increase the risk of child abuse (Wu and Xu 2020; Katz et al. 2019). Therefore, it is essential to investigate the impacts of divorce, unemployment, and poverty on child maltreatment in Malaysia, employing a data set covering 30 years, from 1989 to 2019. The ARDL approach provides some advantages in comparison with approaches using questionnaires or interviews. One of them is that it can examine the long- and short-term effects of child abuse. Abuse can arise from short-term effects (economic shocks, temporary circumstances, disasters, etc.) or long-term effects (structural factors only observable over extended periods). Identifying short-run and long-run effects can lead to formulating the right policies to reduce child abuse rates as rapidly and effectively as possible.

Several studies in Malaysia have investigated the nexus of macroeconomic determinants on child abuse (Shaari et al. 2022), such as the linkage among inflation, unemployment, and child abuse (Shaari et al. 2015), the effect of women's participation in the labour force and inflation of child abuse (Shaari et al. 2019), and the relationship between economic growth and child abuse (Shaari et al. 2021). Overall, they found that macroeconomic variables like inflation, unemployment, and labour participation significantly impact child abuse in Malaysia. However, none of them consider the potential impact of poverty and divorce on child abuse. Divorce has increased in the country, and thus it might lead to child abuse in line with findings in other regions (Birnbaum et al. 2018). Poverty also plays an important role in determining child abuse. Hence, turning a blind eye to this determinant might leave the issue of child abuse unsolved. We contribute to the literature by questioning whether increasing levels of poverty and divorce have an impact on child abuse.

2. Literature Review

2.1. Theoretical Background

In the field of economics, Shaari et al. (2021) introduced the Kuznets curve of abuse to observe the relationship between income per capita and child abuse. The trend of child abuse was observed in two different stages. Higher income per capita in the early stages of economic development can contribute to higher child abuse cases. However, in the final stages, child abuse cases are reduced when income per capita continues to increase. In the field of psychology, Hill (1949) developed the theory of family stress, where families experience ups and downs. According to the family stress model, interparental relationships have repercussions for children due to poverty and economic pressure. Economic

pressure includes job losses (unemployment), a drop in income, a higher cost of living, etc., leading to stress and, thus, domestic violence, including child abuse (Schenck-Fontaine et al. 2017; Usher et al. 2020). In the same way, external factors related to structural changes in lifestyle have been addressed. For example, an increase in the labour participation of both spouses, a greater dedication to professional life due to greater work demands, changes in work patterns, and disequilibrium in work–life balance can affect home relationships and increase personal and family stress (Rodriguez 2010). From the perspective of family stress theory, these economic factors and changes in social and family dynamics can result in domestic stress, and thus, child abuse ensues. From the theory, we can relate economic factors to poverty, unemployment, inflation, and economic growth, which can cause parents to experience stress and vent the stress on their children (a vulnerable group).

2.2. Previous Empirical Studies

Many studies have investigated the relationship between unemployment and child abuse, such as Brown and De Cao (2018), Shaari et al. (2015, 2022), and Kim (2021). Despite different approaches, they consistently came to similar conclusions that child abuse is linked to unemployment. Shaari et al. (2015) investigated the link between inflation, unemployment, and child abuse in Malaysia. Data from 1982 to 2011 were collected and analysed using the Johansen co-integration approach. The results revealed that inflation does not have a significant effect on child abuse. However, a higher unemployment rate can contribute to higher child abuse cases in Malaysia. Using Ordinary Least Squares (OLS), Brown and De Cao (2018) then examined the effect of unemployment on child abuse and neglect in the United States from 2004 to 2012. The study observed different groups of children, controlling for aspects such as gender, age, and ethnic group. Their findings supported a positive relationship between unemployment and child abuse. Shaari et al. (2022) extended the previous study by including unemployment, inflation, and economic growth. The findings consistently revealed that a higher unemployment rate results in higher child abuse cases in Malaysia. Additionally, inflation and economic growth positively impact child abuse.

Kim (2021) explored the relationship between child abuse and unemployment in the Republic of Korea during the COVID-19 pandemic. The study used the monthly number of hotline calls regarding child abuse during the COVID-19 epidemic and examined a link with unemployment. The findings revealed a positive relationship between the male unemployment rate and the number of hotline calls linked to child abuse. With the hypothesis of the Kuznets curve of abuse, Shaari et al. (2021) examined the relationship between the effect of economic growth on child abuse in two different stages of economic development. The findings illustrated an inverted U relationship where higher GDP per capita in the early stages contributes to higher child abuse cases. However, in the final stages, higher GDP per capita leads to lower child abuse cases in Malaysia. Additionally, inflation plays an important role in influencing child abuse cases. However, unemployment was found to have no connection with child abuse cases. Besides inflation, Shaari et al. (2019) embarked on an investigation into the relationship between women's labour participation and child abuse over a 24-year period from 1990 to 2014. The results show that higher inflation rates and higher female labour force participation rates lead to higher child abuse cases, possibly due to the struggle to balance an increasing workload and family commitments.

Most past studies on poverty that directly or indirectly affect child abuse rates were conducted in the context of developed countries. Among them was Smith et al. (2018), who examined the relationship between adequacy, equity, and child welfare in the southern states of the United States. The study focussed on demographics that might separate by racial composition in rural areas. Data from 2012 to 2014 on child abuse for 354 counties in four southern states were analysed using a multiple regression method. The results showed a positive relationship between child poverty and child abuse.

Birnbaum et al. (2018) evaluated the validity and reliability of an index by analysing 15 conflict factors typical of high conflict in separation on a sample size of 124, consisting

of 47 fathers and 77 mothers. Besides dimensions of conflict in the separated families index demographic (DCSFI), two questionnaires were employed to examine the concurrent validity. The findings suggested that stress after a divorce might lead to child abuse. Faller (2000) conducted a thorough study that investigated the correlation between divorce and other problems that may be harmful to children (abuse). Statistics showed that 80 percent of divorces had a connection to child abuse-related problems, such as child sexual abuse, physical abuse, neglect, substance abuse, and domestic violence. The findings disclosed that divorce has long-term adverse effects on children. Brown et al. (2000) also studied child abuse in Australia. The study used data from the court involving 200 families who made allegations of child abuse in two states through observation of court proceedings and interviewing relevant courts. It was observed that child abuse has a significant connection with marital breakdown.

Although many studies have investigated the factors that can determine child abuse, studies using time-series data analysis remain sparse. With the employment of time-series analysis, earlier studies (Shaari et al. 2015, 2022) left out two important factors, particularly poverty and divorce. Therefore, this study attempts to fill the gap by examining the impacts of poverty, unemployment, and divorce on child abuse.

3. Materials and Methods

This study investigates the impacts of poverty, divorce, and unemployment on child abuse cases in Malaysia. Data on the incidence of absolute poverty as a proxy for poverty, consumer price index as a proxy for inflation, the number of divorced people in the labour force as a proxy for divorce, child abuse cases as a proxy for child abuse, the number of women in the labour force as a proxy for women's participation in the labour force, and the number of unemployed people as a proxy for unemployment, were gathered from various sources. Child abuse cases are treated as a dependent variable, while the other variables are treated as independent variables. These variables are selected based on the family stress theory stating that family stress which can lead to domestic violence, such as child abuse, is attributed to economic factors, such as poverty, unemployment, and a higher cost of living (inflation). Additionally, economic growth that can represent increasing professional demands can also contribute to stress. Therefore, a positive relationship between divorce and child abuse is expected. When a marriage ends in divorce, children might fall prey to abuse, either in the form of neglect, physical abuse, or psychological abuse. Inflation might also lead to increased rates of child abuse. When inflation rises, households struggle to keep pace with a higher cost of living, resulting in stress. It is expected that child abuse increases with unemployment. Unemployed parents experience stress due to their loss of income to provide for and feed their family members. Hence, children might be neglected or abused. Poverty is also expected to affect child abuse, as it is positively associated with stress. There is a negative relationship between economic growth and child abuse. Higher GDP per capita implies a higher standard of living, and thus, child abuse cases are likely to decline. Therefore, the specification model of this study is as follows:

$$CA_t = \alpha + \beta_1 D_t + \beta_2 POV_t + \beta_3 U_t + \beta_4 CPI_t + \beta_5 GDP_t + \beta_6 FL_t + \varepsilon_t \tag{1}$$

from Equation (1), CA represents the number of child abuse cases, D represents divorce, POV represents poverty, and U represents unemployment. CPI represents inflation, GDP represents economic growth, and FL represents female labour force. ε is the random error term, whereas t is the year. Table 1 shows a description of each variable used in this study. Data ranging from 1989 to 2019 were collected from various sources, such as the Department of Statistics, the World Bank, and the Department of Social Welfare Malaysia.

Table 1. Variable Descriptions.

Variable	Description	Source	Unit of Measurement	Symbol
Child Abuse	The number of Child abuse cases reported	Department of Social Welfare Malaysia	Cases	CA
Divorce	The number of divorced people in the labour force	Department of Statistics Malaysia	The number of people	D
Economic Growth	Gross Domestic Product Per Capita (constant Local Currency Units (LCU))	World Bank	Local currency units	GDP
Inflation	Consumer Price Index (2010 = 100)	World Bank	Index	CPI
Unemployment	The number of unemployed people	Department of Statistics Malaysia	The number of people	U
Poverty	Incidence of absolute poverty	Department of Statistics Malaysia	Incidence	POV
Female Labour force	The number of female people in the labour force	Department of Statistics Malaysia	The number of people	FL

To analyse the effects of divorce and poverty on child abuse. All the variables are in the form of logarithms. Therefore, a new model specification was obtained as follows:

$$\ln CA_t = \alpha + \beta_1 \ln D_t + \beta_2 \ln POV_t + \beta_3 \ln U_t + \beta_4 \ln CPI_t + \beta_5 \ln GDP_t + \beta_6 \ln FL_t + \varepsilon_t \quad (2)$$

where lnCA is the log of the number of child abuse cases, lnD is the log of the total number of divorced people in the labour force, lnPOV is the log of absolute poverty incidences, lnU is the log of total unemployed people, lnCPI is the log of consumer price index, lnGDP is the log of real GDP, and lnFL is the log of female labour force.

This study uses the ARDL approach. This study uses EVIEWS 10 as it can handle the data quickly and effectively, do statistical and econometric analyses, and create forecasts or model simulations. Several tests need to be carried out. The first step is to see the suitability of the data by applying the unit root test. Second, we test for co-integration using the bound testing approach introduced by Pesaran et al. (2001). Finally, long-term and short-term estimation tests are carried out using the ARDL approach to examine the effects of divorce, unemployment, and poverty on child abuse in Malaysia. An ARDL approach is more suitable and able to produce better results for data samples with a small size (Zhang et al. 2018; Rahman 2017). The ARDL approach can also estimate the long-term linear regression in the presence of co-integration between variables. Several other co-integration techniques, such as Engle and Granger (1987) and Johansen and Juselius (1990), can also be used. However, the ARDL approach requires stationary tests to be carried out first. This suggests that a co-integration test based on the ARDL approach can be carried out regardless of whether all variables are in the order of I(0), I(1), or a mixture of I(0) and I(1), but not I(2). This is compared to the Engle and Granger and Johansen and Juselius approaches, which can only be used if the variables are in the order I(0). The first step is to estimate the long-term relationship (co-integration) between time series variables. The model is as follows

$$lnCA_t = \pi_0 + \pi_1 lnCA_{t-1} + \pi_2 lnD_{t-1} + \pi_3 lnPOV_{t-1} + \pi_4 lnU_{t-1} + \pi_5 lnCPI_{t-1} + \pi_6 lnGDP_{t-1} + \pi_7 lnFL_{t-1}$$
$$+ \sum_{i}^{p} \Lambda_1 \Delta lnCA_{t-1} + \sum_{j}^{q} \Lambda_2 \Delta lnD_{t-j} + \sum_{k}^{r} \Lambda_3 \Delta lnPOV_{t-k} + \sum_{l}^{s} \Lambda_4 \Delta lnU_{t-1} + \sum_{m}^{t} \Lambda_5 \Delta lnCPI_{t-m} \quad (3)$$
$$+ \sum_{n}^{u} \Lambda_6 \Delta lnGDP_{t-n} + \sum_{o}^{v} \Lambda_7 \Delta lnFL_{t-o} + \pi_t$$

The first differential coefficients (p, q, r, and s) are the optimal lag, and the μ refers to the error term. To identify the existence of long-term relationships between variables in the equation, then the null hypothesis and alternative hypotheses are tested using the F-statistical test as in Equation (4) and Equation (5) as follows:

$$H_0 : \pi_1 = \pi_2 = \pi_3 = \pi_4 = 0 \text{ (No Long} - \text{term Co} - \text{integration)} \quad (4)$$

$$H_0 : \pi_1 \neq \pi_2 \neq \pi_3 \neq \pi_4 \neq 0 \text{ (Long} - \text{term Cointegration)} \quad (5)$$

Suppose the estimated value of the F-statistic exceeds the value of the critical bound (bound critical value). In that case, the null hypothesis is rejected. This suggests that an estimated long-term co-integration relationship between all variables exists. Suppose the estimated value of F-statistics is less than the critical value of the lower bound. In that case, the null hypothesis is not rejected. Finally, suppose the estimated F-statistical value falls between the critical value of the lower and upper bound. In that case, the F-statistical value cannot be identified as to whether there is co-integration. This means that the results of the results cannot be concluded. If co-integration exists between all variables, the long-term relationship can be estimated using the ARDL approach. Once the co-integration has been confirmed, the second step is to estimate the ARDL model (p, q, r, and s) in the long run. In the last step, the short-term estimation of the ARDL model is carried out, taking into account the error correction of the term (ECT) derived from the short-term ARDL model. The error correction model (ECM) is expressed in the following equations:

$$lnCA_t = \theta_1 + \sum_{i}^{p} \Lambda_1 \Delta lnCA_{t-1} + \sum_{j}^{q} \Lambda_2 \Delta lnD_{t-j} + \sum_{k}^{r} \Lambda_3 \Delta lnPOV_{t-k} + \sum_{l}^{s} \Lambda_4 \Delta lnU_{t-1} + \sum_{m}^{t} \Lambda_5 \Delta lnCPI_{t-m}$$
$$+ \sum_{n}^{u} \Lambda_6 \Delta lnGDP_{t-n} + \sum_{o}^{v} \Lambda_7 \Delta lnFL_{t-o} + \Phi ECT_{t-1} + \pi_1 \quad (6)$$

The joint value (Φ) of ECT in Equation (6) can explain two things. First, the value measures the speed of adjustment toward the long-term balance. This is because it takes time to focus on long-term balance. Secondly, ECT can also confirm long-term relationships among variables.

4. Results

Table 2 shows descriptive statistical test results for all the variables used in the study. The mean for GDP per capita stands at RM 28,594.98. The lowest GDP per capita was in 1989 (RM 15,253.11, equivalent to USD 3905), and the maximum was in 2019 (RM 44,579.64, equivalent to USD 11,075). The mean for CPI (a proxy for inflation) stands at 88.14, and the difference between the maximum and minimum values is 66.10, with prices increasing by 120% in the 30-year period. The poverty level fell from 16.5% at its maximum level to 0.6% in 2019, substantially decreasing the number of people living under the poverty line. The number of divorce cases increased by 3.26 times during the period between 1989 and 2019.

Regarding the number of child abuse reported cases, the figure increased from a minimum of 276 to its maximum of 6061, meaning there is a more than 20 times increase between the minimum and maximum levels. Female labour participation increased by more than 1.5 times within the period. Meanwhile, the standard deviation indicates that the average or normal distance score differs from the mean.

Table 2. Results of descriptive statistics.

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Sum	Obs (N)
GDP per Capita	28,594.98	27,509.47	44,579.64	15,253.11	8151.5900	0.296246	2.183683	886,444.50	31
CPI	88.14406	85.23675	121.4631	55.36441	20.02914	0.07625	1.898278	2732.466	31
Poverty	6.60	6.00	16.05	0.60	3.915269	0.890725	3.329335	204.600	31
Divorce	158,841.9	130,900	303,900	71,200	75,436.19	0.663331	2.113026	4,924,100	31
Child Abuse	2381.548	1656	6061	276	1699.723	0.772519	2.275309	73,828	31
Unemployment	361,440.3	366,600	508,200	214,900	82,273.48	0.158693	2.360091	11,204,650	31
Female Labour Force (000)	3978.369	3731.1	6078.1	2390.3	1148.651	0.405064	1.891008	123,329.50	31

We refer to unit root test results to ensure the data fits the ARDL approach. A unit root test is performed to verify whether our time series data have a unit root. If it has a unit root, then the data is said to be not stationary. Several approaches, such as Philip Peron and Augmented Dickey–Fuller, are used to examine data stationarity. The test must be performed to prevent us from developing a spurious or false regression. Table 3 shows the results of unit root tests. lnD, lnPOV, and lnGDP are non-stationary at level and stationary at the first difference, suggesting that they are integrated of order 1. lnFL, lnCA, lnCPI, and lnU are stationary at level and even at the first difference, implying that they are integrated of order 0. The mixed order of integration suggests that our study fulfils the precondition for the employment of the ARDL approach to examine the impacts of unemployment, poverty, and divorce on child abuse in Malaysia.

Table 3. Unit Root Tests Results.

Variable	Intercept		Intercept and Trend		Order of Integration
	Level	First Difference	Level	First Difference	
lnFL	−1.8567 (0.3472)	−8.6429 *** (0.0000)	−4.9548 *** (0.0021)	−8.4815 *** (0.000)	I(0)
lnCA	−2.2644 (0.184)	−4.9839 *** (0.0004)	−4.8278 *** (0.0012)	−4.7919 *** (0.0032)	I(1)
lnD	−0.0134 (0.9500)	−5.1661 *** (0.0002)	−2.7335 (0.2313)	−5.0844 *** (0.0016)	I(1)
lnPOV	−2.0487 (0.2657)	−4.7820 *** (0.0006)	−1.9354 (0.6114)	−4.8157 *** (0.0030)	I(0)
lnU	−0.6649 (0.8407)	−5.1926 *** (0.0002)	−3.7977 ** (0.0308)	−5.1615 *** (0.0013)	I(0)
lnCPI	−4.2950 *** (0.0021)	−6.7810 *** (0.0000)	−5.1727 *** (0.0012)	−6.6614 *** (0.0000)	I(1)
lnGDP	−1.4478 (0.5057)	−4.0604 *** (0.0041)	−2.8927 (0.1788)	−3.6050 * (0.0517)	I(1)

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

A bound test is carried out to determine a co-integration relationship, and the results are reported in Table 4. The F-statistical value of 7.3356 is significant at 1%, higher than the upper bound of 3.99 and the lower bound of 2.88. Therefore, this indicates that there is a long-term co-integration relationship. However, there is no co-integration relationship if the F-statistic is lower than the upper and lower bounds. However, the results remain inconclusive if the F-statistic is between the upper and the lower bounds.

Table 4. Bound Test Results.

F-Statistic = 7.3356		
Significant Level	**Lower Bound**	**Upper Bound**
1%	2.88	3.99
5%	2.27	3.28
10%	1.99	2.94

Table 5 shows the results of long-term coefficient tests using the ARDL approach. Based on the table, two factors, particularly divorce and female labour force, do not affect child abuse in the long run. The results also suggest that a 1% increase in female labour force and divorce does not cause any change in the number of child abuse cases in the long run. However, unemployment, poverty, consumer price index, and economic growth have significant relationships with child abuse. The results show that a 1% increase in unemployment and economic growth results in a 3.06% and 5.97% increase in child abuse, respectively. The results also show a negative relationship between inflation and child abuse, and poverty and child abuse, in the long run. A 1% increase in the consumer price index and poverty may lead to a 7.34% and 0.24% decrease in child abuse cases, respectively.

Table 5. Long-run ARDL test results.

Variables	Coefficient	T-Statistics	Probability
lnD	−0.7891	−0.8164	0.4244
lnPOV	−0.2435	−1.8207	0.0844
lnU	3.0646	2.1651	0.0433
lnCPI	−7.3395	−2.1114	0.0482
lnGDP	5.9668	2.6666	0.0152
lnFL	0.9974	1.6965	0.1061
C	−58.4600	−3.1787	0.0049

Table 6 shows the results of the short-run effects of divorce, poverty, unemployment, inflation, and economic growth on child abuse using the ARDL method. Divorce and inflation have no positive effect on child abuse, suggesting that a 1% increase in divorce and inflation does not cause any change in child abuse cases in the short run. However, poverty can negatively impact child abuse, with a significance of 5%. A 1% increase in poverty can lead to a decrease of 0.10% in child abuse cases. This means that richer people are more likely to abuse their children. This may result from wealthier individuals being busier with work and neglecting their children. Work stress may also lead to physical abuse (Shaari et al. 2022). In addition, Miller (2018) stated that wealthy children are more likely to suffer emotional abuse than poor children. Therefore, the common assumption that wealthy children are safe from abuse is not true.

Table 6. Short-run ARDL test results.

Variables	Coefficients	t-Statistics	Probability
D(lnD)	0.5437	1.7199	0.1017
D(lnPOV)	−0.1015 **	−2.1203	0.0474
D(lnU)	1.2773 ***	3.5082	0.0024
D(lnCPI)	1.3407	0.5796	0.5690
D(lnGDP)	1.3888 *	1.7698	0.0928
D(lnFL)	0.4157 ***	2.2248	0.0384
ECT(−1)	−0.4168	−3.3052	0.0037
$R^2 = 0.9831$ Adjusted $R^2 = 0.9742$			

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

Higher unemployment also increases the number of child abuse cases in Malaysia. The results show that the coefficient is 1.2773 and significant at 1%, indicating that a 1% increase in unemployment may lead to a 1.28% increase in child abuse cases in the short run in Malaysia. The results also show a connection between inflation and child abuse in the short run. Economic growth positively impacts the number of child abuse cases in the short run, as it is significant at 10%. The coefficient is 1.3888, suggesting that a 1% increase in economic growth may increase child abuse cases by 1.39% in the short run.

The results of diagnostic tests reported Table 7, consisting of the Jarque–Bera test, the Breusch–Godfrey series correlation, the heteroskedasticity, and Ramsey's stability test, show all F-statistics are insignificant. These results indicate that the model used has no diagnostic problems. Therefore, it is appropriate to attribute the factors of divorce, poverty, unemployment, consumer price index, and economic growth to child abuse in Malaysia using the ARDL method.

Table 7. Diagnostic Tests Results.

Statistical Tests	F-Statistics	Probability
Jarque-Bera	0.6810	0.7114
Breush Godfrey collecting series	0.1105	0.8960
Heteroskedastisity test	1.9500	0.1010
Reset Ramsey Stability	1.2463	0.2789

To ensure the stability of the model, we refer to Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) graphs, as shown in Figure 2 below. Of the two diagrams, the test results found that the model used was stable, because all the plotted points were between two red-coloured bounds.
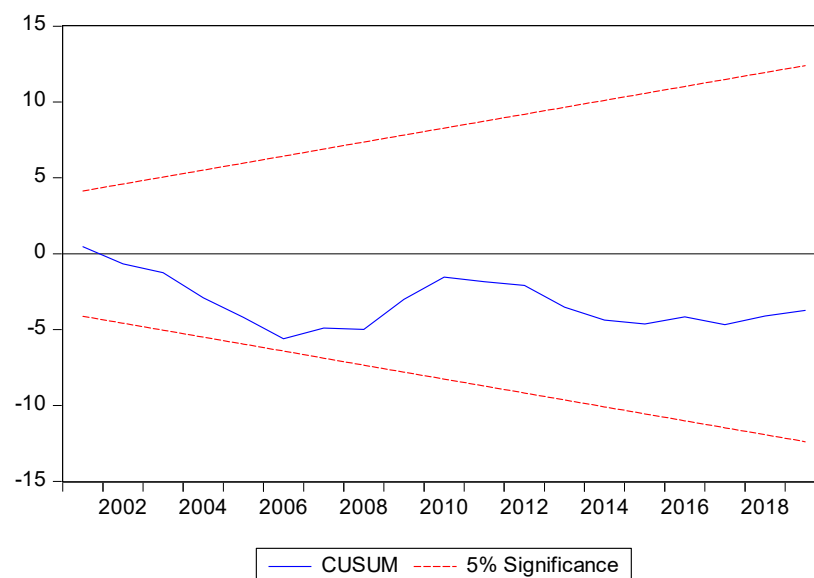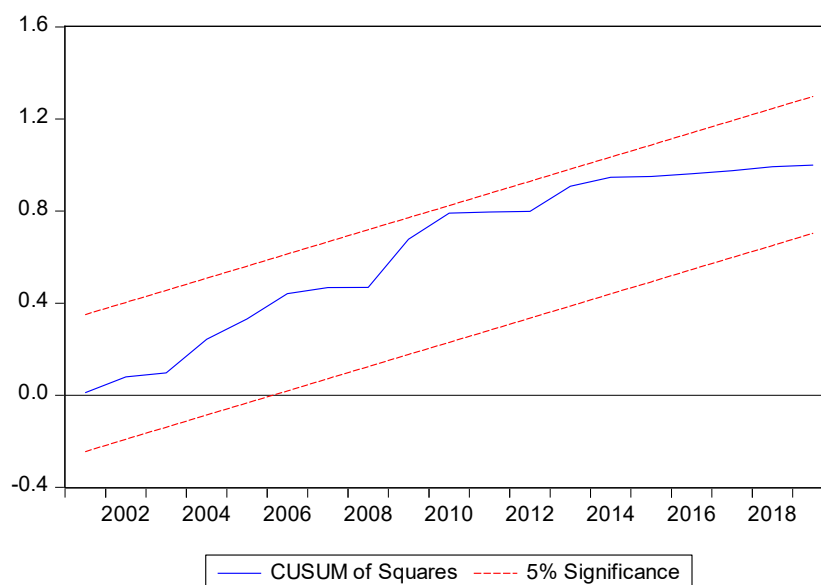

Figure 2. *Cont.*

Figure 2. Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMQ).

5. Discussions

The results show that a higher unemployment rate contributes to higher child abuse cases in the long and short run. These findings are supported by Lindo et al. (2013, 2018). However, Lindo et al. (2013) focussed on child abuse cases by gender. Shaari et al. (2015) stated that unemployed people are likely to experience stress due to job losses, making them struggle to put food on the table, and they may vent their stress on their children. If parents are unemployed for a long period, children may experience abuse, which may be detrimental to their mental development. Therefore, policies on reducing the unemployment rate in the country are of utmost importance. The Malaysian government has spent its money on employers to employ unemployed graduates to train them to acquire necessary skills for less than two years. This effort has much to commend it. However, after the training, they are still unemployed due to employers' unwillingness to continue to employ them. This might be due to the fact that less than two years is not enough to equip unemployed graduates with the necessary skills. Hence, the training should be run for more than two years.

Economic growth is also responsible for higher child abuse cases in the long and short run. It means a higher standard of living, which should lead to greater well-being. Nevertheless, this growth improves children's well-being as they suffer abuse and neglect from parents who are busy working and more likely to experience stress. Shaari et al. (2022) also found a positive relationship between economic growth and child abuse in Malaysia. Rapid economic growth prompts a rise in productivity, potentially making people busier and more stressed. Limiting economic growth is beyond the realm of possibility. However, the government may consider formulating policies to reduce employees' stress in the workplace.

Economic growth in Malaysia has been supported by larger women's participation in the labour force. This undoubtedly requires working women to strike a balance between work and family, which may prove difficult for some, and result in children being neglected or physically abused by highly stressed mothers. Hence, our results show that a higher number of women in the labour force can result in a higher number of child abuse cases. These findings are in line with the findings of Shaari et al. (2019). They also found a positive relationship in Malaysia between a higher demand for women in the labour force and a higher number of reported child abuse cases. In driving Malaysia towards a developed economy, more women should participate in the labour force, which can be a menace to children. Women are more likely to abuse their children due to their inability to strike a

balance between family and work. Hence, policies to reduce stress among working mothers are needed.

The results of this study also found that there is a negative relationship between inflation and child abuse in Malaysia. This result is similar to the result of Shaari et al. (2022) despite its insignificance. Inflation suggests a higher cost of living, and the cost of treating abused children increases simultaneously. The government has to spend significant funds to protect and care for abused children. Therefore, to reduce the cost, the government has formulated various policies and taken action to reduce child abuse cases.

Contrary to what was initially formulated, the results of this study show that divorce does not impact child abuse in Malaysia. This differs from Van Dolen et al.'s (2013) research, which showed a positive relationship between divorce and child abuse. When marriages end in divorce, children risk being abused by their mothers or fathers. Some studies in Malaysia found that divorce is an important factor in child abuse and requires awareness and assistance to maintain harmonious relations at home (Sumari et al. 2020). Parental divorce has been considered one of the most stressful events in the lives of the affected children, with ongoing effects throughout the child's life (Brand et al. 2017). Bojuwoye and Akpan (2014) also stated that divorce might cause children to feel sad and confused, to be deprived of their rights to protection and care from their parents, potentially leading to physical abuse as their attachment to their parents has eroded. Additionally, mothers who have to work may place their children under the care of childminders or nursery staff, which may lead children to be exposed to abuse (Shaari 2022).

The results of this study differ from past studies, such as Shaari et al. (2015, 2019, 2022), as they did not include other potential variables, particularly divorce and poverty. This study ascertains that a higher poverty rate can contribute to lower child abuse cases in Malaysia. Omitting this variable may lead to the inappropriate formulation of policies. Our result is also different from the initial hypotheses that low-income families are more likely to abuse their children (Lefebvre et al. 2017). This study, however, finds that low-income families are less stressed outside of work and have ample time with their children.

6. Conclusions

6.1. Policy Implications

This study aims to examine the impacts of poverty, unemployment, and divorce on reported cases of child abuse in Malaysia using the ARDL approach. The findings of this study can shed light on the reality of child abuse in Malaysia, with the aim of reducing child abuse cases. A drastic decrease in poverty in Malaysia (0.6% in 2019) has been accompanied by an increase in child abuse. Rapid economic growth, larger labour participation, and effective government policies have effectively increased income per capita and lowered poverty rates. However, an improvement in economic welfare has exacerbated child abuse, suggesting that policies should promote improvements in work–life balance for parents so that they spend more time with their children. Lowering household economic tension (proxied by income per capita growth, unemployment, and inflation), could improve the family environment. Policies to limit working hours while allowing decent income should be encouraged as they can support the reduction of child abuse linked to economic factors. This policy can support households to earn decent incomes and have more time with their children.

Higher economic growth, fuelled by improvements in productivity, can contribute to increased stress levels and the likeliness of child abuse cases. Parents are busy working and are likely to experience stress. Employers should provide workplace counselling to stressed-out employees, as well as policies that ensure improved working conditions to reduce workplace stress. This would help to ensure that workers will not bring their stress home. In addition, community-based programs, parenthood courses, recreation plans, stress managing programs, and other sorts of therapies can also combat the potential rise in stressors at home. If the Malaysian government aims to support higher levels of women's participation in the labour force, policies should be directed to encourage

employers to provide nurseries and to facilitate children being easily attended to by their parents. Additionally, flexible working hours can also be introduced for working mothers so that they can more easily perform the delicate balancing act between family and work commitments, and they can also reduce their work stress.

6.2. Limitations and Future Research

This study has some limitations. It considers only five independent variables: divorce, poverty, unemployment, inflation, and economic growth. Therefore, including other important variables, such as drug addiction, household relationships, indicators of work–life balance, or accounting for other proxies of stressors at home may improve findings in the future. Additionally, factors such as regional differences in child abuse reporting across Malaysia and cultural, social, or political factors that might affect the reporting of cases could be investigated in more detail in future research. Future studies could also focus on unemployment by gender. This study does not include the impact of the COVID-19 pandemic on child abuse. Therefore, in future research this could be an interesting addition.

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References

Antai, Diddy, Patrick Braithwaite, and George Clerk. 2016. Social determinants of child abuse: Evidence of factors associated with maternal abuse from the Egypt demographic and health survey. *Journal of Injury and Violence Research* 8: 25–34. [CrossRef] [PubMed]

Birnbaum, Rachel, Lynn McCleary, Michael Saini, and Nicholas Bala. 2018. Dimensions of conflict for separated families index: An index for family courts. *Children and Youth Services Review* 88: 191–96. [CrossRef]

Bojuwoye, Olaniyi, and Orok Akpan. 2014. Child Abuse: The Experiences of Children of Divorced Parents. *Journal of Psychology in Africa* 19: 37–43. [CrossRef]

Brand, Carrie, Greg Howcroft, and Christopher Norman Hoelson. 2017. The voice of the child in parental divorce: Implications for clinical practice and mentalhealth practitioners. *Journal of Child & Adolescent Mental Health* 29: 169–78. [CrossRef]

Brown, Thea, Margartia Frederico, Lesley Hewitt, and Rosemary Sheehan. 2000. Revealing the existence of child abuse in the context of marital breakdown and custody and access disputes. *Child Abuse & Neglect* 24: 849–59.

Brown, Dan, and Elisabetta De Cao. 2018. The impact of unemployment on child maltreatment in the United States (No. 2018-04). ISER Working Paper Series. Available online: https://www.econstor.eu/handle/10419/200368 (accessed on 15 April 2022).

Carleton, Tamara. 2013. How Are Children an Asset for Future National Abundance. U.S Chamber Of Commerce Foundation. Available online: https://www.uschamberfoundation.org/blog/post/how-are-children-asset-future-national-abundance/33967 (accessed on 15 August 2022).

Van Dolen, Willemijn M., Charles B. Weinberg, and Leiming Ma. 2013. The influence of unemployment and divorce rate on child help-seeking behavior about violence, relationships, and other issues. *Child Abuse & Neglect* 37: 172–80. [CrossRef]

Engle, Robert F., and Clive W. J. Granger. 1987. Cointegration and error correction: Representation, estimation and testing. *Econometrica* 55: 251–76. [CrossRef]

Faller, Kathleen Coulborn. 2000. Child Maltreatment and Endangerment in the Context of Divorce. *University of Arkansas at Little Rock Law Review* 22: 429. Available online: https://lawrepository.ualr.edu/lawreview/vol22/iss3/6 (accessed on 15 August 2022).

Griffith, Annette K. 2022. Parental Burnout and Child Maltreatment During the COVID-19 Pandemic. *Journal of Family Violence* 37: 725–731. [CrossRef]

Hill, Reuben. 1949. *Families under Stress: Adjustment to the Crisis of War Separation and Reunion*. Manhattan: Harper and Brothers.

Mohd Jazid, Amirul Iman, and Patmawati Ibrahim. 2020. Persistent Poverty Based on Three Dimensions in HDI. In *Charting a Sustainable Future of ASEAN in Business and Social Sciences*. Singapore: Springer, pp. 87–98.

Johansen, Soren, and Katarina Juselius. 1990. Maximum likelihood estimation and inference on co-integration—With appucations to the demand for money. *Oxford Bulletin of Economics and Statistics* 52: 169–210. [CrossRef]

Katz, Carmit, Talia Glucklich, Shir Piller, and Daniela Efrat Matty. 2019. Between chaos and danger: Spotlighting social workers' views in cases of child maltreatment accusations in the context of high-intensity parental disputes. *Children and Youth Services Review* 107: 104497. [CrossRef]

Kim, Young Eun. 2021. Unemployment and child maltreatment during the COVID-19 pandemic in the Republic of Korea. *Child Abuse & Neglect* 130: 105474. [CrossRef]

Lawson, Monica, Megan H. Piel, and Michaela Simon. 2020. Child Maltreatment during the COVID-19 Pandemic:Consequences of Parental Job Loss on Psychological and Physical Abuse Towards Children. *Child Abuse & Neglect* 110: 104709. [CrossRef]

Lefebvre, Rachael, Barbara Fallon, Melissa Van Wert, and Joanne Filippelli. 2017. Examining the relationship between economic hardship and child maltreatment using data from the Ontario Incidence Study of Reported Child Abuse and Neglect-2013 (OIS-2013). *Behavioral Sciences* 7: 6. [CrossRef] [PubMed]

Lindo, Jason M., Jessamyn Schaller, and Benjamin Hansen. 2013. Economic Conditions and Child Abuse, IZA DP No. 7355. Available online: https://ssrn.com/abstract=2257205 (accessed on 15 April 2022).

Lindo, Jason M., Jessamyn Schaller, and Benjamin Hansen. 2018. Caution! Men not at work: Gender-specific labor market conditions and child maltreatment. *Journal of Public Economics* 163: 77–98. [CrossRef]

Malaysian Ministry of Health. 2022. Child Abse. Available online: http://www.myhealth.gov.my/en/child-abuse/ (accessed on 7 August 2022).

Miller. 2018. The Common Misconceptions about a Wealthy Upbringing How Children in Affluent Households Can Actually Face a Rocky Financial Future. Available online: https://www.psychologytoday.com/us/blog/the-human-side-finance/201807/the-common-misconceptions-about-wealthy-upbringing (accessed on 15 April 2022).

National Institute of Justice. 2017. Pathways Between Child Maltreatment and Adult Criminal Involvement. Available online: https://nij.ojp.gov/topics/articles/pathways-between-child-maltreatment-and-adult-criminal-involvement (accessed on 20 May 2022).

Paquin-Boudreau, Amylie, Karine Poitras, Francine Cyr, and Élisabeth Godbout. 2021. An Interdisciplinary Case Management Protocol for High-Conflict Families: The Evolution of Coparental Dynamic. *Journal of Divorce & Remarriage* 62: 657–72. [CrossRef]

Pesaran, M. Hashem, Yongcheol Shin, and Richard J. Smith. 2001. Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics* 16: 289–326. [CrossRef]

Rahman, Mohammad Mafizur. 2017. Do population density, economic growth, energy use and exports adversely affect environmental quality in Asian populous countries? *Renewable and Sustainable Energy Reviews* 77: 506–14. [CrossRef]

Rodriguez, Christina M. 2010. Parent–child aggression: Association with child abuse potential and parenting styles. *Violence and Victims* 25: 728–41. [CrossRef]

Schenck-Fontaine, Anika, Anna Gassman-Pines, Christina M. Gibson-Davis, and Elizabeth O. Ananat. 2017. Local job losses and child maltreatment: The importance of community context. *Social Service Review* 91: 233–63. [CrossRef]

Shaari. 2022. Higher Child Abuse Cases May Be Attributed to Economic Growth. Malaysiakini. Available online: https://www.malaysiakini.com/letters/618327 (accessed on 17 April 2022).

Shaari, Mohd Shahidan, Nor Hidayah Harun, and Nor Ermawati Hussain. 2019. Female Labour Force and Child Abuse in Malaysia Using ARDL Approach. *Jurnal Ekonomi Malaysia* 53: 27–33. [CrossRef]

Shaari, Mohd Shahidan, Noorazeela Zainol Abidin, Hafizah Abdul Rahim, and Abdul Rahim Ridzuan. 2022. Macroeconomic determinants of child abuse in Malaysia: An ARDL approach. *International Journal Economic Policy in Emerging Economies* 15: 139–52. [CrossRef]

Shaari, Mohd Shahidan, Paul Anthony Mariadas, Benjamin Nangle, and Abdul Rahim Ridzuan. 2021. The relationship between economic growth and child abuse in Malaysia. *Economics Bulletin* 41: 1932–46.

Shaari, Mohd Shahidan, Syahira Sa'aban, Nor Hidayah Bt Harun, and Mohd Suberi Ab Halim. 2015. The Relationship Among the Unemployment Rate, Inflation and Child Abuse Rate in Malaysia. *International Journal of Business and Technopreneurship* 5: 467–78.

Smith, Brenda D., Emma Sophia Kay, and Tracy D. Pressley. 2018. Child maltreatment in rural southern counties: Another perspective on race, poverty and child welfare. *Child Abuse & Neglect* 80: 52–61. [CrossRef]

Sumari, Melati, Sarada Devi R. Subramaniam, and Norfaezah Md Khalid. 2020. Coping with parental divorce: A study of adolescents in a collectivist culture of Malaysia. *Journal of Divorce & Remarriage* 61: 186–205. [CrossRef]

Usher, Kim, Navjot Bhullar, Joanne Durkin, Naomi Gyamfi, and Debra Jackson. 2020. Family violence and COVID-19: Increased vulnerability and reduced options for support. *International Journal of Mental Health Nursing* 29: 549–52. [CrossRef] [PubMed]

World Health Organization. 2017. Child Maltreatment. Available online: https://www.who.int/gho/publications/world_health_statistics/2017/EN_WHS2017_TOC.pdf?ua=1 (accessed on 18 October 2019).

Wu, Qi, and Yanfeng Xu. 2020. Parenting stress and risk of child maltreatment during the COVID-19 pandemic: A family stress theory-informed perspective. *Developmental Child Welfare* 2: 180–96. [CrossRef]

Zhang, Bin, Zhaohua Wang, and Bo Wang. 2018. Energy production, economic growth and CO_2 emission: Evidence from Pakistan. *Natural Hazards* 90: 27–50. [CrossRef]