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THE NEXUS BETWEEN CHILD ABUSE AND ECONOMIC CONDITIONS: EMPIRICAL EVIDENCE FROM MALAYSIA

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Abstract

This research attempts to examine the impact of economic conditions on number of child abuse cases in Malaysia. Yearly time series data has been included in data collection from year 1988 until 2019. To achieve the objective of the study, an estimation method of Autoregressive Distributed Lagged (ARDL) has been employed. The ARDL methodology consists of two steps analysis; first, ARDL Bound test which to determine the existence of cointegration relationship between child abuse and economics condition and second, ARDL Level Relation test with purpose to identify the cointegration relationship does significant in the long run. The findings have found cointegration relationship among the variables. However, only inflation (INF), unemployment (UEM), and minimum wage (MIN) appear significant to affect number of child abuse cases in Malaysia in the long run. The results suggest except poverty (POV), the number of child abuse cases in Malaysia are fully adjusted by the movement in INF, UEM and MIN. Overall, output from this study provide recommendation for policy-makers in readjusting the existing policies so that they able to curb the rising number of child abuse as well as to promotes economic growth and peaceful environment in Malaysia.

Keywords: Child abuse, Poverty, Income, Unemployment, Minimum wage

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INTRODUCTION

According to United Nations Children's Fund, UNICEF (2019), child abuse refers to the maltreatment of children, which appear in the forms of physical abuse, emotional abuse, sexual abuse, and neglect. In medical literature, the first child abuse case was reported in 1860. In 2017, World Health Organization (WHO) estimated that up to one billion children aged 2-17 years have experienced physical, sexual and neglect. More surprisingly, about 120 million children were reported that abuse was committed by people who were close to them, such as parents, relatives, and teachers (UNICEF, 2018). Child abuse has severe and long-term consequences for children's physical, emotional, and psychological well-being. It can lead to physical injuries, impaired brain development, emotional trauma and a higher risk of engaging in risky behaviors later in life.

Generally, child abuse is defined as misconduct action towards the children due to social rules (Bakır, 2018). A notable rise in child abuse cases has the potential to exert substantial and immediate impacts on both community and economy in the country. This situation has alarm us on the possibility when they grow up, they are more likely to commit crimes. The consequences of maltreatment can be devastating, ranging from minor injuries to severe brain damage and even death. Meanwhile, psychological consequences range from chronic low self-esteem that prone to be passive and alone. In any civilized society, child abuse is deemed unacceptable thus public health systems must be mobilised to prevent it.

It has been demonstrated in numerous studies that socio-economic factors, including poverty has a great contribution to child abuse (Nazirulla *et al.,* 2023). Zakaria (2015) and Karim *et al.,* (2020) suggests that children from marginalized communities or disadvantaged backgrounds may be more vulnerable to abuse due to various social and economic stressors. A study by McLeigh et al. (2018) found the evidence of the poverty have a direct relationship on rates of abuse and neglect in South Carolina. Meanwhile, Zakaria (2015) describe in his findings that the uncertain economic condition of families gives encouragement of child abuse. Pasian et al. (2013) suggested that the chances for children in poor families to be neglected are stronger than in middle level income families. In consistent with a study from Lacharité (2014), he infers lack of financial assistant and social support promotes the likelihood of child neglect. Thus, it can be suggested the parents that experience economic hardship is at a greater risk of mistreatment the children.

Another factor that received limited attention to influence the number of child abuse is minimum wage of the parents. Typical minimum wage earner is a breadwinner and provider which responsible for raising a child, running a household and paying bills (Perez, 2014). Higher minimum wage literally has decreased the pressure among the parents thus contribute to the lower risk of the child is being abuse. Berger et al. (2013) elaborates increase in household income

has led to decrease in child maltreatment. In line with the study by Raissian and Bullinger (2017) that suggested increase in the minimum wage implies a significant decrease in children maltreatment. Nonetheless, following to the Sabia and Nielsen (2013) there is no significant effect of minimum wage on poverty rates hence not significant to contribute number of child abuse cases as well.

In Malaysia, the number of reported cases of child abuse have been on the rise since 2019. According to the Department of Social Welfare, more than 2,000 child abuse cases are reported every year and for the first half of 2022, Malaysia recorded a total of 1,055 child abuse cases, with physical abuse being the most common type of abuse, followed by sexual and emotional abuse. The majority of the abuse was directed towards girls, with 706 cases, while 349 cases involved boys. These alarming developments in child abuse are heartbreaking and tragic, and it is crucial to create a safe environment free from violence and harm for all children. In light of these statistics, continued efforts are needed to prevent and address child abuse in Malaysia.

Majority of the previous studies has been found does not include the economic determinants such as poverty and minimum wage to affect child abuse especially from the context of Malaysia. For instant, Shaari et al. (2015) only include unemployment and inflation as determinants to influence child abuse cases in Malaysia. Practically, a higher minimum wage could improve income level of the family thus reduce poverty as overall. With a stable income, parents are able to fulfil basic needs of the children and continuously provide satisfactory physical, mental, spiritual, and moral development. Since poverty and minimum wages has widely received an attention to influence the income level hence reduce the risk of child abuse, this study proposes to investigate the long-run cointegration between child abuse cases and economic conditions in Malaysia as the first objective. Next, to examine the one-to-one relationship between child abuse and economic conditions in Malaysia as second objective.

LITERATURE REVIEW

There has been a vigorous debate about child abuse among non-economists. Most of them provide a discussion that limited from the view of medical consequences which include physical injury and mental health development. However, the findings among the economists deliver mass evidence when they found child abuse has severe and lasting consequences for injuring physical and mental health and affecting interpersonal relationships, victims, labor force outcomes, educational achievement, and criminal behavior (Currie & Tekin, 2012). The study from Peterson et al. (2018) suggest child abuse has significant economic consequences for society, including productivity losses, increased burdens on criminal justice systems, special education programs and substantial costs for child welfare services and health care. The economic burden of child maltreatment is difficult to calculate, but estimates suggest that the total lifetime

costs associated with one year of confirmed cases of child maltreatment in the United States is approximately $428 billion. Furthermore, Nguyen (2013) infers when parents are stressed in the aftermath of divorce, they may not give their children full attention, which can lead to feelings of neglect. Additionally, children can be stressed due to the fact that their parents are battling for custody, which can affect their happiness.

Numerous economic factors in child abuse have been explained by previous literature, such as higher cost of living, domestic problems, unemployment and poverty. Given these factors possibly can cause stress thus triggered child abuse. Bullinger et al. (2020) found economic conditions such as income, macroeconomic conditions and parental employment have been identified as predictors of child abuse and neglect. Sidebotham and Heron (2006) specified that child abuse is impacted from poverty. Consistent with Olive (2007), he proposes that poverty is one of the determinants in child abuse and proves that physical abuse by the parents is due to the pressure from poverty. Gallo et al., (2006) conclude parents who live in prosperity are reluctant to abuse their children as compared to the parents live in poverty. According to Eisenbruch (2019), most of the children in Cambodia suffer abuse due to poverty, culture, and sexual desire. Meanwhile Zakaria (2015) ascertained that the high volatile economy of the families can increase child abuse cases. In line with the study from Shaari et al., (2022), in short run, inflation has been found to boost the number of a child abuse in developing countries including Malaysia. In the study, they discover the high cost of living due to inflation triggered the most pressure from the parents which led them to abuse their children. Therefore, higher cost of living possibly produce repercussion on the families.

Majority scholars identify that unemployment is one of the main contributions to child abuse. The stress of unemployment can drive individuals to resort to substance abuse as a coping mechanism, potentially leading to an escalation in physical abuse or neglect. Unemployment can also contribute to higher divorce rates, which may expose children to new adults who could potentially perpetrate abuse. Furthermore, single-parent households, often a result of divorce or unemployment, may struggle with limited resources to fulfil a child's basic needs. Lastly, an upsurge in poverty resulting from increased unemployment will affect failure to adequately meet a child's fundamental physical and psychological requirements. Following to Rosemary et al. (2019), the study stated that child sexual abuse is associated both unemployment and poverty. In the same vein with Doidge et al. (2017), unemployed parents tend to abuse their children due to the pressure of having no salary to support for their families. Besides, Morris et al. (2019) highlights that families living in poverty and being unemployed put the children at high risk of being abused.

Furthermore, previous literature has consistently provided the evidence among the children with low-income families, specifically those in poverty, are

at a higher risk of child maltreatment. Unfortunately, causal evidence for this relationship is inconclusive. Other than that, an increase in minimum wage has been associated with less number report of child abuse, but the evidence is mixed (Bernstein & Shierholz, 2014). In a study conducted by Raissian and Bullinger (2017), higher minimum salary laws also appear to be significant with lower reports of neglect for children ages 0 to 12 years.

In the literature, limited study has been found to investigate a group of economic determinants to influence number of child abuse cases especially in Malaysia. Most of them did not explore the determinants of child abuse using a time series data analysis. However, a limited number of previous studies, for instant Shaari et al. (2015), investigate the effects of unemployment, inflation, and child abuse in Malaysia. The study did not include minimum wage as a potential determinant. Therefore, the present study proposes a minimum wage as recent significant variable to be consider under economic determinants of child abuse case in Malaysia.

METHODOLOGY

Data Collection

Data in this study consists of yearly time series data covering period of 32 years from 1988 until 2019. For dependent variables, child abuse (CAB) was gauge by the yearly number of reported child abuse cases, meanwhile inflation (INF), total unemployment (UEM), poverty (POV) and minimum wage (MIN) have been chosen as a proxy for economic conditions that act as an independent variable. The data on economic variables (INF, UEM, POV and MIN) were collected from the Department of Statistics Malaysia while the number of child abuse (CAB) cases were collected from the Department of Social Welfare Malaysia. The present study proposes that the CAB will act as dependent variable and believe the variation of CAB could be explained by the set of explanatory variables which include economic determinants such as INF, UEM, POV and MIN.

Autoregressive Distributed Lag (ARDL) Cointegration Approach

The present study proposes the ARDL cointegration approach in order to assess the relationship between number of child abuse and set of economic determinants in the first stage analysis. Pesaran and Shin (1999) initiate the ARDL bounds cointegration approach and later being extended by Pesaran et al. (2001). The ARDL approach is most recent cointegration technique after the Johansen Juselius (Johansen & Juselius, 1990) and Eagle Granger (Engle & Granger, 1987) approaches. Main benefit of ARDL approach is it allows separate order of integration and does not restrict the same order of integration among the variables. This condition is certainly appropriate for those variables that might own fractional order of integration (Pesaran & Shin, 1999). Likewise, this method is more suitable for two or more variables in a small sample size to identify the

long-run relationship as compared to Engle and Granger's (1987) and Johansen and Juselius (1990) approaches. Other than that, Pesaran and Shin (1999) mention the ARDL framework produce super-consistent long-run coefficients estimators. In fact, many studies have been proven to validate the factors of child abuse by employing ARDL methodology (Shaari et al., 2022).

It is essential to check the stationarity for all variables to determine the integration order before continuing with the ARDL bounds test. In previous, there is a large argument on the literature that claim ARDL approach is not necessary for pre-testing the stationarity to identify the order of integration. However, according to Alimi and Ofonyelu (2013) the prior test is important for model under the ARDL framework as to ensure no variables are integrated of order *I*(2). Following to Ouattara (2004), any variable with the presence of *I*(2) leads to the invalid computed F-statistics as the critical values under bounds test proposed by Pesaran et al. (2001) is cover on the hypothesis that have variables range from *I*(0) or *I*(1). Therefore, the prior checking of unit root tests in conducting the ARDL approach is needed to confirm no variable is integrated of order 2 or above.

Next step is to proceed with ARDL bounds test methodology as propose by Pesaran et al. (2001) to examine the existing of cointegration among the child abuse and economic conditions. Below depict the ARDL (p, q) model used to estimate the long run relationship between the variables:

$$\Delta i_t = c + \beta_1 i_{t-1} + \beta_2 x_{t-1} + \sum_{j=1}^{p-1} \phi_i \Delta i_{t-i} + \sum_{i=1}^{q-1} \psi \Delta x_{t-i} + \phi \Delta x_t + \varepsilon_t \quad \text{----------(1)}$$

Where, Δ denotes the first difference operator, i_t = child abuse (CAB_t); x_t = inflation rate (INF_t), Unemployment (UEM_t), Poverty (POV_t), minimum wage (MIN_t) and (ε_t) represents white noise error term. On the other hand, p and q are the autoregressive lag orders of the independent and dependent variables.

To estimate cointegration in equation (1) can be assessed by using ordinary least squares and *F-statistics*. A Schwarz Bayesian Criterion (SBC) has been employed for the selection of optimal lag length. According to Pesaran et al. (2001), the critical values of this test valid under two conditions, *i.e.* when all variable are stationary at *I(0)* and *I(1)*. The critical value consists of two sets of upper and lower bounds. Alternate hypothesis is supported if the computed F-statistics fall above the upper bound, thus infers the cointegration among the child abuse and the economic determinants. Meanwhile, if the computed F-statistic fall below the lower bound, the null hypothesis is valid, and this imply no cointegration between child abuse and the economic determinants. Moreover, if the computed F-statistics fall in these bounds, the result remains inconclusive.

In addition to this, the study from Bahmani and Gelan (2006) suggest is the alternative option to detect long-run cointegration relationship in model estimation is by providing a significance lagged of Error Correction Model (ECM_{t-1}). They propose a negative and significant value of ECM_{t-1} indicates the existence of long run cointegration thus support the variation of child abuse cases is explain by the economic variables. The coefficient on ECM_{t-1} also indicates the pace among child abuse and economic variables to achieve their long-run equilibrium.

RESULTS AND ANALYSIS

Stationarity Test – Phillips-Perron and Augmented Dickey-Fuller Unit Root Tests

First step prior to the ARDL bounds test, it is necessary to identify the order of integration for all the variables. For this purpose, the present study employs Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) unit root tests to determine the integration order of the variables (Dickey & Fuller, 1979; Phillips & Perron, 1988). The ADF test valid when ε_t is white noise. The model is written as:

$$\Delta Y_t = \gamma Y_{t-1} + \sum_{i=1}^{p} a_i \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

Meanwhile, the PP test is indicated by using the equation as written below:

$$Y_t = a_0 + a_1 Y_{t-1} + \varepsilon_t \quad (3)$$

Table 1 displays the result of unit root tests under Phillips-Perron and Augmented Dickey Fuller tests.

Table 1: Augmented Dickey-Fuller and Phillip-Perron Unit Root Test Results

	ADF		Phillip-Perron	
	Level			
	Intercept	Intercept and trend	Intercept	Intercept and trend
CAB	-2.3455(6)	-2.3731(6)	-1.5677	-2.1398
INF	-2.9974(6) ***	-2.0147(6) **	-2.3283***	-3.6262**
UEM	-2.3442(6)	-2.0456(6)	-2.5611	-2.1019
POV	-1.5598 (6)	-1.7899 (6)	-1.7718	-1.9173
MIN	-1.1789 (6)	-1.5233(6)	-1.8561	-1.8912

		First Different		
CAB	-7.1198(6)***	-7.0122(6)***	-5.6781***	-5.6099***
INF	-7.2877(6) ***	-7.0201(6)***	-7.2377***	-7.9266***
UEM	-5.3274(6) ***	-5.1922 (6)***	-5.7312***	-5.6202***
POV	-4.7729(6) ***	-4.8847(6) ***	-4.9200***	-4.3782***
MIN	-5.5478(6) ***	-5.2145 (6)***	-5.8442***	-5.6786***

Notes: *, **, *** denotes 10%, 5% and 1% significance levels respectively

As depicted in Table 1, none of the variables are stationary at an order more than one $I(1)$ thus permits us to proceed with the ARDL bounds techniques. The stationarity of each variables is necessary to confirm in order to ensure none of the variables are integrated of order $I(2)$ as this condition will provide invalid result (Alimi & Ofonyelu, 2013).

The ARDL Long-run Cointegration Approach
ARDL Bound Test

After checking the stationarity, next is to examine the cointegration relationship between child abuse cases and economic conditions by employing the ARDL bounds test (Pesaran & Shin, 1995, 1996). Below depicts is the general model to explain the

$$\Delta CAB_t = c + \beta_1 CAB_{t-1} + \beta_2 INF_{t-1} + \beta_2 UEM_{t-1} + \beta_2 POV_{t-1} + \beta_2 MIN_{t-1} + \sum \alpha_{1i} \Delta CAB_{t-i} + \sum \alpha_{2i} \Delta INF_{t-i} + \sum \alpha_{3i} \Delta\, UEM_{t-i} + \sum \alpha_{4i} \Delta\, POV_{t-i} + \sum \alpha_{5i} \Delta MIN_{t-i} + \varepsilon_t \quad (4)$$

For certain conditions, both criteria select the similar order of lagged number for the conditional ECM in equation (1). The estimation results are described in Table 2 below:

Table 2: Estimated Results for the Existence of Long Run Cointegration Relationship

Interest rates	*F-statistic*	SBC (p,q)	ECMt-1	*p-value*
CAB	6.937**	(12,6)	-0.051	0.072
INF	7.925***	(12,12)	-0.022	0.036
UEM	4.814**	(12, 8)	-0.039	0.021
POV	6.981***	(12,6)	-	-
MIN	7.248***	(12,6)	-0.045	-0.082

Notes: *, **, *** denotes 10%, 5% and 1% significance levels respectively.

Table 3: Critical Values for ARDL Bounds Test

Critical Value	Lower Bound	Upper Bound
1% significant level	6.84	7.84
5% significant level	4.9	5.73
10% significance level	4.04	4.78
Null Hypothesis: No Cointegration		

Notes: The Critical Value Developed by Pesaran et al. (2001) Under Case III: Unrestricted Intercepts; No Trends

According to the critical value presented in Table 3, F-statistics for all variables in Table 2 ARDL bounds test have fallen above the upper bound at 1%, 5% and 10% significant level. Inflation rate (INF) displays the computed F-statistics more than the upper bound critical value at 1%. Meanwhile unemployment (UEM) record computed F-statistics above the upper bound critical value at 10%. Likewise, the poverty rate (POV) and minimum wage (MIN) show the computed F-statistics exceed the upper bound critical value at 5%. Therefore, the findings from ARDL bound test findings infers that a set of economic conditions which include INF, UEM, POV and MIN are found to cointegrate with number of child abuse cases in Malaysia. After validating the cointegration in the ARDL bounds test, next step to proceed with ARDL level relation test to validate the present of cointegration relationship is significant in the long-run by estimating Error Correction Model (ECM).

Pesaran et al. (2001) suggest the existence of cointegration in the ARDL bounds test does not confirm a perfect cointegration between the variables. These authors recommend a significant and negative value of error correction terms (ECMt-1) indicate the cointegration is significant and stable in the long run. Table 2 displays the results on the coefficient of ECMt-1 for all variables are negative and significant, except for POV.

According to Table 2, inflation (INF) rate appears to own a significant positive relationship with the number of child abuse cases. This situation elaborates in the long run, as inflation increases it led to a higher number of child abuse cases reported. High inflation rate describes a situation when rising price of goods that promotes to higher living cost. This issue brings difficulties to the parents as they need to strive within the limited income and makes them depress. Consequently, there are higher tendency for a depression parent to beat and neglect their children (Shaari et al., 2019).

Furthermore, Table 2 displays unemployment (UEM) own a significant and positive relationship with the number of child abuse cases. This condition explains increase in unemployment rate will reduce the number of child abuse cases in the long run in Malaysia. Unemployment more likely could lead to divorce, which may encourage to abuse if children are exposed to new family members if the parents have new partners who may be prone to abusive

behaviour. Things also get the similar consequences for a single parent households may have less resources to provide basic needs for children. The findings are consistent with the study from Anderberg et al. (2015), they suggested an increase unemployment can result in a failure to provide a child's basic physiological and physical needs.

Next, Table 2 reveals minimum wage has a negative and significant relationship with the number of child abuse cases. This state describes an increase in minimum wage led to a lower number of child abuse cases reported. The level of minimum wage aligns with the income that affects the ability of the parents to provide a basic need of a children. Pelton (2015) suggest lower minimum wage among the parents is relevant with regard to neglect, which is often defined by inadequate provision of food, shelter, clothing, medical care, and inadequate home conditions.

Lastly, poverty (POV) is found not significant to support long run cointegration with child abuse cases reported in Malaysia. The findings suggest the number of child abuse cases are not fully adjusted by the movement in poverty.

Diagnostic Test

In addition, the regression model has undergone the diagnostic test such as Lagrange Multiplier (LM) and Cumulative Sum Recursive Residuals (CUSUM) test to ensure the model has no serial correlation problem and dynamically stable. The LM test indicates that no serial correlation problem exists (p-value is greater than 0.05). While for CUSUM tests, it shows the stability test is within the bounds and significant at 5% level. This condition suggests the model is dynamically stable to validate all the results.

CONCLUSION AND RECOMMENDATION

This research investigates the impact of economics determinants of child abuse cases in Malaysia by using the ARDL approach. Data spanning from 1988 to 2019 were analysed and the findings reveal except for poverty, in the long-run all economic variables namely inflation, unemployment and minimum wage are cointegrate with the number of child abuse cases in Malaysia. These findings infer that in the long-run, higher inflation rates result to increase in child abuse cases in Malaysia. Periods with high inflation can reduce the purchasing power of money, which inflicts pressure on parents and thus it can cause child abuse, especially in low-income families. This finding is consistent with Shaari et al., (2022) where they proposed in developing countries, higher inflation will result in a rise in general price thus encourage them to hit the children as to release their pressure. Therefore, we can infer since Malaysia is one of the developing countries, higher inflations rates can give a significant impact to the rise number in child abuse.

Apart from that, in the long-run, rise in unemployment also leads to higher number of child abuse cases. This might cause parents to allocate more time at home without financial sources. As a result, they will be stressed thus the child abuse occurs. On the other hand, the study also found the higher minimum wage among the parents will result in the lower number of child abuse reported. The government take a proactive action when they frequently revised the amount of minimum wages that proportionate with the living cost in Malaysia. Hence, we can infer that higher level of minimum wage for the parents grants them the ability to fulfill basic needs of the children. Such situation may avoid the parents from depression thus reduce the cases of child abuse.

The outputs from this study contribute new knowledge to the body of child abuse literature and also the theories. Few theories that are associated to child abuse have been introduced such as attachment and family systems and ecological theories. Moreover, these findings are also significant for policymakers as they may readjust their existing policy as they can shed some light on how to curb child abuse from reaching an epidemic proportion. Policy makers also should control the rates of unemployment and inflation. For instance, the government may organise entrepreneurship programs that offer more job opportunities and incentives from the government should be introduced in order to help beginner entrepreneurs. Furthermore, central bank was the authorise body appointed by the government should control the inflation through implementation of monetary policies contractionary fiscal or monetary policies.

The findings of this study also benefit employers since they may propose to provide nursery in the workplaces to employees so that children can be easily reached and given attention by the parents. This study owns several limitations. First, it considers only four independent variables, namely inflation, unemployment, poverty and minimum wage and the results possible might not thoroughly capture the other determinants of child abuse cases in Malaysia. There are several potential variables that influence child abuse such as population and economy growth. Second, this study must focus each state in Malaysia so that able to capture the determinants of child abuse in every state. Therefore, a panel regression analysis must be employed.

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ETHICAL STATEMENT

In accordance with international publication guidelines and our duty to uphold research ethics, we declare that we have no conflicts of interest and all respondents agreed to be interviewed and the research has considered all possible ethics implications throughout the research project. The risk and benefit to researchers, participants and others (for example, potentially stigmatised or marginalised groups) as a result of the research and the potential impact, knowledge exchange, dissemination activity and future re-use of the data has also been considered as part of the ethical research work.

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