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THE RELATIONSHIP BETWEEN SOCIOECONOMIC FACTORS WITH FERTILITY RATE IN MALAYSIA

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ABSTRACT

The issue of an ageing population is on the rise globally, and Malaysia is not excluded from facing this issue. Past literature has recognized that the declining fertility rate is one of the main factors that lead to this problem. However, along with the declining fertility rate in Malaysia over time, there are also changes in social and economic factors such as increment in female labor participation, higher house income and consumption expenditure, increasing inflation and changes in the demographic of the population. The study has become a concern since these factors could affect the declining fertility rate. Hence, this study is conducted (1) to analyze the significant socioeconomic factors that affected fertility rate decline in Malaysia; (2) to investigate the short-run and long-run relationship between socioeconomic factors and fertility rates in Malaysia; and (3) to determine the direction of the causal relationship between each of the socioeconomic factors and fertility rates in Malaysia. The Autoregressive Distributed Lag (ARDL) model was conducted for the first and second objectives, while the Granger Causality test was conducted for the third objective. The research is conducted to investigate the stated relationship between the period in the year 1982 to 2019. It can be concluded that income, household consumption expenditure and the female labor force are related to fertility in the short and long run. At the same time, inflation and population ethnicity are only related in the long run.

Keywords*: ARDL, Fertility Rate, Female Labor Participation and Household Income*

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1. Introduction

A low fertility rate is one of the main factors contributing to the ageing population. Yenilmez (2014), in his study, stated that countries around the globe are facing the impacts of the ageing population. Poland, Germany, Italy and Japan are some countries facing a dense old population. Some other countries are heading towards that, such as South Korea, Russia and Canada, while some are projected to face the problem decades later, like China. The study stated that this effect is caused by two main factors–low fertility rate or low mortality rate in a certain population. In another study, Pham and Vo (2021) stated that the rapid ageing population is the combined effect of deteriorating fertility and mortality rates and the increase in life expectancy.

The World Bank Data (2020) defined the total fertility rate as the total number of children per woman in her childbearing years per the specified year. For example, Gietel-Basten and Scherbov (2020) explained that the fertility rate is important for society to replace themselves. If it is below the replacement fertility, it signs a decline in population or the

ageing population. Apart from that, Rindfuss and Choe (2015) stated that the replacement fertility rate is the fertility rate of the population when its growth rate is zero. In order to maintain the size of the population, every woman needs to give birth to two children assumed to 'replace' the father and mother. Therefore, the replacement rate can be reasonably approximated at 2.1 births per woman, which is larger than 2.0 births per woman because some female births do not survive to childbearing age. However, Malaysia's latest fertility rate is below the expected replacement fertility. Figure 1 shows the decline in the fertility rate from 1982 until 2019, with the current fertility rate of 1.983 births per woman. Moreover, Rindfuss and Choe (2015) added that a shrinking population is a concern as it may deteriorate nationalistic pride, and it is always better to have a growing population. Supporting this statement, Tey (2020) explained that the pool of human resources is important since it is highly related to human capital. Therefore, Malaysia has prioritized education and skill training to attain the number of educated and skilled labourers.

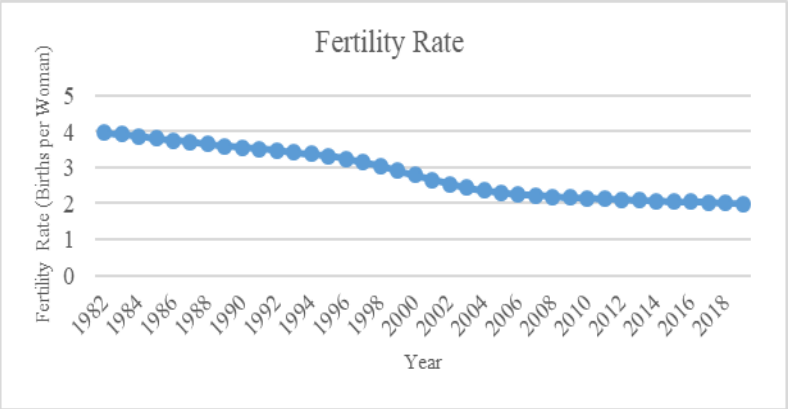

Figure 1. Fertility Rate Against Time.

Rindfuss and Choe (2015) also commented that the main issue of an ageing population is that there will be a hike in the need for funding mechanisms to support the elderly such as social security and social welfare systems. The authors explained that the elderly might grow bigger in society. However, reducing fertility rates could result in a less working-age population that pays taxes. In other words, this leads to a decline in the working-age population. The research also added that although low fertility can lead to an ageing population, it can only happen when the fertility rate is sustained at a low rate for a long period, along with other factors. The problems that arise afterwards are that the government will need to reduce the support to the bigger elderly population or induce higher taxes on the smaller working-age population. Given the consistency of decline in fertility rate in Malaysia from 1989 until now, as Malaysia is moving towards an ageing population, such issues may deepen and worsen.

Prior researches show the effect of the declining fertility rate on many aspects. Yenilmez (2014) proved that a declining fertility rate could affect the population's health, social security, and economy and significantly towards the labor force participation rate, which increases the proportion of retirees in the labor force. To prevent such issues, vast research has been conducted to understand the factors of fertility rate. In research held by Kamaruddin and Khalili (2015), fertility, measured by the number of births per woman, is determined based on household decisions in which the two main views are economic and socioeconomic factors. Hence, this study focuses on the determinants of fertility behavior in Malaysia. This includes socioeconomic factors such as income, women's labor participation, household expenditure, inflation and ethnic distributions in the population. This is essential to

fill the gaps in past research and further understand the fertility rate behavior to prepare for the nation moving towards an ageing population.

2. Literature Review

2.1 Income

Tang and Tey (2017) analyzed the long-run and short-run effects of per capita income on the fertility rate. There are two stages of the effect in which the beginning effect of better income increased the quality of life by improving healthcare, better sanitation and improving the population's nutrition, which then increased the birth rate and fertility rate. However, when the income is at a very high level, the trend of fertility rate drops because it increases female education and employment and promotes the idea of family planning. This implements that a further increase in income may impact the decline of the fertility rate. As hypothesized, the effect of the income is currently in the second phase, which affected the downturn of the fertility rate. Hence this study will analyze the effect of income on fertility.

Idris *et al.* (2018) commented on the huge attention drawn by the relationship between income per capita and the fertility rate. The study concluded that the variable increases with fertility at first. However, this trend is only up to a certain optimal point before the trend meets its downturn, whereby the increase in income will affect the decrease of the fertility rate.

Zakaria *et al.* (2017) emphasized the economic theory in which if children are pictured as consumer durable goods, the demand for children will increase when family income increases. However, a negative substitution effect may happen in which increasing income will create more opportunity costs for raising children. To put it simply, the high-income lets couples spend more on the life quality of the children instead of giving less to more children.

2.2 Women's Labor Participation

Chandiok *et al.* (2016) studied the biological and social determinants of fertility in India. The study found that women's self-determination is often measured by their educational attainment and occupational status, which both of these factors result in the size of the family. Often, these self-determined women get married late and are self-conscious about having family planning. Working women have less time to devote to their self-development while pregnant since there will be long maternity leave and much such as her health and her baby's. Hence, women's employment patterns could also show some disruptions throughout their labor force due to childbearing and family responsibilities (Yusuf, 2012).

Furthermore, considering the condition of pregnancy and childcare, it is likely that most working environment is not favourable to women. Yenilmez (2014) stated that in the Republic of Korea, to stimulate more participation of educated women, the government tried to create more advantageous and considerate conditions for women. Furthermore, the study highlights governmental efforts such as encouraging the provision of childcare facilities for female employees that can alleviate the problem in a way that lets more females be employed since they have more time for their careers instead of childcare.

Apart from that, Istihak *et al.* (2018) stated that educated women often engage in various economic activities that make them tend to have fewer children. They defined these situations as a trade-off between the number of children and time availability for children. This trade-off is explained to exist since mothers want to spend more time with their children. Thus, it would be better to have fewer children.

2.3 Household Consumption Expenditure

Galloway and Hart (2015) contributed in their study, concluding by using quasi-experimental data that income and direct cost of children are significant towards fertility behavior. Rindfuss *et al.* (2010) explained that the increased fertility rate in Norway is affected by the low indirect cost of childbearing since there is a wide availability of subsidized child care. This is accurate since the direct cost of childbearing consists of food, clothes, schooling, housing and more that may burden some parents. Meanwhile, the paper also provided that the indirect cost, which includes loss of working hours and less human capital in the long term, may seem a reason for some working parents to be less fertile.

Research by Mat Ripin *et al.* (2020) viewed the quality of life with fertility among civil servants in Kota Bharu. The study highlighted that some workers nowadays limit their family size since they need to commit to their work. In addition, the parents need to spend for child daycare while at work, mostly ranging from RM 100 to RM 350 per month, and they found that children's education is costly. This is supported by Sethi *et al.* (2021), explaining that the costs depend on childrearing and the investment of their human capital. Many types of expenditure include apparel, food and drinks, education, and so many extents. This type of consumption per child is positively related to the net costs of rearing a child. Hence, the expenditure affects the fertility decision of the family

2.4 Inflation

He (2018) studied inflation and fertility by applying the Schumpeterian model growth in which consumption and investment are also included to identify the optimized fertility decision. Rational human beings will also consider those factors along with inflation. It has been discovered that the inflation rate has a significant relationship with fertility and is causal to the fertility rate. Although inflation will trigger a higher expenditure, a huge fertility decision often takes into account inflation and other determining factors.

On the other hand, Filoso and Papagni (2015) studied the effect of financial development on fertility choice. One of the discussions in the study is on the effect of financial accessibility that influences household decisions on the number of children. In addition, the study included the inflation rate to represent the outcome of monetary policy on the economy and explained that the abrupt economy proxied by inflation could also impact household consumption expenditure.

Khattak (2019) investigated a similar area with the inclusion of economic uncertainty. Rationalizing the inflation variable, Khattak (2019) explained that people would have higher living costs. Hence, this will increase the expenditure on raising children. Additionally, governmental policy putting higher or lower taxes will affect the inflation and cost of living in which higher tax leads to higher inflation and lower tax leads to lower inflation.

2.5 Ethnicity

Kamaruddin and Khalili (2015) highlighted the variation of population growth by ethnic group. The study stated that fertility rates among Malays are 40 percent higher than the Indians and 56 percent higher than the Chinese. Therefore, it is important to include ethnic groups to further understand fertility behaviour based on the Malaysian demographic. This can contribute to explaining the population growth among different ethnic groups.

Tey (2020) highlighted that the pace of fertility differed widely among the main ethnicity in Malaysia. Grouped into Bumiputera and non-Bumiputera, there is a clear

difference in the pace of fertility transition in which the Bumiputera has a more gradual increment in fertility. In contrast, the non-Bumiputera has a dropping and low fertility rate.

Meanwhile, Odimegwu and Adewoyin (2020) centred the explanation of fertility behaviour around people's cultural and social values. Hence, for this essence, the fertility rate varied across different ethnicities. Moreover, the study also acknowledged other demographical determinants such as age, religion and type of residency in the study area.

2.6 The Estimating Models

Past studies diverged in handling the research area of fertility rate factors. Cross-sectional analysis is an analysis of data of different individuals at one particular time. This type of data is commonly obtained from conducting a survey which is primary data. For example, Mat Ripin *et al.* (2020) studied the determinants of quality of life and fertility among civil servants in Kota Bharu. The study was conducted on 200 respondents among civil servants. Another study with a similar method by Chandiok *et al.* (2016) focused on factors that determined fertility behaviour among Jat women in India and conducted a survey on 1014 married women in the Pawal district of India.

A panel data analysis is an analysis that compares different individuals over a time period. For example, He (2018) sampled data from 12 countries from the year 2000 until 2014 to investigate the impact of monetary policy on growth and welfare by using fertility choice as a proxy to measure growth and welfare. Meanwhile, Kamaruddin and Khalili (2015) implied this type of analysis to identify the factors that affect the fertility rate using panel data of women of childbearing age from the year 1990 to 2001.

A time series analysis involved time series data focused on one subject in a range of periods. For example, Awad and Yussof (2017) studied factors that have affected fertility among Malaysians, which included the natural logarithm of fertility rate, per capita income, infant mortality rate, female education level and female employment. This study applied Autoregressive Distributed Lag (ARDL) framework to explain the relationship between the variables using data from the year 1980 to 2014. Similarly, Idris *et al.* (2018) analysed an almost similar topic using the ARDL model that studied financial development as a factor of declining fertility in Malaysia for periods from 1975 to 2013. This research uses a similar ARDL framework to investigate the intended study area between 1982 to 2019.

3. Data and Methodology

3.1 Data

The variables included in this study are chosen based on prior researches. This study uses only Malaysian data on fertility rates, national income per capita (INC), labour force of women (FEMLAB), household consumption expenditures (HCONS), inflation rates (CPI), and populations race (BUMI) from 1982 to 2019. The measurement, data source and data period of all variables are as in Table 1 below. For the purpose of having a better regression, INC and HCONS are adjusted due to the large size of the dataset. LNINC, representing INC in logarithmic form and LNHCONS, the logarithmic form of HCONS is used in the regression.

Table 1. Table of Variables.

Variables		***Data measured***	***Data source***	***Data Period***
Dependent	Fertility Rate (F)	Fertility rate (births per woman)	The World Bank Data Website	1982 to 2019
Independent	Income (INC)	Adjusted net national income per capita (US$)	The World Bank Data Website	
	Women's Labour Participation (FEMLAB)	Female participation rate (% labor force participation rate of female)	Department of Statistics Malaysia	
	Household Consumption Expenditure (HCONS)	Household final consumption expenditure (US$)	The World Bank Data Website	
	Inflation Rate (CPI)	Consumer Price Index	The World Bank Data Website	
	Populations race (BUMI)	Ratio of Bumiputera citizens (% of total population)	Department of Statistics Malaysia	

3.2 ARDL Model

This paper analyses the significant socioeconomic factors of fertility rate using ARDL framework. The basic model of ARDL is as follows:

$$\Delta F_t = \alpha_0 + \sum_{i=1}^{k} \alpha_1 \Delta LNINC_{t-i} + \sum_{i=1}^{k} \alpha_2 \Delta FEMLAB_{t-i} + \sum_{i=1}^{k} \alpha_3 \Delta LNHCONS_{t-i} + \sum_{i=1}^{k} \alpha_4 \Delta CPI_{t-i} + \sum_{i=1}^{k} \alpha_5 \Delta BUMI_{t-i} + \varepsilon_t \quad (1)$$

Shrestha and Bhatta (2018) stated that the ARDL is suitable to be applied on variables of mixed order of integration I (0) and I (1), in which the data is stationary at level or I (1). However, the model is not suitable for dataset of different order of integration. Hence, to ensure that the data is suitable for ARDL model, unit root test is necessary. There are several types of unit root test. The Augmented Dickie-Fuller Test (ADF) is the most commonly used in testing the stationarity. The stationarity test is to be tested individually. The models of ADF test for each variable are:

$$\Delta X_t = \mu_X + \delta_X X_{t-1} + \sum_{i=1}^{k} \beta_{X,i} \Delta X_{t-i} + e_{X,t} \quad (2)$$

where,

$$X = \{F, INC, FEMLAB, HCONS, CPI, BUMI\}$$

$\mu_X = constant\ for\ equation\ X$

$\delta = \alpha - 1$

$\alpha =$ coefficient of X_{t-1}

$\beta_{X,i} = \tau - 1$

$\tau =$ coefficient of X_{t-i}

All variables F, INC, FEMLAB, HCONS, CPI and BUMI are tested using equation (2) as X with the similar hypothesis statement, that is:

$$H_0: \delta = 0, \text{the series is not stationary and has unit root.}$$

$$H_1: \delta < 0, \text{the series is stationary and has no unit root.}$$

After the ADF test is done and confirming the suitability of each dataset for every variable, the ARDL model can be applied. To evaluate the dynamics of short-run and long-run impact of independent variables on dependent variables, Error Correction Model is integrated into equation (1). The ECM is run to identify the number of optimal lag length. This model contributes in investigating the short run and long run relationship between the socioeconomic factors and fertility rates in Malaysia. The ECM is registered as equation (3).

$$\begin{aligned}\Delta F_t = \alpha_0 &+ \sum_{i=1}^{k} \alpha_1 \Delta LNINC_{t-i} + \sum_{i=1}^{k} \alpha_2 \Delta LNHCONS_{t-i} + \sum_{i=1}^{k} \alpha_3 \Delta FEMLAB_{t-i} \\ &+ \sum_{i=1}^{k} \alpha_4 \Delta CPI_{t-i} + \sum_{i=1}^{k} \alpha_5 \Delta BUMI_{t-i} + \sum_{i=1}^{k} \alpha_7 \Delta F_{t-i} + \beta_1 \Delta LNINC_{t-1} \\ &+ \beta_2 \Delta FEMLAB_{t-1} + \beta_3 \Delta LNHCONS_{t-1} + \beta_4 \Delta CPI_{t-1} + \beta_5 \Delta BUMI_{t-1} \\ &+ \varepsilon_t \end{aligned} \quad (3)$$

where,

$\alpha_i = coefficient\ of\ each\ variable$

$\beta_i = speed\ of\ adjustments\ of\ ECM$

$\varepsilon = error\ term$

3.3 Granger Causality Test

The Granger Causality Test is a pairwise test to identify either a variable influence changes of paired variable or not and to identify the direction of the causality relationship. This test contributes to achieve the third objective to determine the direction of causality relationship between all the socioeconomic factors and the fertility rate in Malaysia. The simple model of the Granger causality is as follows:

$$\Delta Y_t = \sum_{i=1}^{n} \alpha_i \Delta Y_{t-i} + \sum_{j=1}^{n} \beta_j \Delta X_{t-j} + u_{1t} \tag{4}$$

$$\Delta X_t = \sum_{i=1}^{n} \lambda_i \Delta X_{t-i} + \sum_{j=1}^{n} \delta_j \Delta Y_{t-j} + u_{1t} \tag{5}$$

where,

$Y = F$

$X = \{INC, FEMLAB, HCONS, CPI, BUMI\}$

$\alpha_i = coefficient\ of\ \Delta Y_{t-i};\ \ \Delta Y_{t-i} = Y_t - Y_i$

$\beta_j = coefficient\ of\ \Delta X_{t-j};\ \Delta X_{t-j} = X_t - X_j$

$\lambda_i = coefficient\ of\ \Delta X_{t-i};\ \Delta X_{t-i} = X_t - X_i$

$\delta_j = coefficient\ of\ \Delta Y_{t-j};\ \ \Delta Y_{t-j} = Y_t - Y_j$

The equations show the current value of ΔY and ΔX is related to the past value of ΔY and ΔX. The model is tested on pairwise of independent – dependent variables; {F – INC, F – FEMLAB, F – HCONS, F – CPI, F – BUMI}. The hypothesis testing for all the models is as follow:

(1) The null hypothesis for the first equation is $\beta_j = 0$, that means, changes in X does not influence changes in Y and rejecting the null hypothesis means that changes in X influence the changes in Y.

(2) Meanwhile, the null hypothesis for the second equation is $\delta_j = 0$, that means, changes in Y does not influence changes in X and rejecting the null hypothesis means that changes in Y influence the changes in X.

4. Results

To determine the model for equation (1), ADF test is first conducted. Results for equation (2) for the test is tabulated in Table 2 with column 2 and 3 registering the significance value or p-value for the series in level, and column 4 and 5 showing the p-value for the series in first-difference. Variable F and HCONS, with p-value of 0.0016 and 0.0022 are both less than significance level of 0.05, hence we can reject null hypothesis and take that the series are stationary at first-difference with trend and intercept. This means the data series do not intercept at 0 and the series have clear direction. Meanwhile, INC, FEMLAB and CPI have p-value of 0.0013, 0.0001 and 0.0003 respectively suggesting that the series are stationary at first-difference with intercept. BUMI on the other hand has p-value of 0.001indicating that the

series is stationary at level with intercept. All variables are stationary at I (0) and I (1), hence, are suitable to be used in the ARDL model (1).

Table 2. Result of ADF Test.

Series	**p-Value for Level:**		**p-Value for First-difference:**	
	Intercept	***Trend and Intercept***	***Intercept***	***Trend and Intercept***
F	0.2584	0.3473	0.8157	0.0016
LNINC	0.9366	0.0902	0.0013	0.0076
FEMLAB	0.9723	0.9597	0.0001	0.0004
LNHCONS	0.9910	0.2878	0.0033	0.0022
CPI	0.9993	0.3932	0.0003	0.0007
BUMI	0.001	0.1873	0.0233	0.0072

The result of ARDL model tabulated in Table 3 below defines the relationship in the short run. Akaike info criterion (AIC) is used to select the best lagged model and the selected model is ARDL (4,4,2,4,3,4). The statistically significant variables in the short run are determined by the respective p-value of variables that are less than 5% (refer column 3). Next, to capture the relationship between the variables in the long run, ECM (Equation (3)) is conducted, and the result is shown in Table 4. The p-value that are less than 5% reflect statistically significant variables in the long run. The F-bound test (refer Table 5) reflected that there exists long-run relationship at all significance level because the F-value of 12.36154 is higher than the upper bound of significance 1%, 2.5%, 5% and 10%.

Table 3. Result of ARDL.

Variable	**Coefficient**	**p-value**
LNINC	-0.108027	0.0018
LNHCONS	-0.086590	0.0248
FEMLAB	0.002365	0.0129
CPI	0.000454	0.2962
BUMI	0.960983	0.0684

Table 4. Result of Error Correction Model.

Variable	**Coefficient**	**p-value**
LNINC	-0.108027	0.0000
LNHCONS	-0.086590	0.0000
FEMLAB	0.002365	0.0000
CPI	0.000454	0.0203
BUMI	0.960983	0.0005

Table 5. F-Bound Test for Error Correction Model.

Test Statistic	Value	Significance level	Lower Bound	Upper Bound
F-statistic	12.36154	**10%**	2.08	3.00
k	5	**5%**	2.39	3.38
		2.5%	2.70	3.73
		1%	3.06	4.15

Based on the result, LNINC are statistically significant on fertility in the short run and long run in which 1% increase in household income reduce fertility rate by 0.108% in both cases. This result supported conclusion from Tang and Tey (2017) that there is a negative relationship between income and fertility rate. However, Idris *et al.* (2018) concluded that fertility rate will increase with the increase of income. This difference is explained by Tang and Tey (2017) that the variation of impact of income on fertility rate is caused by external cause such as inflation that negate different result in different cases. Next, LNHCONS is found to be related negatively with fertility rate in both short run and long run. The result reflected that 1% increase in household consumption expenditure will decrease fertility rate by 0.087% which is in line with Idris *et al.* (2018) that deduced an inverse effect of household consumption expenditure on fertility.

On the other hand, FEMLAB moved together with fertility over time whereby 1% increase of female labor participation will increase 0.0023% of fertility rate in both short run and long run. This result supported the finding from Galloway and Hart (2015), Istihak *et al.* (2018) and Sethi *et al.* (2021) that concluded that there is a direct proportional relationship of female labor participation and fertility rate. Meanwhile, CPI has a positive significant effect in the long run as 1% increase in inflation increase fertility rate by 0.0005% which is similar to the conclusion by He (2018). BUMI is also positively related to fertility rate in the long run in which a 1% increase in percentage of Bumiputera population increase fertility rate in Malaysia by 0.96%. This result supported Subramaniam and Mohd Saleh (2016) that concluded the constant growth of Bumiputera as compared to other races in Malaysia.

In addition, the outcome for Granger Causality test is shown in Table 6. P-values in every table is used to determine the existence of Granger Causality among independent and dependent variables. From the outcomes, LNINC, LNHCONS, CPI and BUMI can be concluded to Granger Cause F and only shows a unidirectional relationship. This means, changes in household income, household consumption expenditure, inflation and percentage of Bumiputera population leads to changes in fertility rate, however changes in fertility will not has any effect on the stated variables. On the other side, FEMLAB and F does not Granger Cause each other in which if there are changes in female labor participation, fertility rate will not be affected and so does the other way around.

Table 6. Result of Granger Causality (p-Value).

Dependent	F	LNINC	LNHCONS	FEMLAB	CPI	BUMI
F	-	0.0599	0.1955	0.2296	0.3286	0.0629
LNINC	8.E-12	-	-	-	-	-
LNHCONS	4.E-07	-	-	-	-	-
FEMLAB	0.9129	-	-	-	-	-
CPI	2.E-05	-	-	-	-	-
BUMI	3.E-05	-	-	-	-	-

5. Conclusion

This study employed the ARDL model to analyze the significant socioeconomic factors that affected fertility decline in Malaysia, both in the short run and in the long run. It can be concluded that only income, household consumption expenditure and female labor force that has a significant relationship with fertility. This may be due to the fact that income and expenditure are closely related to short-term decisions. The lack of accessibility to good financial leads to the decision of being infertile to reduce financial burden and responsibility. In addition, higher female labor force participation indicates a more secure job and income for females. This leads to a better economy in the household. Therefore, the increase in the female labor force influences the decision to be more fertile and have a higher fertility rate.

Meanwhile, in the long run, all variables are significant for fertility. Higher inflation leads to better fertility in the long run. This is because higher inflation indicates a greater future money supply in the nation which relatively reflects a good economy of a nation. Moreover, the population ethnic with the percentage of Bumiputera in the society supports past research that there is a higher fertility rate among Malays since the increase in the Bumiputera portion of the population over time has led to a higher fertility rate.

Some suggestions to prevent the possibility of depopulation in Malaysia are by aiding and encouraging a clear education path, especially for women. This can help them to build a better career, and their labor participation can help to improve the family's economy, which subsequently can affect the fertility decision. In addition, Tey (2020) highlighted the Malaysian government's current effort to incentivize women to get back to work through monthly incentives and tax exemptions. This also can help women to prevent shortcomings over maternity.

Vollset *et al.* (2020) also bring out efforts that have been done by some countries such as Taiwan, Singapore and China that initiated paid maternity and paternity leave, protected re-employment rights and subsidized parents for childcare. This type of effort can also be implemented in Malaysia for a similar purpose of increasing the fertility rate. Logan *et al.* (2019), on the other hand, spotlighted efforts that can be taken by individuals, such as going through fertility counselling to release the fertility burden that came from various factors, one of which is the level of income.

Overall, this study can help further research in understanding fertility behaviour in a classified manner. In addition, policymakers may also benefit from this research as the results could be used as a reference to improvise such policies to ensure the capability of the future labor force and preparedness for any demographic changes, especially the increasing ageing population and declining fertility rates in Malaysia as well as the impact afterwards.

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