

**3rd KANITA POSTGRADUATE INTERNATIONAL CONFERENCE ON  
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Universiti Sains Malaysia, Penang**Women's Informal Employment and Fertility Rate: A Concern On Population  
Growth**Nazurah Binti Abdul Malek\*, Zera Zuryana Idris  
International Islamic University Malaysia\*Corresponding email: [nazurahabdulmalek@gmail.com](mailto:nazurahabdulmalek@gmail.com)**Abstract**

Population growth is a vital component of sustainable development as it ensures the continuity of human capital formation process. There is limited prior research that specifically examines the relationship between women participation in informal activities and the concept of sustainable development. Using the Ordinary Least Square regression method, this paper attempts to study the impact of women participation in informal employment on population growth. Taking the most present statistical update for 47 countries from different regions provided by the International Labour Organisation (ILO), this study found that women involvement in the informal economy does affect fertility rate positively. This provides some support that the nature of women's employment or the kinds of jobs and working conditions provide alternative returns and satisfactions to having children. The result of this study may assist in the formation of the labour policy process to enjoy a sustainable economic growth.

**Keywords:** *Women, Informal Employment, Population, Sustainable, Fertility*

**1. Introduction**

The Malthusian population theory suggests that population growth must be kept low. According to this theory, population growth will force the people to live at the subsistence income level. This pessimistic view on population growth has long been criticized for being unrealistic. Instead, population growth is one of the crucial element of sustainable development. The positive impact of population growth can be perceived from two perspectives. First, it contributes to a bigger labour supply which potentially will boost the national output. Second, it contributes to the increase in demand in the market. It is without doubt that women play an important role in this segment of sustainable development. The world's population growth depicted in Figure 1 has shown some worrying trend. The annual percentage of population growth decrease gradually from 1.7 percent in 1990 to 1.18 percent in 2015. Female's participation in the labour market has been said to affect the fertility rate and a family's childbearing decision. The formal working environment with fixed working hours has forced most households to opt for childcare services. This indicates the costs of having a

child rises as the mother decides to join the labour market. Whereas, informal nature of work often provides some flexibility to the mothers to take care of their children. It is hypothesized that the flexibility attained from the informal working environment is expected to influence the childbearing decision positively. This paper tends to examine the impact of female participation in informal employment on fertility rate empirically. The result of this study may assist in the formation of the labour policy process to enjoy a sustainable economic growth.

## 2. Literature Review

### 2.1 Theoretical Framework

Childbearing decision is a microeconomic decision which takes place at a family level. Similar to other economic decision, such decision normally going through a costs-benefit analysis as well. Microeconomic theory of fertility could be useful to explain such decision made by a family or married couple. The fundamental for microeconomic theory of fertility is the demand for children. According to Fukuda (2016), economic theory of marriage and fertility is classified into two groups: New Home Economics theory and Easterlin's theory. The New Home Economics theory on fertility behaviour was initially articulated by Becker (1960). It assumed the quality of children and budget constraints in terms of allocation of time and opportunity costs. Given these variables, households are assumed to produce consumer commodities (including children) according to the maximization of household utility (De Bruijn, 2006). The model thereby links fertility decisions to other household decisions, including labour force participation and consumption.

In addition to that, Easterlin (1975) highlighted three major determinants of fertility namely income, the relative price of raising a child and the subjective preferences for children compared with goods. Easterlin's hypothesis identifies that the positive relationship between income and fertility is dependent on relative income. This "relative cohort size" or "relative income" model completes the usual assumption that the reduction in fertility rates results from changes in the female labour force participation, by empathizing that all behavioural changes are, at least partly, a response to the relative income (Doliger, 2004).

### 2.2 Empirical evidence

Both in theoretical and empirical literature, fertility receives great attention as it interrelates with economic development. Economic growth appears at the beginning of the high

fertility rate, however, with the acceleration of economic growth, the fertility rate declines (Li, 2016). Economic changes have the greatest impact on reducing family size, and thus slowing population growth, compared to other factors (Weintraub, 1962; Hartmann, 2010; University of Missouri-Columbia, 2013). In some countries, lower fertility has helped stimulate the economy by reducing the number of dependents relative to the productive population, lightening the burden on educational facilities, and encouraging women's labour force participation (Robey, 1991; Ashraf., Weil & Wilde, 2013). This then suggests to the idea of the cost of raising a child.

The relative cost concept by Easterlin (1975), which previously explained, seems capable of contributing to the understanding of why fertility failed to decline in the early stages of so many countries' development, and it also partly explains the ultimate secular fertility decline (Lindert, 1980). For example, in the case of Japan, Masako (2004) found that the cost of children showed statistically significant negative effects on fertility as the high cost of educating and raising children is one of the causes of the fertility decline in Japan.

Further, increasing number of women in the labour force is strongly related to the growth of female participation in higher education and also the growing numbers of mothers re-entering the labour force or remaining in employment. However, OECD (2011) reported that in all OECD countries, a much larger share of female employment is part-time when compared with male employment, with the OECD average for women at 21.7% compared with only 4.4% for men. A study by Ariza, De la Rica Goiricelaya & Ugidos (2003) shows that for working women, the part-time schedule affects fertility positively in Belgium, Germany, Ireland, Italy and The Netherlands, given that women that make use of this possibility are, *ceteris paribus*, more likely to have a child. This suggests that working at atypical times or flexible work environment affects women's childbearing decisions (Čipin & Međimurec, 2013; Cole 2006).

Besides that, the empirical findings of the study by Subramaniam & Mohd Saleh (2016) reveal that in the case of Malaysia, women in the informal working sectors tend to have more children. The informal working sector in their study refers to women working in jobs which are more flexible in nature and most of them were self-employed (owning small businesses). The issue of women in informal employment has attracted much public attention. Informal employment was not a choice for many women who entered the informal labour market due to human capital constraints and family responsibilities (Rodin et al., 2012). To some extent, this

is also related to women's self-selection to employment in sectors with family-friendly workplace practices or working under less favourable employment conditions.

Likewise, another factor which possibly be the contributing influence of fertility rate is human immunodeficiency virus (HIV) infection where it severely undermines the development prospects. A study by Zaba & Gregson (1997) demonstrates that lower fertility amongst HIV-positive women causes a population attributable decline in total fertility of the order of 0.4% for each percentage point HIV prevalence in the general female population. The disease is decimating human capital and institutions, perpetuating intergenerational poverty and inequality, and threatening the security of populations and countries (Angelo, 2003).

This study focuses more on the determinants of fertility rates especially on the employment of women in the informal sector. This should be a concern when there is a significant overlap between being a woman, working in the informal sector, and being poor or contributing to growth.

### 3. Data and Methodology

There are two main sources of data used in this study which are International Labour Organisation (ILO) and The World Bank. The data on the dependent variable i.e. fertility rate is obtained from The World Bank. Fertility Rate measures the total births per woman. This stands as a proxy for population growth. Given other things constant, an increase in fertility rate should indicate an increase in population as well. To measure the impact of female participation in informal economy on population growth, the percentage of female in non-agriculture informal employment was utilized. To date, this is the best available data to represent the female participation in the informal economy. The data is collected across 47 countries from different regions provided in the ILO most recent statistical update on employment in the informal economy. The data on informal economy are collected through survey initiated by ILO. Therefore the data is very limited and vary between countries. Data on GDP per capita which is obtained from The World Bank is used to represent the level of economic development. Next, the data on women's share of population ages 15+ living with HIV is also obtained from The World Bank. Finally, the Consumer Price Index (CPI) is used as a proxy for costs of living or costs of raising a child.

The study employs a simple cross-sectional Ordinary Least Squares (OLS) Regression Analysis. To measure the impact of female participation in informal economy on the population

growth, the following model is estimated.

$$\begin{aligned} \text{Log}(\text{Fertility Rate}) = & \beta_0 + \beta_1 \text{Percentage of female in Informal employment}_i + \beta_2 \text{Log}(\text{GDP per Capita})_i \\ & + \beta_3 \text{Percentage of female population with HIV}_i + \beta_4 \text{Consumer Price Index}_i + \varepsilon_i \end{aligned}$$

Since the data on female participation in informal economy which is the major interests in the model is very limited, data for all other variables used in the model are collected following the time period as the main variable. Therefore, unlike the usual cross-sectional analysis in which data are collected for across sample at a specific point of time, this study analyse the relationship between the explanatory variables and the dependent variable based on sample-specific time period. To ensure the robustness of the model, all the diagnostics test relevant to the cross-sectional analysis were conducted.

#### 4. Findings and Discussion

The results of a simple cross-sectional OLS regression are presented in Table 1. Our simple empirical analysis shows that female participation in the informal economy does affect birth rate positively. This result is consistent with earlier finding by Subramaniam & Mohd Saleh (2016). This finding can be explained in terms of two point of view. First, the nature of women's employment or the kinds of jobs and working conditions provide alternative returns and satisfactions to having children. Cáceres-Delpiano (2012) while examining the relationship between fertility and mother's employment highlighted that the degree of informality of a job does affect the family size. At a higher fertility rate (3+), mothers tend to sacrifice jobs associated with a higher degree of formality. This kind of jobs is normally associated with specific working schedule. Given this fact, if a mother chooses to work, she must get childcare services. Increase in number of children indicates an increase in the costs of childcare services.

Employing our theoretical New Home Economics theory and Easterlin's theory models, it can be said that satisfaction of having children increases as the cost of raising a child decreases. Secondly, positive relationship between female participation in informal economy and fertility rate can be explained in the another context of microeconomic theory of fertility. A rise in income would lead to a higher budget line and a higher level of satisfaction to have more child. Demand theory of fertility hypothesizes that the true income elasticities for both child quality and quantity are positive but as income increases, however, the couples demand higher quality children (Barro and Becker, 1989).

Apart from female participation in the informal economy, the estimation also presented

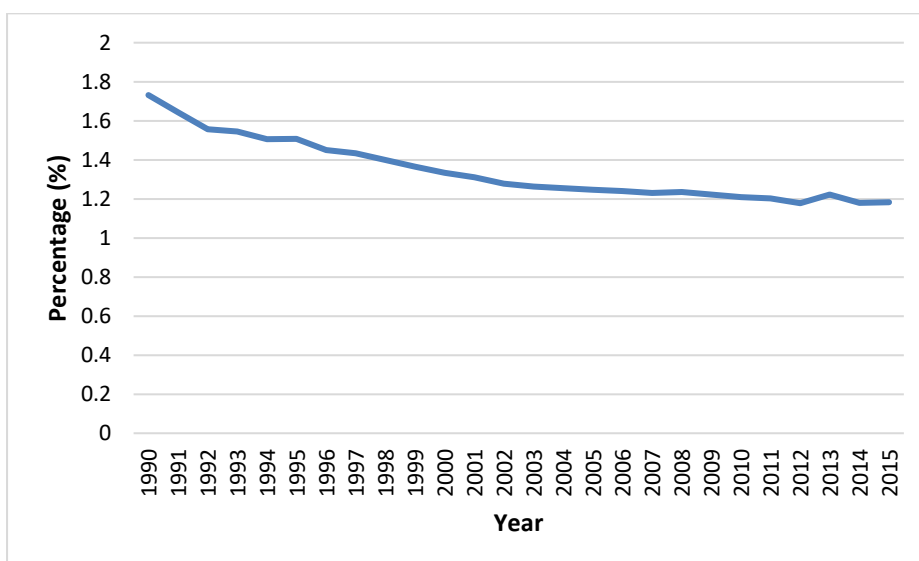
that Gross Domestic Product (GDP) per capita negatively influence the fertility rate. To be specific, as the GDP per capita increase by 1 percent, the fertility rate is estimated to decrease by 9 percent. The negative relationship between GDP per capita and fertility rate was also captured in the previous study by Weintraub (1962), Hartmann (2010), Robey (1991), Ashraf et al. (2013). In most cases, GDP per capita stands best as the proxy for economic development. A higher level of GDP per capita indicates a higher level of economic development. Economic development in this context can be implied as a prosperous economy that offers a lot of job opportunities. Furthermore, women in a developed economy are made competitive in the labour market through education. In other words, the female in developed economy tend to join the labour market which in turn will reduce their intention of having children.

Another important determinant of fertility rate is the health condition of the female population. The finding suggests that HIV affects fertility rate positively. This finding is in line with Zaba & Gregson (1997) and Angelo (2003). The disease is destroying human capital and institutions, extending poverty and inequality, and threatening the safety of populations and growth of countries.

Finally, the intention of having children is often associated with the cost of raising a child. Consumer Price Index which was used as a proxy for costs of living fails to exhibit a significant relationship with the fertility rate.

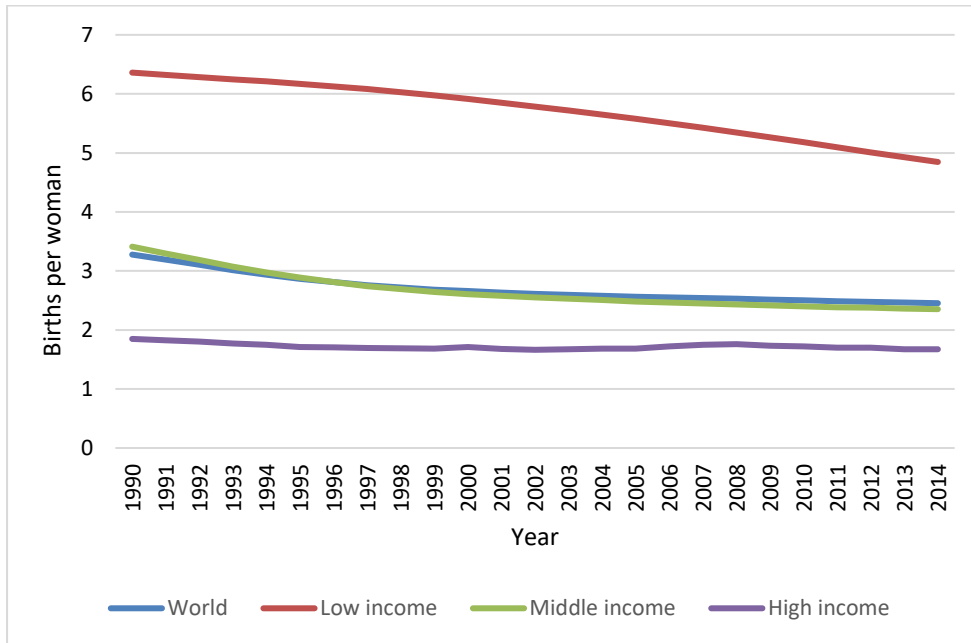
#### 4.1 Tables and Figures

Figure 1: World's Population Growth



Source: World Development Indicator, World Bank

Figure 2: Fertility rate



Source: World Development Indicator, World Bank

Table 1: Results of Ordinary Least Squares Regression

Variables	Coefficients
Percentage of female in non-agricultural Informal employment	0.006952** (0.002062)
GDP per Capita	-0.094809** (0.044933)
HIV	0.014955** (0.003319)
Consumer Price Index	0.009834 (0.006674)

\*\* Significant

## 5. Conclusion

This study attempts to measure the impact of female participation in informal economy which is often associated with the flexibility in working hours on the fertility rate. We argue

that the flexible working hours increase the tendency to have children. Informal jobs allow women to take care of their children while working. Such scenario acts as an incentive for women to bear a child. The results of this study indicate that female participation in the informal economy affects fertility rate positively. This finding supports the fact that the nature of female employment does affect the fertility rate and thus the population growth. A more flexible and supportive working environment for female could ensure the stability of population growth in a nation.

This study should serve as the preliminary empirical analysis of the impact of female employment's nature and population growth. It could be enhanced further by using a wide range of data. Questionnaire survey involving the female in informal economy might provide a link between the microeconomic decisions of having children with the macroeconomic consequences of population growth.

## 6. References

- Angelo, V. (2003). HIV/Aids, Population and Sustainable Development. *Cadernos de Estudos Africanos*, (4), 99-120.
- Ariza, A., De la Rica Goiricelaya, S., & Ugidos Olazabal, A. (2003). The effect of flexibility in working hours on fertility: A comparative analysis of selected European countries.
- Ashraf, Q. H., Weil, D. N., & Wilde, J. (2013). The effect of fertility reduction on economic growth. *Population and development review*, 39(1), 97-130.
- Barro, R. J., & Becker, G. S. (1989). Fertility choice in a model of economic growth. *Econometrica: journal of the Econometric Society*, 481-501.
- Becker, G. S. (1960). An economic analysis of fertility. In *Demographic and economic change in developed countries* (pp. 209-240). Columbia University Press.
- Cáceres-Delpiano, J. (2012). Can we still learn something from the relationship between fertility and mother's employment? Evidence from developing countries. *Demography*, 49(1), 151-174.
- Čipin, I., & Međimurec, P. (2013, January). The impact of atypical working hours on fertility intentions across Europe. In *XXVII International Population Conference*.
- Cole, G. A. (2006). Flexibility and the workplace: The battle to control working time. *International Journal of Law and Management*, 48(6), 536.
- De Bruijn, B. J., & De Bruijn, B. J. (2006). *Fertility: theories, frameworks, models, concepts*.



na.

- Doliger, C. (2004). The Easterlin Hypothesis. *Historical Social Research/Historische*
- Easterlin, R. A. (1975). An economic framework for fertility analysis. *Studies in family planning*, 6(3), 54-63.
- Fukuda, N. (2016). Economic and Ideational Theories of Marriage and Fertility Behaviour. In *Marriage and Fertility Behaviour in Japan* (pp. 11-39). Springer Singapore.
- Hartmann, A. M. (2010). *Fertility and economic growth: how does the fertility rate influence economic growth in developing countries* (Doctoral dissertation, dissertation]. Denmark: Aarhus School of Business, University of Aarhus).
- Li, Y. (2016). The Relationship between Fertility Rate and Economic Growth in Developing Countries.
- Lindert, P. H. (1980). Child costs and economic development. In *Population and economic change in developing countries* (pp. 5-80). University of Chicago Press.
- Masako, O. (2004). *The Effect of the Cost of Children on Recent Fertility Decline in Japan* (No. 221). Center for Intergenerational Studies, Institute of Economic Research, Hitotsubashi University.
- OECD (2011), *Doing Better for Families*
- Robey, B. (1991). Economic development and fertility decline: lessons from Asia's newly industrialized countries. *Asia-Pacific population & policy*, (16), 1.
- Rodin, D. L., McNeill, K., Vite-León, N., & Heymann, J. (2012). Determinants of informal employment among working mothers in Mexico. *Community, Work & Family*, 15(1), 85-99.
- Subramaniam, G., & Mohd Saleh, N. (2016). Does Work Environment Impact Fertility Rate? A Comparison between Formal and Informal Sectors in Malaysia. *Journal of Emerging Economies & Islamic Research*, 4(1).
- University of Missouri-Columbia. (2013, April 30). Economics influence fertility rates more than other factors. *ScienceDaily*. Retrieved October 26, 2016 from [www.sciencedaily.com/releases/2013/04/130430161940.htm](http://www.sciencedaily.com/releases/2013/04/130430161940.htm)
- Weintraub, R. (1962). The birth rate and economic development: An empirical study. *Econometrica: Journal of the Econometric Society*, 812-817.
- Zaba, B., & Gregson, S. (1997). Measuring the impact of HIV on fertility in Africa. *AIDS (London, England)*, 12, S41-50.