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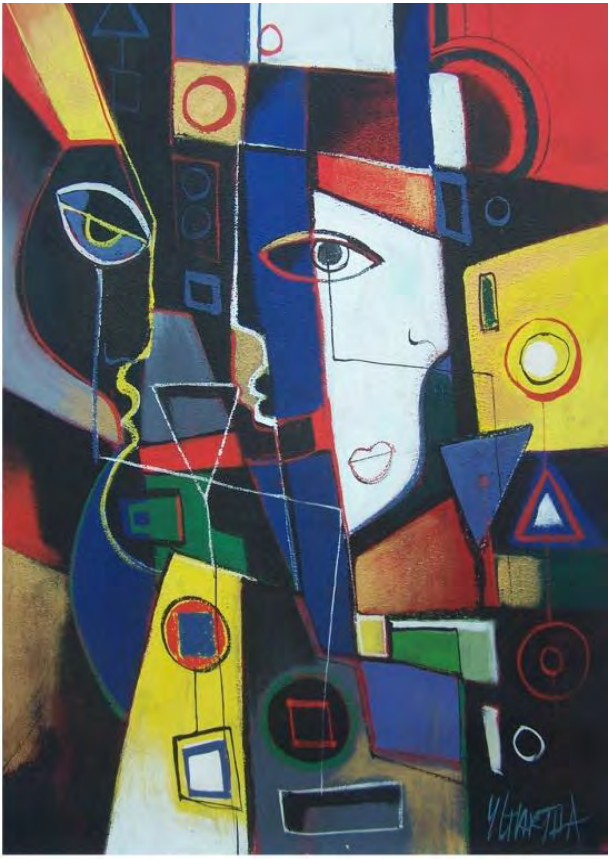
Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía, Lingüística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Año 35, 2019, Especial N° 21

Revista de Ciencias Humanas y Sociales
ISSN 1012-1587/ ISSNe: 2477-9385
Depósito Legal pp 198402ZU45



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Opcion, Año 35, Especial Nº 21 (2019):*2899-2921*
ISSN 1012-1587/ISSNe: 2477-9385

The Analysis of Fiscal Policy and Fertility in Regency and City Governments in Indonesia

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Abstract
This research aims to analyze whether fiscal policy affects fertility in Regency and City Governments Indonesia using panel data covering the time frame from 2007 to 2017, a cross-section of 432 regency and city governments in Indonesia. Increases in regional expenditure, regional debt, and regional budget deficits affect fertility decisions during the business cycle. However, regional deficit is due to the high fertility in 432 regency and city governments in Indonesia. Households feel immoral to increase child demand as long as the provincial government is highly in debt and deficit due to low regional income. They do not want to burden future debt to their children and avoid sustainable regional fiscal deficits.

Keywords: total fertility rate, local revenue, regional expenditure, regional debt, regional deficit

El análisis de la política fiscal y la fertilidad en los gobiernos de regencia y ciudad en Indonesia

Abstracto
Esta investigación tiene como objetivo analizar si la política fiscal afecta la fertilidad en los gobiernos de regencia y municipales de Indonesia utilizando datos de panel que cubren el período de tiempo de 2007 a 2017, una sección transversal de 432 gobiernos de regencia y municipales en Indonesia. Los aumentos en el gasto regional, la deuda regional y los déficits presupuestarios regionales afectan las decisiones de fertilidad durante el ciclo económico. Sin embargo, el déficit regional se debe a la alta fertilidad en 432 gobiernos de regencia y municipales en Indonesia. Los hogares se sienten inmorales para aumentar la demanda de niños, siempre y cuando el gobierno provincial tenga una gran deuda y déficit debido a los bajos ingresos regionales. No quieren cargar la deuda futura de sus hijos y evitar déficits fiscales regionales sostenibles.

Palabras clave: tasa de fertilidad total, ingresos locales, gasto regional, deuda regional, déficit regional

I. Introduction

Fiscal policy is closely related to taxation because it influences the economy. If taxes are reduced, people's purchasing power will increase, and the industry can increase its products and vice versa. Meanwhile, according to the Ricardian Equivalent theory, the impact of tax reduction done by the government through tax cuts and the state budget is funded using debt does not affect consumption because citizens are rational. Therefore, reducing taxes does not directly increase consumption and investment (Ministry of Finance, 2012). Fiscal policies implemented in Indonesia as a developing country are expansive policies using the budget deficit instrument. The deficit is caused by inadequate income to finance increased government expenditure--one of which is the increase in government subsidies--despite encouraging investment and interest rates. So, an expansionary fiscal policy with a deficit in budget will not cause long-term problems. Formulating an appropriate and controlled budget financing strategy is important to maintain healthy, credible, and sustainable budget (Romer and Abhimanyu, 2011).

The national debt ratio/GDP, the government budget deficit ratio /GDP, the

tax income ratio/GDP, and the government expenditure ratio/GDP affect fertility decisions in developed countries. Therefore, increasing government expenditure can reduce the numbers of children living in households, result in the recent budget deficit, and lead to tax burden in the future (Zaid, 2013). Increasing tax rates will stabilize debt ratio to GDP in that increase in tax revenue will bring about sustainable fiscal policies. In Japan and Europe, the simulation of reducing fertility through special government expenditures for children exceeds long-term fiscal costs by increasing tax rates, but the system is very different in other countries (Doi, 2011).

Increasing income means increasing the quantity and quality of children although the elasticity of the number of children is smaller than the elasticity of the quality. Fertility is influenced by income related to gender in that the lower a man earns, the lower a child demands (income effect). On the other hand, a decrease in women's income has an ambiguous effect due to income effects contrary to the substitution effect in child demand. The previous study examines the effects of fertility both on economic growth and the number of female workers. By presenting a positive feedback model from low fertility to higher per capita output, women's salaries and participation rates are relatively higher in the workforce causing low fertility. Therefore, Zaid (2013) suggests a feedback effect between economic activity and fertility. Jones (2011) finds that fertility theory explains that there is a poor relation between fertility and income. Some empirical studies state that countries with high GDP have low fertility and vice versa. Differences in several countries around the world are due to their economic activities (Cervellati, 2016). A low economy can be caused by a dependency ratio because the non-productive age populations are higher than the productive populations that affect the fiscal deficit. Reducing fertility is an important factor in economic development (Rajagukguk, 2010 and Ashraf, 2013). The government needs to increase child-care subsidies through lump-sum taxes and influence household income to reduce government expenditures (Rosaria, 2013). China successfully applies the one-child policy continuously to solve the problem of economic growth because the female population spends its productive age to conceive, to give birth, and to take care of babies all of which cause difficulties to gain income. As a result, it may overcome the problem of high outcomes and cause serious fiscal deficits problems for the country (Zhao, 2011; Fyustiazari, 2014; Yang and Wang, 2011). At the same time, assessing the economic impact of the one-child policy is not a welfare impact. Families can have more children because children can increase the parents' utility despite possible reduction in in-

come per capita and economic conditions. So, the decision to have children depends on the economic conditions of a household (Benoit, 2015; Oguro, 2011).

Regional fiscal development shows that regional expenditure of each province in Indonesia has increased, but it is lower than income. To cover it, they perform debt between regions in Indonesia. The budget deficit continuously done by the provincial government will lead to bad fiscal sustainability. The impact of regional fiscal policies can affect the population in a region. Whereas, the development of the National Total Fertility Rate (TFR) in 2017 reached 2.4. It is the result of the provisional report on Indonesia demographic and health survey (SDKI) so that until now the Indonesian government has not reached the TFR target of 2.1. Adioetomo reveals how the total fertility rate (TFR) was 2.1 and the impact on the fiscal (BKKBN, 2018). To achieve the targeted rate of 2.1 in 2015 contraceptive prevalence rate (CPR), equality in family planning must be 75.37% and is likely to be achieved by 2031 (Nur'aini, 2012). Out of 432 regency and city governments in Indonesia, the TFR among regency and city governments with the value as targeted nationally to be 2.10 is 20.60% while the remainings have TFR value of between 2.1 and 5.08 in 2017. To achieve the National TFR, the government will need more effective and efficient regional fiscal policies that can affect fertility decision. This research is only focused on the effects of economic activity on fertility in regency and city governments. Based on the information above, fiscal policy factors have an impact on fertility, but the impact size in each region is different. However, there is still no research on how fiscal policy factors affect fertility. The fiscal policy of the provincial government in Indonesia is expected to provide a stimulus in sustainable and quality fertility decisions. This study uses regional fiscal policy factors such as regional income, regional expenditure, regional debt, and regional deficits. Regarding fertility, this study uses the TFR in regency and city governments in Indonesia during the cycle period. Therefore, this study can explain regional fiscal policy variables such as regional income, regional expenditure, regional debt, and regional deficit that affect fertility (TFR) in regency and city governments in Indonesia.

II. Literature Review

Regional fiscal policy is realized by giving funds, special autonomy and alignments, as well as instruments to increase regional income that is potential for regional governments. Also, the central government allocates ministries' budget to implement deconcentration and supporting tasks (Akmad, 2012). Proper implementation of fiscal policy is a very power-

ful instrument to reduce the business cycle. At the same time, the wrong implementation of fiscal policy will cause new problems during economic uncertainty, and even worse. In Indonesia, the form of the new regional fiscal is distributed on the expenditure funded through transfer funds to the regions based on the needs and priorities of each region. But, regional fiscal for the revenue has not been implemented clearly that the central government still controls most of the tax base. Fiscal policy is an effective instrument to influence macro aggregate in the long term. Newer growth models raise the interest in fiscal policy as an effective instrument for encouraging economic growth (Gallo, 2011). Enough revenue from local governments may reduce the growth rate by central transfers. In Nigeria, Lesotho, and the Philippines, a long-term relationship is found between national income and government expenditure (Thamae, 2013). Whereas Udeaja (2015) found in Nigeria that health spending has a negative effect on economic growth.

An increase in tax revenue can reduce GDP while state expenditure can directly increase GDP growth in Indonesia. Low employee productivity is shown by low education and health conditions in several developing countries. Low productivity causes a nonoptimal output and difficulties in increasing economic growth. China is a country with a great number of employees that can increase economic growth (Rini, 2015). Floden (2013) said the new fiscal framework can increase public finances but a high budget surplus and GDP growth show one-third of the decrease in debt ratio. Doi, et al. (2011) found that Japan increases tax rates to stabilize its debt ratio to GDP because it can sustain the fiscal policy. The main problem in managing the country's finances faced by Indonesia is the low tax revenue compared to government spending needs resulting in an increased budget deficit. The balance of fiscal policy must stimulate consumption by addressing the needs of growing populations (Park, 2010). The government can solve the fiscal gap by changing deficit financing policies, step-by-step policy changes through increasing full pension age, increasing maximum taxable income for payroll taxes (Nishiyama, 2015). Policy reformation can adjust for smaller or better tax contributions, then this policy aims to reduce fertility in China (Coeurdacier, 2013). If the interest rate elasticity for child support is nearly zero and the debt accumulation in the economy is high, it is an inefficient economy that shows the financing of child support programs by issuing debt and using a lump-sum tax (Ishida, 2015). Tax incentive policies have a strong influence on fertility with some evidence of various responses (Baudin, 2013). An increase in childbirth is affected by

reformation. The first birth is usually higher than the next birth but this increase cannot be explained by differential trends or macro factors (Brewer, 2009). The fertility rates of married white women are different. But, there is still no evidence of differences in married women with high fertility rates compared to single women with low fertility rates. Increasing fertility and immigration are not deemed effective for fiscal challenges (George Kudrna, 2015).

Lower fertility results in higher labor ratio using an abstract model of taxation. The aim of increasing taxes and social assurance contributions is needed to balance the government budget (Kulish et al, 2010). But Fehr et al. (2008) found that low capital reflects a significant increase in salary and income tax rates by the multiregional OLG demographic model. In Canada, the government provides benefits for pregnant women through a tax system levied from public consumption taxes (Oguro, 2011; Benoit, 2015; Fehr and Ujhelyiova, 2010). They assume that children are not as costly to the family, but are investments for the whole community. Increased fertility depends on the family policy on how to address the problem of high economic activity on the number of children desired. But there is a need to increase child allowance so that the better quality of welfare of present and future generations.

Longevity has a direct utility effect while fertility does not. High birth rates result in fiscal increase (Andersen, 2012). In developing countries fertility has a negative relationship on human development but is positive on income. Human development and higher education and a healthy population lead to lower fertility rates, which can cover gaps with developed countries' economies (Hafner and Foulkes, 2013). This fiscal policy instrument stimulates an increase in births. Incremental births and additional immigrants can help alleviate the fiscal situation in a long period (Ronald, D; (Kudla, 2014, 2018). Chamon and Prasad (2010) limit family loan capacity and interactions between demographics and public spending on education through government budget constraints. An increase in government spending will bring a decrease in fertility. Fertility has a small effect on microeconomics compared to macroeconomics because household time allocation decisions limit the function of the fertility impulse response. As a result, an increase in government spending negatively through subsidies (Graneli, 2016). Fertility has a reverse cyclical nature, because when childbirth costs increase then fertility will decrease because the state does not facilitate pension subsidies children, so they delay giving birth untill they improve economic conditions and have stable incomes (Orsal, 2010).

Whereas Kudla (2014) stated that with exogenous fertility, households can determine the maximum number of children owned to avoid high household financial incentives due to increased birth rates. Financial incentives are very important for the probability of giving birth in Quebec and ROC. Then, Gori (2017) said that fertility depends on culture, beliefs, and social norms specifically related to institutions or ethnic groups followed by linguistic and religious contours. Hadiyanto (2017) stated that in West Java, the higher the level of the household economy, the lower the fertility level because parents begin to prefer higher quality children. Mahendra (2016) concluded that education is very important for women in fertility in Indonesia because people with higher education realize their lower fertility. In contrast to Pungan (2016), there is no difference between women with junior and senior highschool and above, between work at home and outside the home on fertility in the city of Palangkaraya in terms of poor households.

Arsene Dumont in Hadiyanto (2017) wrote an article titled Depopulation et Civilisation which discusses a theory called social capillarity in that a person wanting to increase his position or improve his socio-economic situation will decrease the desire to give birth or have children, which in turn suppresses birth rates indirectly. The first birth as a measure of the fertility capacity of parents positively influences the number of children. Low fertility makes children educated, have good skill, and professions with high incomes indicating there is an exchange between the quantity and quality of children in the UK during the industrial revolution supporting modern economic growth theories (Galor, 2011; Klemp, 2017). Bloom (2009) argues that the low fertility rate in Spain is caused by high numbers of unemployed women.

III. Theoretical Model

In the context of development, the Regional Government Budget policy is expected to respond to both economic development and people's lives, so a flexible fiscal policy is needed (Abhimanyu, 2011). The influence of fiscal policy on fertility is based on the business cycle model. This research model is a modification of Zaid (2013), using a business cycle model with moral behavior on the demand for children by determining the optimal number of children in heavily-indebted regions or central-dependent regions with the reason that giving birth in the worst economic conditions so that children will not bear the debt in the future. The problem is the ability of

households to maximize utility functions. In the household sector, maximizing lifetime utility is obtained from consumption (ci,t), employee (li,t), kids (ni,t) and moral behavior or household responsibilities (mi,t). Then in the next period, access to risky of government bonds (bi,t) by paying real interest rates (rt). This study replaces the labor income tax rate into consumption tax τ_t^w. The Consumption Tax Model is taken from the Kudla study (2018) that households will pay consumption tax rates on total regional income derived from community labor income (wt li,t) with the real interest per hour (wt), and cost to grow a child (qt).

Households are assumed to act morally so that utility (k) is obtained outside of this research model. But the utility will decrease because the actual children's choice (ni,t) will deviate from the optimal number of children (nt*). Then the household needs to know the optimal number of children based on its utility function in determining the child demand (mi,t= m (ni,t, nt*)). The household is responsible for the child's demand is greater than 0 (mi,nt > 0) and the number of children is greater than the optimal number of children (ni,t > nt*). So, this problem is formulated as the following equation.

$$\max\{c_{i,t}, l_{i,t}, n_{i,t}, m_{i,t}, b_{i,t}\}_{t=0}^{\infty} E_0 \sum_{t=0}^{\infty} \beta^t U(c_{i,t}, l_{i,t}, n_{i,t}, m_{i,t}) \quad (3.1)$$

forming

$$c_{i,t} + b_{i,t} + q_{i,t} n_{i,t} - (1 - \tau_t^w) w_t l_{i,t} + (1 + r_{t-1}) b_{i,t-1} \quad (3.2)$$

u ($c_{i,t}$, $l_{i,t}$, $n_{i,t}$, $m_{i,t}$) is a function of the period utility and β is the subjective discount factor of the household. So, an optimization can generate the following conditions in the equation:

$$-\frac{u_{l,t}}{u_{c,t}} = (1 - \tau_t^w) w_t \quad (3.3)$$

$$u_{ct} = \beta(1 + r_t) E_t (u_{ct} + 1) \quad (3.4)$$

$$u_{nt} = u_{c,t} q_t - u_{m,t} m_{n,t} \quad (3.5)$$

Equations (2.3) and (2.4) show labor standards and Euler consumption conditions. Then equation (2.5) sets the number of requests for children in this model. The number of children in this model is a function of consumption, the cost of growing a child, and household moral considerations in determining children as their responsibility. Problems in the household are the assumption of a tax on consumption while empirical analysis focuses on total regional income consisting of local tax revenue, regional non-tax revenue, and central transfer revenue. The total tax burden of households in a lump sum is in accordance with the total regional income collected by

the local government.

From this equation, taxes do not affect optimal condition in households. In taxation, the tax burden is introduced as regional income. Regional income is the only source of tax in this model to maintain focus on moral behavior, and it is in line with Jones' (2011) discussing it as empirical evidence on the quality-quantity tradeoff in this study combined into one. According to Galor (2011) and Klemp (2017), the theory of long-term growth sets a tradeoff between quantity and quality of children because technological advances encourage parents to increase investment in their children by reducing the numbers of their children. However, all costs of growing children can be seen as accounting, including the costs of having high-quality children can be obtained through regional spending following fiscal policy rules. In the production sector, working households will produce products, and also, they will earn income used to meet current and future needs. So, in the production sector, the company employs labor to produce output (yt) with the following technological equation.

$$y_t = f(l_t) \tag{3.6}$$

Then company will select employeess to maximize it:

$$\max \{l_t\}\infty_{t=0} \sum_{t=0}^{\infty} [f(l_t) - w_t l_t] \tag{3,7}$$

By maximizing profits, the company formulates the following standard labor demand conditions:

$$f_{l,t} = w_t \tag{3.8}$$

It shows that the equilibrium product of labor is equal to real salaries. This equation and equation 3.3 is used to determine the balance in the labor market. Then in the market-clearing, there is a balance of regional expenditure in the following equation:

$$\tau_t^w w_t l_t + b_t = g_t + (1 + r_{t-1})\, b_{t-1} \tag{3.9}$$

With the exogenous process of gt, rt dan τ_t^w, the competitive balance will be as the sequence (bt, ct, lt , nt , qt, wt). Competitive balance is general because of three exogenous processes. In combination, there is a consideration of the economic response to shocks to gt and lt individually by keeping other factors to be constant. Because households behaving morally (mt) are determined by the

number of children (nt), the value of the previous variable follows the last value, so the moral behavior of the household (mt) is not included in the competitive balance. Finally, the total productivity factor is assumed to be constant so as to know the impact of fiscal policy in influencing fertility on regency and city governments in Indonesia by forming functional and assuming utility functions for the next period in households. By inputting equations (3.4) into (3.11), the following equation thus be:

$$u_{nt} = \left(\beta(1+r_t)E_t\,(u_{ct}+1)\right)\left((1-\tau_t^w)g_t + (1+r_{t-1})\,b_{t-1} - b_t l_{i,t} + (1+r_{t-1})b_{i,t-1} - c_{i,t} + b_{i,t}\right) \quad (3.10)$$

Here are three cases corresponding to the expansionary fiscal policy: firstly, the government must increase spending without changing the tax rate of workers because there is no increase in regional income; secondly, the government must reduce consumption tax rates without changing regional spending, increasing spending and cutting consumption tax rates simultaneously. It affects local government deficits especially local government debt. Different from regional spending and regional income, debt and regional deficits are not exogenously determined by the optimal household because they are determined endogenously in the model. Then the impact of fiscal policy on local governments in the fertility decision is assumed to be in the constant real interest rate (r) to form the following equation:

$$u_{nt} = \left(\beta E_t\,(u_{ct}+1)\right)\left(g_t - b_t l_{i,t} - \tau_t^w g_t + \tau_t^w b_t l_{i,t} - c_{i,t} + b_{i,t}\right) \quad (3.11)$$

From equation (3.12) the child utility function is determined by fiscal policy measured by regional income, regional expenditure, regional debt, and regional deficit. Kudla (2018) said that fiscal policy spurs fertility through an increase in consumption tax of goods consumed by adults. Consumption tax in this study is classified as indirect tax, which is deducted from goods and services in the provincial government. Meanwhile, evaluation on the impact of fiscal policy on fertility in regency and city governments in Indonesia is in equation (3.12) by fiscal policy variables in the region such as regional income (PD), regional expenditure (BD), regional debt (UD) and regional deficit (DD) and the fertility variable used is the Total Fertility Ratio (TFR), the equation is as follows:

$$U_{nt} = f(\,PD,BD,UD,DD) \quad (3.12)$$

To expand the business cycle model variables towards fertility decisions, the basic model in equation (3.12) is transformed to be a linear relationship that can be analyzed using econometrics as follows:

$$TFR = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots\ldots \beta_n X_n + \varepsilon \quad (3.12)$$

IV. Results

In panel data analysis, the first step is to choose the best model from the three models, namely Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM). In addition to the Chow test and the Hausman test, a statistical value comparison will also be used on each model to strengthen the test results that the selected model is the best. The chow test result is as follows:

Table 3.1. Estimated Regression Results of Panel data Model with Chow Test At Municipals and City Goverment in Indonesia

	TFR	
Model	**Chow Statistic Test**	**Prob cross-section chi-square**
Model	46.33	0.0000
Model	40.25	0.0000

The result of the chow statistic test value model 1 is 46.22 and model 2 is 40.25 with prob.cross-section chi-square value of 0.0000 <0.05 meaning that FEM is more appropriate than PLS. The next step is hauman test with the following result.

Table 3.2. The reggression results of Municipals in Indonesia

	TFR	
Model	**Uji Hausman Test**	**Prob cross-section chi-square**
Model	42.65	0.0000
Model	108.42	0.0000

Based on the table above, the value of the hausman test model 1 is 42.65 and model 2 is 108.42 with a random cross-section prob value of 0.0000 <0.05. Therefore, it can be concluded that FEM is more appropriate than REM. Thus, it is not necessary to continue with the LM test. Thus, we use panel data regression with the Fixed Effect Model (FEM). The following is the FEM panel data regression re-

sults.

Table 3.3. Estimated Regression Results of Panel data Model At Municipals and City Goverment in Indonesia

Variabel	Coefisien Model 1	Coefisien Model 2	TFR Model 1	TFR Model 2
Constanta	4.526	2.274		
Log PD	-0.027	-0.030	-0.38 (0.706***)	-0.42 (0.678***)
Log BD	-0.329	-0.346	-4.06 (0.000*)	-4.26 (0.000*)
Log UD	0.019	0.017	2.92 (0.004*)	2.65 (0.008*)
Log DD	0.026	0.026	2.50 (0.012*)	2.55 (0.011*)
Log AHH		1.161		3.25 (0,001*)
Log Pend (Pendidikan)		-0.078		-0.68 (0.497***)
Log Penddk (Penduduk)		0.056		0.88 (0.381***)
F-test		66.18 (0.000*)		39.59 (0.000*)

*** = *Significant value at 10%,* ** = *Significant value at 5%,* * = *Significant value at 1%*

Then the panel data regression results will be obtained by the Fixed Effect Model, the equation is as follows:

Regression Equation Model 1:

$$TFR = \beta_0 + \beta_0 + \beta_1 \log PD + \beta_2 \log BD + \beta_3 \log UD + \beta_4 \log DD + \varepsilon \quad (3.13)$$

$$TFR = 4{,}526 - 0{,}027 \log PD - 0{,}329 \log BD + 0{,}019 \log UD + 0{,}026 \log DD$$

Regression Equation Model 2:

$$TFR = \beta_0 + \beta_0 + \beta_1 \log PD + \beta_2 \log BD + \beta_3 \log UD + \beta_4 \log DD + \beta_5 \log AHH + \beta_6 \log Pend + \beta_7 \log Pddk + \varepsilon \quad (3.14)$$

$$TFR = 2{,}274 - 0{,}030 \log PD - 0{,}346 \log BD + 0{,}017 \log UD + 0{,}026 \log DD + 1.161 \log AHH - 0{,}078 \log Pend + 0{,}056 \log Penddk$$

The results of the fixed effect in equation model 1 show that regional spending has a negative effect. Meanwhile, regional debt and regional budget deficits have a positive and significant effect on the total fertility rate in 432 regency and city governments in Indonesia while regional income has no negative and no significant effect. Whereas, by equation model 2, regional expenditure has a negative effect. Then regional debt, regional budget deficit, and life expectancy have a positive and significant effect while regional income and education has no negative effect. The population has no positive effect and is not significant to the total fertility rate in 432 regency and city governments in Indonesia.

Low regional income does not affect fertility decisions caused by the inability of households to pay taxes to regency and city governments. People spend to meet their consumption or their income is still low so that they are unable to pay taxes. Kulish et al. (2010) found that the lower fertility is, the higher labor ratio will be. So, their income increases, which can finally increase regional income through local taxes. On the other hand, Oguro (2011) and Benoit (2015) argued that to increase consumption tax, Canada provides allowances for pregnant people through a tax system that is levied from public consumption taxes. So the government must achieve the consumption tax or local tax target to increase regional income. This study is not in line with Kurt A.David (2013) Zaid (2013) and Kudla (2018) that income is strongly influential in birthrates. Children are future human resources and state assets in increasing income by taxes. The higher the regional income is, the lower the TFR will be. Regional income in Indonesia is still low that the TFR and birthrates are higher. Then, the low education does not affect fertility decisions. Education is measured by the average duration in school. The low average number of years spent in school in regency and city governments in Indonesia result in a small number of people going to college. As a result, the TFR is still high in regency and city governments in Indonesia. This research is not in line with Hadiyanto (2017) and Mahendra's (2016) revealing that education greatly influences birth rates, because educated people will plan a small number of children with optimal quality rather than having many children but not qual-

ified. A booming population makes fertility higher. This will jeopardize fiscal policy because it makes the non-productive population increase and can also jeopardize regional spending if the increase in regional income is not proportional to regional expenditure. In Indonesia, it is still impossible to issue a fine policy if every family has more children than the government expects. Indeed, this policy violates human rights. This is the policy of Todaro and Smith (2011). Based on the opinion of Galor (2011) and Klemp (2017), low fertility makes children well-educated, have great skill, and high-income professions. It shows that there is an exchange between the quantity and quality of children in the UK during the industrial revolution, supporting the theory of modern economic growth.

High regional expenditure does not affect--and is significant to--the TFR but the equivalent of Ricardian theory in the provincial government in Indonesia is not applicable. Households do not care about the policies made by the government to increase regional spending and do not make household decisions to reduce child demand. As a result, the TFR in regency and city governments in Indonesia is still high. This study is in line with Lucia G (2016) who wrote that an increase in birth rates has a negative effect on expenditure. This is due to regional spending used by the government not to improve the quality of health and education but for infrastructure development. Regional debt has positive and significant effect on the TFR. The higher the regional debt and deficit are, the lower the TFR will be. But, regency and city governments' debt used to cover regional spending does not make households reduce their fertility. There are no household contributions to help government policies, so an expansionary fiscal policy with a business cycle model will aggravate the economy. In line with Zaid (2013), moral householders will not increase children demand because the country is in a period of increasing debt and national deficits. Regional deficits have a positive and significant effect on the TFR because fertility in regency and city governments in Indonesia is still high. As moral households which contribute to the government, they should control the demand for children as long as the provincial government is in a high deficit due to low regional income.

V. Conclusion

Based on the results regarding the effect on TFR in 432 regency and city governments in Indonesia, the fixed effects in equation model 1 are that regional spending has a negative effect while regional debt and regional budget deficits have a positive and significant effect. However, regional income has no negative and significant effect. Whereas in equation model 2, regional spending has a negative effect, while regional debt, regional budget deficit, and life expectancy have positive and significant effects. On the other hand, regional income and education have no negative effect, while the population has no positive effect and is not significant. Households spend their consumption for more children and it causes their children to pay high taxes in the future on policies made by the government to cover debts due to regional income deficits. Therefore, the Ricardian Equivalent theory does not apply to this research. The business cycle model in developing countries can be used based on moral household behavior which will not burden the children to cover sustainable regional deficits. In this study, the provincial government issues a policy for families whose children are more in numbers than it is that the government policy has required. But, this policy does not violate human rights. So, this policy can reduce the TFR in Indonesia because low fertility makes children educated, have skilled jobs, and professions with high incomes, thus increasing economic growth. The business cycle model in developing countries can be used based on moral household behavior which will not burden the children to cover sustainable regional deficits. In this study, the provincial government issues a policy for families whose children are more in numbers more children than it is that the government policy has required. But, this policy does not violate human rights so this policy can reduce TFR because low fertility makes children educated, have good skill, and high-salary professions so that it can increase the economic growth. Finally, we suggest that local governments spend more on child subsidies in education and health in the next budget. Then, for further research, researchers may improve data samples for Indonesia in order to obtain more optimal results while changing analysis models. It is possible to add macroeconomic variables to be more extensive

and obtain optimal results about the effects of the economy on fertility. The Indonesian government has a target of reaching the TFR value of 2.1 so as to avoid population boom. Regency and city governments have debts that increase continuously and will affect fiscal deficit. The central government must then be able to avoid sustainable fiscal deficits.

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APPENDIX

1. Chow Test and Output Hipotesys Test, Fixed Effect Method (Model 1)

```
. xtreg tfr log_pd log_bd log_ud log_dd, fe

Fixed-effects (within) regression               Number of obs      =      4750
Group variable: kode                            Number of groups   =       432

R-sq:  within  = 0.0578                         Obs per group: min =        10
       between = 0.1443                                        avg =      11.0
       overall = 0.1042                                        max =        11

                                                F(4,4314)          =     66.18
corr(u_i, Xb)  = 0.2010                         Prob > F           =    0.0000
```

tfr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
log_pd	-.0273783	.0725919	-0.38	0.706	-.1696958	.1149391
log_bd	-.3293044	.0811446	-4.06	0.000	-.4883895	-.1702193
log_ud	.0191307	.0065593	2.92	0.004	.0062711	.0319903
log_dd	.0255806	.0102274	2.50	0.012	.0055297	.0456316
_cons	4.52643	.1202907	37.63	0.000	4.290598	4.762261
sigma_u	.50917218					
sigma_e	.24204665					
rho	.0156744	(fraction of variance due to u_i)				

F test that all u_i=0: F(431, 4314) = 46.33 Prob > F = 0.0000

2. Hausman Test (Model 1)

```
. hausman fe re
```

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
log_pd	-.0273783	-.0278357	.0004573	.
log_bd	-.3293044	-.3471341	.0178297	.
log_ud	.0191307	.0183508	.0007799	.
log_dd	.0255806	.02396	.0016206	.

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 42.65
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

3. Chow Test and Output Hipotesys Test, Fixed Effect Method (Model 2)

```
Fixed-effects (within) regression               Number of obs      =      4752
Group variable: kode                            Number of groups   =       432

R-sq:  within  = 0.0604                         Obs per group: min =        11
       between = 0.0269                                        avg =      11.0
       overall = 0.0303                                        max =        11

                                                F(7,4313)          =     39.59
corr(u_i, Xb)  = 0.0455                         Prob > F           =    0.0000
```

tfr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
log_pd	-.0301716	.0725844	-0.42	0.678	-.1724744	.1121312
log_bd	-.3464305	.0813219	-4.26	0.000	-.5058633	-.1869977
log_ud	.0174493	.006573	2.65	0.008	.0045629	.0303357
log_dd	.0261635	.010257	2.55	0.011	.0060545	.0462726
log_ahh	1.161116	.3573832	3.25	0.001	.4604614	1.861771
log_pend	-.078264	.1153306	-0.68	0.497	-.3043712	.1478432
log_pddk	.0564975	.064428	0.88	0.381	-.0698145	.1828096
_cons	2.274587	.7249915	3.14	0.002	.8532308	3.695943
sigma_u	.5239472					
sigma_e	.24178755					
rho	.82443123	(fraction of variance due to u_i)				

F test that all u_i=0: F(431, 4313) = 40.25 Prob > F = 0.0000

5. Hausman Test (model 2)

```
. hausman fe re
```

	Coefficients (b) fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
log_pd	-.0301716	-.0150418	-.0151298	.
log_bd	-.3464305	-.3282341	-.0181964	.
log_ud	.0174493	.0174199	.0000294	.
log_dd	.0261635	.0213779	.0047856	.
log_ahh	1.161116	.4291381	.7319781	.0841844
log_pend	-.078264	-.1464414	.0681774	.0472403
log_pddk	.0564975	-.2287663	.2852638	.0496616

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 108.42
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

UNIVERSIDAD
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Revista de Ciencias Humanas y Sociales

Año 35, Especial N° 21, (2019)

Esta revista fue editada en formato digital por el personal de la Oficina de Publicaciones Científicas de la Facultad Experimental de Ciencias, Universidad del Zulia.
Maracaibo - Venezuela

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