

Analysis Childcare Cost of Daycare and Noncare Type from Urban Working Mother in South Sumatera Province Indonesia

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Abstract- This research is based on theory and previous research on the labor supply for married women in particular in support of early childhood care. Working mothers who have children can still work involving the care of the child to the grandparents or other relatives (noncare) or to institute a professional child care (daycare). The aim of research is to see a tendency of working mothers in demand of childcare which raises cost of childcare. It was concluded that the mother worked in four cities in the province of South Sumatera prefer use the type of noncare, which is a type childcare with or without nurse in supervised by grandparents or other relatives. Demand in noncare type raises a greater cost than daycare type. This is due to leave their children on grandparents with or without nurse at home causing non-economic costs of providing care to the grandparents as a form to be thankful to them while mother work at the office. So these findings is the difference from previous research that the type of childcare costs at noncare type is larger and the amount of cost noncare is not fixed per month.

Index Terms- childcare costs, noncare, daycare

I. INTRODUCTION

Nowdays in a family, not only a husband to work but also a lot of wife also work outside the home. Factors that cause married women be a worker because the level education women are increasing and the change in the norms prevailing in society, especially urban areas regarding the appropriate roles carried out by women because of social economi, education and modernization (Elfindri and Bachtiar, 2004). The problem is when a family has a new member of the infant and children of early age, the mother must retun to work after the time of maternity over. Family decisions regarding the raising of children of working mothers would be different for each family. There are mothers who volunteer stopped working outside the home in order to care their own children and not least also mothers returns to work and leave their children in home under supervised grandparents even other people who can be trusted.

For some families, the main elements of what we call domestic production is the supervision and care of children. Many parents pay attention on providing the best quality for their children, in which treatments are produced in a nursing home or purchased outside the home (daycare). There are several forms of programs that can be taken, from the tax credit

childcare services that are purchased by parents worked as shape government subsidies for *day care*, school lunches, and health care. The purpose of this theory in recognizing the implications of labor market programs to support child care (Ehrenberg and Smith, 2012). So the solution of working mothers who have children infants and early childhood (under five years) is a childcare who can be trusted. Leave their children in all types of care raises the cost of chilcare. It is reasonable because mothers can work outside the home should be helped by the presence of childcare. There is a substitution effect of working mothers who shift responsibility to the daycare. The phenomenon of increased levels of maternal education work is also occur in the province of South Sumatera Indonesia, that can be seen in Table 1 below:

Table 1 South Sumatra Population Aged up to 15 Years old by Educational Attainment and Total Employment, August 2014

| Education Attainment | Man Working | Working women |
|---|-------------|---------------|
| Photo Unprecedented School | / 17 522 | 26 956 |
| Photo / Graduated SD | 359 302 | 283 418 |
| SD | 715 163 | 451 218 |
| JSS | 425 466 | 203 577 |
| SLTA | 584 436 | 264 541 |
| Diploma I / II / III / College / University | 176 148 | 185 059 |

Source: data is processed, the South Sumatera provincial state Work Force 2014

Table 1 above provides information that the number of working women with the highest education level attained the Diploma I / II / III / College / University more than men work. Indeed, for other education (graduate under college) the majority coming from the man who works, so that this data was also informed that the obligation to make a living is still dominated by men, so that men do not need to go back to school and have education higher. Diverse than the women, they continue their education usually comes from motivated herself

otherwise could also from parents motivation and family environment. For women who come from a families that capable both financial and nonfinancial (eg education level) usually encourage children to continue their school to higher education with return to have a better job in the future. So if they children graduated from Diploma level I/II/III/College/ University, parents also push their children to work, include their daughters. This condition is consistent with result from interview that the majority of respondents prior work rather than married.

Table 2. Population of South Sumatra (in thousands) 2014

| Age | Amount | |
|-------|--------|---------|
| | Man | Female |
| | 416 | |
| 0-4 | 504 | 398 094 |
| | 396 | |
| 5-9 | 274 | 375 104 |
| | 378 | |
| 10-14 | 636 | 360 773 |
| | 368 | |
| 15-19 | 635 | 352 840 |
| 20-24 | 370201 | 356 398 |
| | 367 | |
| 25-29 | 082 | 353 241 |
| | 345 | |
| 30-34 | 181 | 334 701 |
| | 310 | |
| 35-39 | 404 | 296 592 |
| | 267 | |
| 40-44 | 483 | 258 374 |
| | 226 | |
| 45-49 | 427 | 223 162 |
| | 190 | |
| 50-54 | 167 | 185 670 |
| | 148 | |
| 55-59 | 451 | 138 681 |
| | 250 | |
| 60+ | 544 | 271 876 |

Source: BPS, Sumsel in Figures 2015

The second phenomenon can be informed of secondary data in Table 2 above. That the population of South Sumatra Province is composed of young population that is aged in the group 0-4 years and 5-9 years of age. So it is assumed these children have working mothers, the responsibility parenting care of early childhood is likely to be transferred to grandparents or involve other people who would be trusted by worker mothers. This condition has resulted arise daycare centre in Indonesia also occur in a South Sumatera Province. Daycare is a professional day care services are paid to help working mothers. Mother worked are believed into daycare still less because working mothers are more trusted parents and in-laws and other relatives. Demand of mother worker in a paid childcare (daycare) is the last option if no family that can't be helped. The demand type childcare of course arise in child care costs (*cost of childcare*). Therefore, this research seeks to

analyze the costs of both types of daycare and nondaycare from worker mothers that leave their children while working hours.

II. LITERATURE REVIEW

Presence of children forming a request childcare. Childcare is the needs of individuals as well as goods/services ie daycare, nurses, helpers can replace the production time mothers and wives remain in activities outside the home (Bellante and Jackson, 1983).

Ooms and Herendeen (1990), describes how families make decisions to buy childcare services. Economic framework is to understand the child care market (*child care market*) through written descriptions some researchers like Connelly and Maynad Hofferth an economist and a sociologist. Connelly stated that the *Childcare* is a service industry that has developed several years ago, due to a growing number of mothers with young children to enter the labor market, more and more families buy child care services. There is 4 types of child care: *family day care, center-based care, non relative inhome care and relative care*. It was found that childcare is a response to the increase in demand for child care.

According to Blau (2003), there are 4 types of childcare are:

1. Center / formal chid care; Companies are profit
2. Family day care; or including grandparents and *baby sitters* at home (Rosenbaum, 2004)
3. relative; friends and other families (Nicolau and Mumford, 2005)
4. Parental care; father (Hoffeth in Oom and Herendeen, 1990)

Furthermore, for the purposes of this study, the type of childcare is only grouped into two, there are type of daycare and type of noncare (family daycare, relative and parental care). The demand for childcare services raises childcare costs (*cost of child care*). Simplified only one child in need of care as well as excerpts from Rosenbaum and Ruhm (2004) and (Kimmel, 1998). The cost of child care is:

Cost of child care:

$$C = f (Hc, Hm, Ywife, Yhusband, Dtipec)$$

$$C = b_0 + b_1 + b_2 Hc Hm Ywife + b_3 + b_4 + b_5 Dtipec Yhusband + e_3$$

Where : C = cost of child care per month

Hc = the number of hours per day using child care

Hm = number of working hours per day mothers

Ywife = revenue per month from mother

Yhusband = revenue per month respondent husband

Dtipec = dummy types of childcare

where 1 = noncare and 0 = daycare

III. RESEARCH METHODS

This research was conducted in the formal sector. The reason is (1) the level of participation of working mothers who

have high levels of education, preferring to work in the formal sector. (2) the mother who request childcare from their mother work as an employee and the employee which have standard working hours. Limits the scope is in line with statements from BPS Sumsel that in urban areas, most of the type of work is more formal and require certain qualifications for workers who will enter it (BPS South Sumatera, Gender Statistics 2013).

The unit of analysis is the study of working mothers of young children, who have a clear working hours are from 08:00 to 16:00 o'clock pm, in accordance with UU RI No.13 tahun 2003 on employment, in Article 77, paragraph 2 of the working time is 8 hours 1 day and 40 hours a week for 5-day work a week (www.bpkp.go.id).

Data for the population and the sample should be taken from data worker mothers who have early childhood in South Sumatera Province in the urban areas. Because of the limitations of the data obtained so that the population of working mothers to be proxy to data BPS published that the number of worker womens in Palembang, Prabumulih, Pagaralam and Lubuklinggau.

Technical sampling will be using *simple random sampling* method in which every element of the population has the same chance to be selected as the sample (Puspowarsito, 2008).

Table 3. Total Population and Sample of Women Working in Cities in South Sumatra province in August 2014

| City | Population | Proportion | Proportion number | Sample |
|--------------|----------------|-------------|-------------------|------------|
| Palembang | 265.791 | 74,98% | 260,913 | 261 |
| Prabumulih | 30.727 | 8,67% | 30,163 | 30 |
| Lubuklingga | 33.731 | 9,51% | 33,112 | 33 |
| u Pagaralam | 24.257 | 6,84% | 23,812 | 24 |
| Total | 354.506 | 100% | | 348 |

Source : data processed, BPS South Sumatera Province, Labor Force in August 2014

The sample size in the book Research Methodology can use a formula developed from Isaac and Michael, for an error rate of 1%, 5%, and 10% (Sugiyono, 2007) was calculated by:

$$s = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2 (N - 1) + \lambda^2 \cdot P \cdot Q}$$

where:

λ^2 = chi kuadrat with error rate 5% = 3,481

N = Population

P = Q = 0,5

d = 0,05

$$s = \frac{3,481 \times 354.506 \times 0,5 \times 0,5}{(0,05^2 \times 354.505) + (3,481 \times 0,5 \times 0,5)}$$

$$= \frac{308.508,8}{887,1328}$$

$$= 347,7594$$

$$\approx 348$$

From Table 3 population and sample size calculations obtained information on the number of respondents as the research sample was 348 women working in the formal sector will be taken from 4 cities in the province of South Sumatra, namely Palembang, Prabumulih, Lubuklinggau and Pagaralam City.

IV. RESULTS AND DISCUSSION

In the classical assumption, primary data have problems heterokedastisitas. Then trying eliminated heterokedastisitas by way of a data transformation that is taking the natural log (ln). Heterokedastistas problem passable reduced but still patterned (using graphs plot residual values). According to Gujarati (2006), the problem heterokedastisitas usually found on *cross section* data (data cross-sectoral). So the problem occurs at the primary data heterokedastisitas this study. So after doing a parametric procedure on research data and have been trying to cure the problem heterokedastistas but the variant data is still not homogeneous (homoskedastisitas).

If the parametric procedure has been done and still there is an assumption that is not fulfilled, there is no other way then the use of non-parametric procedures can be considered. Because of nonparametric methods is change the process data that can not be done parametric, then systematic discussion for nonparametric is equal to the parametric methods, namely descriptive statistics and statistical inference (Santoso, 2012).

Technical analysis using multiple linear regression. In nonparametric techniques using Jackknife method in Stata software. Jackknife is a nonparametric and resampling techniques aimed at estimating the regression parameters (Mara, Satyahadewi and Iskandar, 2013). Jackknife method is one of nonparametric methods used to generate the standard error of the regression coefficient is problematic in classical assumptions related data on a parametric approach. The Statistically processed results its given below:

4.1 the simultaneous Test (Test F)

Thus do the next steps to address the alternative hypothesis H_1 by hypothesis testing problem of models of linear regression as follows:

Hypotheses to test the simultaneous / joint coefficients model by F test for regression equation.

Ho : No influence of variables simultaneously Hc, Hm, RYwife, RYhusband, and Dtipenon to variable RC. ($D_1 = d_2 = \dots = d_5 = 0$)

H_1 : There is a simultaneous effect v ariabel Hc, Hm, RYwife, RYhusband, and Dtipenon to variable RC. (At least $d d_i \neq j \neq 0; i, j = 1, 2, \dots, 5$)

In the simultaneous test / model coefficients together with the F test in STATA software, given the simultaneous influence significant when *P Value-value* $\leq \alpha$ with α of 5%.

Table 4 Test results F for significance coefficient regression model.

| Equation | statistics F | P-value |
|----------|--------------|----------|
| RC | 36.56 | 0.0000 * |

* Significant to a significant degree (α) of 5%.

From the results of the output table, the statistics generated F [see F (5, 347)] amounted to 36.56 with a *P-value* [see Prob> F] is equal to 0.0000 (*P-value* <0.05) so that in this test are given conclusion that there is a significant influence of the independent variables simultaneously Hc, Hm, RYwife, RYhusband, and Dtipenon to variable RC.

4.2 The partial test (t test)

Hypotheses to test partial / individual model coefficients with t test hypotheses for regression equation given below:

H_0 No effect partial, Hc, Hm, RYwife, RYhusband, and Dtipenon to variable RC. ($D_i = 0; i = 1, 2, \dots, 5$)

H_1 : There is a partial effect of variable Hc, Hm, RYwife, RYhusband, and Dtipenon to variable RC. ($D_i \neq 0; i = 1, 2, \dots, 5$)

On testing the partial / individual model coefficients with t-test, given significant when *P-value* $\leq \alpha$ with α was set at 10%, 5%, or 1%.

Table 5 Results of t test for significance of regression model coefficients.

| variable dependent | variable Independent | Coefficient Regression | Standard Error | statistic t | P-value |
|--------------------|----------------------|------------------------|----------------|-------------|----------|
| RC | Hc | 0.0293839 | 0.0454335 | 0.65 | .518 |
| | Hm | 0.0017991 | 0.0567532 | 0.03 | 0.975 |
| | RYwife | 0.165215 | 0.0504902 | 3.27 | 0.001*** |
| | RYhusband | 0.1362324 | 0.0534104 | 2,55 | 0,011** |
| | Dtipenon | 1.342339 | 0.1013483 | 13.24 | 0,000*** |
| | constants | - | 0.363642 | 0.9558352 | -2.63 |

*** Significant to a significant degree (α) of 1%.

** Significant to a significant degree (α) of 5%.

* Significant to a significant degree (α) of 10%.

From the results of the output table, this test gives a conclusion that:

1. There is a significant influence on the RC RYwife variables of 0.165215 (positive effect); meaning that if there is an increase Redominasi of respondents monthly income of 1 million, then Redominasi of consumption of child care per month will increase by 0.165215 million, equivalent to the consumption of child care per month amounted to 165 215; otherwise if there is a decrease Redominasi of respondents monthly income of 1 million, then Redominasi of consumption of child care per month will be decreased by 0.165215 million, equivalent to consumption of child care per month amounted to 165 215.

2. RYhusband variable significant effect on the RC of 0.1362324 (positive effect); meaning that if there is an increase of revenue husband Redominasi per month amounted to 1 million, then Redominasi of consumption of child care per month will be increased by 0.1362324 million or equivalent to the consumption of child care per month amounted to 136,232.4; otherwise if there is a decrease Redominasi husband revenue per month of \$ 1 million, then Redominasi of consumption of child care per month will be decreased by

.1362324 million or equivalent to the consumption of child care per month amounted to 136,232.4.

3. Dtipenon variable significant effect on the RC of 1.342339 (positive effect); meaning that there is a difference Redominasi of consumption of child care per month in child care types, namely: noncare more influence Redominasi of consumption of child care per month amounted to 1.342339 million (or equivalent to the consumption of child care per month amounted to 1,342,339) than daycare.

4. There is no significant influence of each variable to variable Hc and Hm RC; meaning that if there is an increase / decrease in Hc and Hm each by 1 unit, then Redominasi of consumption per month child care will not be affected.

Thus mathematically, the formulation of multiple linear regression models were formed described as follows:

$$RC = -0.9558352 + 0.0293839 Hc + 0.0017991 Hm + 0.165215 RYwife + 0.1362324 RYhusband + 1.342339 Dtipenon + e_4$$

For the validation process, used size *Goodness-of-fit* is coefficient of determination (R^2) and *Mean Square Error* (MSE) [2]. The greater the R-square value, the better the

multiple linear regression models were formed. In addition, measures of goodness is also used linear regression models that MSE (is expected to be small). To assess the goodness of the model can also be used with the following formula MSE size :

$$MSE = RMSE^2$$

RMSE value is obtained from the output value Root MSE.

Table 6 Results of Multiple Linear Regression model validation.

| Equation | R-Square | root MSE | MSE |
|----------|----------|----------|----------|
| RC | .4583 | 1.0221 | 1.044688 |

From the results table, the size of the *goodness-of-fit* is R-Square and MSE generated good value for linear regression models. R-square value obtained was 0.4583 means that the diversity of the dependent variable explained RC capable of independent variables Hc, Hm, RYwife, RYhusband, and Dtipenon simultaneously / together amounted to 45.83% of which the remaining 54.17% is explained by error (*e*) or other variables that are not included in the multiple linear regression models. In other words, goodness Linear Regression models were formed amounted to 45.83%. In addition, the MSE also obtained the good that is equal to 1.044688 (small).

Presence of children forming a request childcare. Childcare is that meets the needs of individuals as well as goods / services ie daycare, nurses, helpers can replace the production time mothers and wives remain in activities outside the home (Bellante and Jackson, 1983).

The results of statistical calculations show that income mothers (Ywife) and earnings father (Yhusband) positive and significant impact to the cost of child care. This means that the costs incurred father and mother depend on the amount of income of the father and mother (family income). The greater the income received by the father and mother, the greater the cost incurred for child care. Aligned from finding Ronald D. Lee and Rodolfo A. Bulatao (1983) that there is a positive relationship between income and child prices.

Another interesting finding in this study that the type of child care affect positively and significantly to the cost of child care. On the basis of the findings of *empirical studies* Rosenbaum and Ruhm (2004) and (Kimmel, 1998) that the demand for child care (there are several types of child care) affects the cost. With nominal data types where 1 = type of non care and type day care = 0, where the selection of category 1 serve as the basis / comparison so that symbolized Dtipenon (Gujarati, 2006). The calculations show that noncare more influence on consumption Redominasi child care per month to Rp 1.342339 million (or the equivalent consumption of child care per month to Rp 1,342,339) rather than daycare. This means that the demand for the type of non-care nursery pose a greater cost than the type of day care nursery. This is due to leave their children on grandparents with or without caregivers at home causing non-economic costs of providing care to the grandparents as formed a thankful because we could have raised the child under the supervision of the grandparents while mothers

working in the office. Non-economic costs of this proxy to the costs incurred as a gesture of thanks to the grandparents, for example buying food, beverages, pulses and so on. So this cost is not permanent. As for the fixed costs could arise if use the services of a nanny at home that pay monthly salaries of caregivers. So the cost of noncare type larger than daycare type and the amount is not fixed incurred by the mother per month.

Different research findings from Suzanne W Helburn and Carollee Howes (1996) that the daycare costs slightly more expensive than family care. This is due in this study, does not include the costs of noneconomic the calculation in family care. While this research include the costs of noneconomic of family care then if the proxied to the nominal lead to higher costs. Treatment of non-economic costs are factored in due to emotional factors between children and parents, that the respondent (Indonesian) are still figuring out how to continue to respect their parents as an expression of gratitude would supervise the children during the respondents worked outside the home. Further research Helburn and Howes (1996) that there is an opportunity to raise the quality of childcare services due to factors other than economic incentives as production costs such as donations of facilities, equipment and materials, volunteers and workers. So the research advice that the parents should be educated about the daycare, increasing the number of child care from the government and private sectors but keeping provisions / high quality standards that the management of the daycare have an affinity for advancing the quality of childcare services.

The types of child care are selected by respondents to the four cities in the South Sumatera based on descriptive statistics as much as 44.83% choose the type of noncare type, as much as 9.17% choose for relative daycare, as much as 1.15% choose the type of care parental care and as much as 44.25% choose the type of care daycare. It was revealed that these statistics are concluded, many respondents in four cities in South Sumatra choose the type noncare. The reason is because respondents must trust to their parents than others even in day care professionals. Parents have experience caring for and educating their children from childhood to have grandchildren. Leave their children in daycare options can be selected if no other family or can be choose daycare as a last option to leave their children.

That suggested that parents prefer chepare prices than service quality, and if anything, more mothers will choose to work and existing problem due to lack of information of child care services, making the search for childcare increasingly expensive (Ooms and Herendeen, 1990). Demand for high quality care will be rising only when consumers have complete information about child care services and the power of economic incentives to purchase child care services (Blau, 2002). So the father and mother indicators of income (family income) affect the cost of care. Here are the results of multiple linear regression:

$$RC = -0.9558352 + 0.0293839 Hc + 0.0017991 Hm + 0.165215 RYwife + 0.1362324 RYhusband + 1.342339 Dtipenon + e_4$$

RC model constant shows a negative value that is worth -0.9558352, which means the cost of child care will take a source of family savings if the family has no income. For working mothers the possibility to issue a childcare costs will still be

there, so leave their children during working mothers an income effect for income working mothers is the influence of price changes (child care expenses) causes a change in the purchasing power of working mothers (Jehle and Reny, 2001).

From the findings of previous research and statistical calculation results can be interpreted that choose the type of child care and day care cheaper fixed payment per month compared to the type of care noncare. The problem with information about child care services and the level of trust mothers to professional institutions. Besides obstacles in the field, there are many professional institutions (daycare) is owned by the private sector, such as the findings of UNESCO (2005) and unlicensed operation.

V. CONCLUSION

Based on the Descriptive Statistics concluded, many respondents in four cities in South Sumatra choose the type noncare. The reason is because more respondents trusted to their parents than others even in day care professionals. Parents have experience caring for and educating their children from childhood to have grandchildren. Leave their children in daycare options can be selected if no other family or can be choose daycare is a last option to leave their children.

The calculations show that noncare more influence on consumption Redominasi child per month to Rp 1.342339 million (or the equivalent of the cost of child care per month to Rp 1,342,339) rather than daycare. This means that the demand for the type of non-care nursery has a greater cost than the type of day care nursery. This is due to leave their children on grandparents with or without caregivers at home causing non-economic costs of providing care to the grandparents as a fromed thankful because they could have raised the child under the supervision of the grandparents for mothers working in the office. Non-economic costs of this proxy to the costs incurred as a gesture of thanks to the grandparents, for example buying food, beverages, pulses and so on. So this cost is not permanent. As for the fixed costs could arise if use the services of a nanny at home that pay monthly salaries of caregivers. So the cost of child care type noncare is larger and the amount is not fixed incurred by the mother per month.

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