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## The Impact in the Costs of Raising a Child on Parents' Decision to Have Children

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**Final Research Proposal**

**The Impact in the Costs of Raising a Child on Parents' Decision to Have Children**

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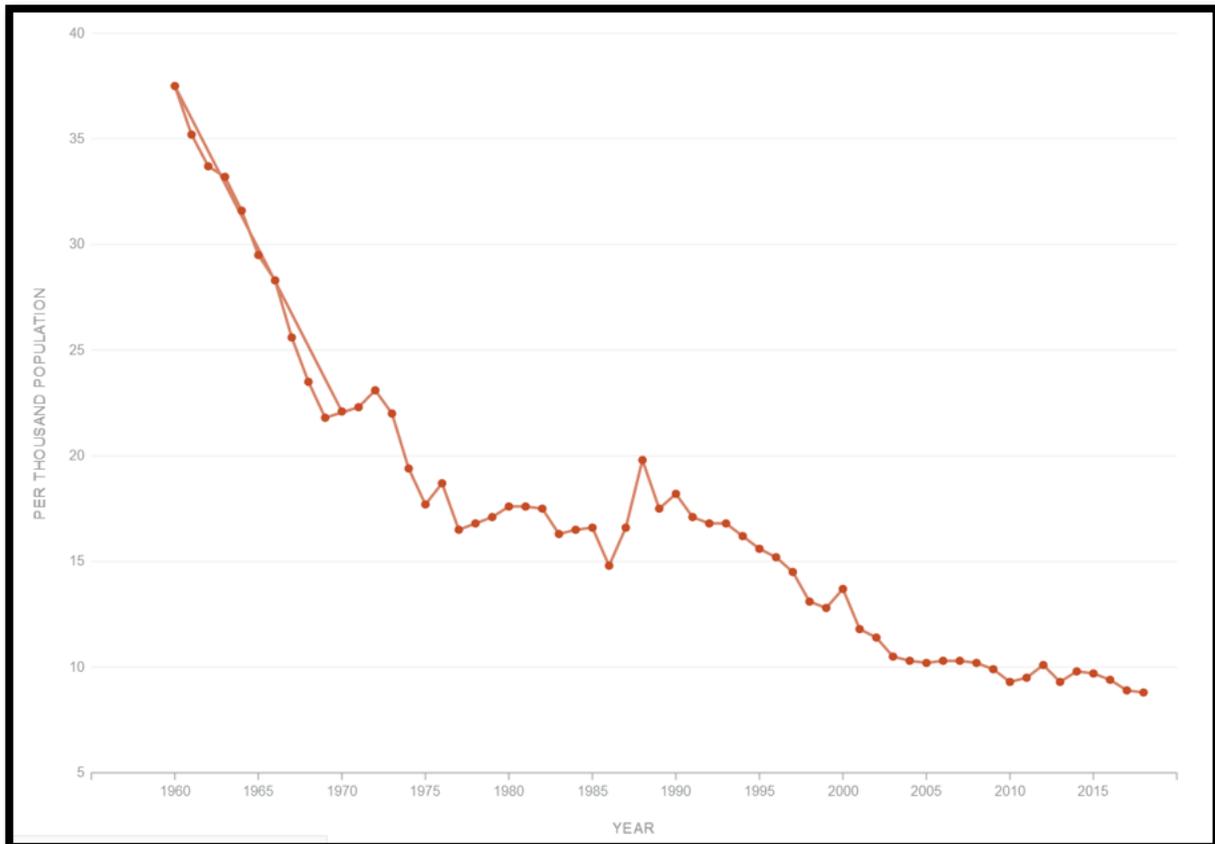
### **Abstract**

Singapore is the second country within the Asia Pacific that had the lowest birth rate percentiles in 2020, which calls for immediate attention. The objective of the research is to determine whether the cost of raising a child will affect the decision of having children in Singapore. The focal area of analysis is due to the gaps that were identified within past literature that had little to no data concerning the studied relationship. Therefore, the contribution is the bridging of the literature. The analysis will be concentrated on 34 OECD countries and a selection of non-OECD countries such as Singapore, Taiwan, Hong Kong, and Thailand. The independent variables are the cost of raising children, cost of living, and income (GDP), and the dependent variable is the birth rate. A line graph will be used to analyze the performance of birth rate, regression analysis to identify factors that have influenced the birth rate, and a t-test to examine any statistically significant differences in the birth rate between developed and developing countries. The results aim to show if the costs of raising a child in Singapore have an effect on a parent's decision of having children.

*Keywords:* Birth Rate, Singapore, Income, Childcare, Costs of Living

## Introduction

The rich culture and economy of Singapore have been a well-celebrated attribute on a global scale. While Singapore is committed to the true goal of maintaining a globally recognized position, the underlying threat to the country's purity and roots is at severe risk. Over the course of history, Singapore has been recognized for its declining Singaporean births, which is depicted in figure one. This declining trend is recognized to be in existence due to several contributing factors in which the cost contributions to raising a child are of great significance. Therefore, the probability of the costs of raising a child on a potential candidates' decision to start a family is analyzed to distinguish the extent to which this specified factor is a lurking barrier to Singaporean citizens.



*Figure 1: Crude birth rate of Singapore, Annual*

This decreasing trend of births has progressively led to Singapore experiencing an imbalance in population densities, which has resulted in an emerging dominance of elderly proportions in relation to the existence of newer and youthful generations. Therefore, Singapore is on the verge of instability concerning factors such as the local labor market due to the insufficient flow of skilled and able personnel to fill the ongoing emergence of gaps within the labor force. This, in turn, is bound to lead to economic vulnerabilities in the long run. Due to the chain of issues that are probable to emerge with the declining trends of births within Singapore, the analyzed factor of cost contributions to raising a child on an individuals' decision of having a child is of great importance.

The amelioration of this growing threat within Singapore is considered to be an invaluable asset to the country in the long run. This is justified due to the recognition of several benefits, including the stabilization of the labor market, continuity of the Singaporean heritage, and the further stabilization of the Singaporean economy due to the availability of needed skills within the country itself in light of the stable generation and maintenance of the Singaporean population.

The justifiable requirement for attention towards this ongoing threat of declining birth rates within Singapore is a leading cause for analyzing and concluding viable results in relation to the drafted research question. In addition, the main contribution of the research being the bridging of the gaps between the existent past literature is further caused for analyzing and concluding appropriate results in relation to the research question. In light of formulating feasible results, the population is set to compensate the entire world in which 34 OECD countries and four Non-OECD countries including Singapore, Taiwan, Hong Kong, and Thailand are looked into. These selected countries are to be analyzed using variables of measures that range from

child care costs, cost of living, and income. Furthermore, meaningful results are to be drafted from the collected data by integrating testing methods such as line graphs, two-sample t-test, and regression analysis along with the generation of key statistics in which minimum, maximum, mean, standard deviation, and count are looked into.

### **Literature Review**

Previous research in this area has shown that household finance has an effect on the birth rate. The recurring theme in all of the papers shows that Singapore is experiencing a decrease in the Total Fertility Rate (TRF) and Birth Rate, which is a result of women with higher levels of education and younger generations delaying marriage. As women prioritize other matters, such as education and career, before accepting to settle down to have children, they did not possess any extra responsibility like raising a child. Despite the Singapore government's efforts to encourage new generations to have children, lower mobility incomes relative to other countries at similar stages of development, income inequality, and stagnant economies cause people to be unwilling to contribute financially to the upbringing of a child when there are numerous obstacles. For instance, the opportunity costs and the costs of children, which are the direct costs of raising a child, are concerned by the parents who want to raise their children. Moreover, these factors are necessary for families of all incomes to make rational decisions and proper family size regarding expenditures and incomes.

#### **Birth Trends**

A study by Rindfuss et al. (2015) addresses the fertility trends in Singapore in comparison with the other Asian countries such as South Korea and Taiwan that are also facing low fertility birth rates. Between 1997 and 2003, Singapore, South Korea, and Taiwan all experienced significant fertility declines. The most recent estimates are influenced by the Year of

the Tiger (2010) and the Year of the Dragon (2012). According to the Chinese zodiac cycle, the Year of the Tiger is considered an inauspicious sign for births, while the year of the Dragon is considered an auspicious sign for births. Therefore, the years involved played a part in the fluctuations in the total fertility rate. However, at these stages, minor year-to-year variations in the Total Fertility Rate (TFR) should not be overvalued. While these fluctuations have an impact on annual births, they are unlikely to have an impact on a cohort's overall fertility. Data were measured and shown by a line graph specifying the total fertility rate from the year 1995 to 2012 for different countries. Although the results showed that Singapore was not the worst performer in the total fertility rate, its fertility rate is still at ultra-low levels. Another line graph indicates the data showing the trends in the total fertility rate by ethnic group in Singapore contacts from the year 1970 to 2012. Results showed that the fertility of the Malay population, which accounts for about 14 percent of the total, decreases sharply from high levels over that period. Likewise, the rest of the ethnic groups who made up the rest of the population suffered a rapid decrease making Singapore a no match for Japan, Hong Kong, or South Korea, which showed a slight increase in the total fertility rate in recent years.

### **Effect of Economic Stability on the Trend of Childbirth**

A study conducted by Li et al. (2011) investigated the effects of materialism, earning capacity, and the generalized perspective of individuals towards the concept of marriage and raising children on the overall birth rates in the United States of America (USA) and Singapore. The study was based on surveys. The covered areas of interest included materialism, life satisfaction, opinions on marriage, willingness to have children, and mate preference. These surveys were distributed among a total of 407 participants in which undergraduate students majoring in introductory psychology were the main focal point of analysis. The key results

obtained suggest that Singaporeans, in comparison to Americans, preferred high materialism-based happiness to achieve life satisfaction than the latter option of pursuing happiness by starting families, providing a strong connection between declining birth rates within Singapore. Furthermore, the growing threat of job instability within these analyzed countries due to globalization within the labor market has added to the further distancing of individuals within Singapore to willingly contribute financially to raise a child than the latter option of spending on materialized luxuries.

Another study on a global outlook was carried out by Farfaras et al. (2016) to investigate the birth trends in Greece following the Greek economic crisis and the efforts that were taken to ease out the recession. The data that was gathered to carry out this study was based on Greek secondary reports. Namely, the data that was used includes Euro stat reports, and International Monetary Fund (IMF) reports to analyze the fiscal outlook of the country. Economic data were also gathered by analyzing the trends in Gross Domestic Product (GDP), fiscal deficit, public debt, and unemployment. Furthermore, data on birth trends of the country were gathered using Hellenic statistical authority and Euro stat reports. These secondary reports had data that spanned from 2000 to 2014. The main conclusions of this research suggest that growing economic instability within Greece coupled with rulings by the European Union (EU) and (IMF) increased the percentiles of unemployment while birth rates suffered from a percentile drop of 20.42% in 2013 in relation to the past six years. In addition, a negative correlation between unemployment and birth rate was also analyzed. Furthermore, seeking medical advice for contraception was analyzed to have shown drastic increases since 2008, which compensated for more than 50% following the economic instability. These key findings suggest that individuals are reluctant to

commit to financial contributions to raise a child when barriers such as unstable economies coupled with the probable outcome of unemployment are met.

### **Costs of raising children**

Research conducted by Reed et al. (1973) focused on both direct costs and indirect costs of raising children, which involved the cost of giving birth, the costs of raising a child to the age of 18, and the costs of higher education. They are importantly necessary for families of all incomes to make rational decisions and proper family size regarding the expenditures and incomes. The different costs of raising children are primarily differences in cost levels rather than the area of residence. Children who grow up in the rural non-farm and urban side practically have a similar number of costs. However, children who grow up in a rural farm area vaguely have fewer costs in the United States. Rather, it depends more on the low-cost and moderate-cost budget. An average moderate budget for raising a non-farm child to the age of 18 is around \$33,000, and the farm child is slightly less. At the low-level budget, the cost is around \$21,000 for a nonfarm child and \$20,000 for a farm child. Although the average cost of giving first childbirth is approximately \$1,500, and the cost might be higher depending on some complex situations such as a Caesarean delivery and prematurity. Another huge cost that has to be considered is the costs of higher education. Expenditures depend on the type of the colleges whether it is private or public. The average cost of room and board is around \$943 annually for public universities, and it costs about \$1,171 for private types. Besides, the tuition of public schools ranges from \$1,316 to \$1,788 for four years, and for private schools costs between \$5,788 and \$7,288 per four years. All the expenditures would be higher in richer families, the costs of giving birth, and the costs of raising a child to the age of 18 vary with the income of the family. The data on the direct and opportunity costs connected with raising children by parents

who are concerned about the children's standard of living and the improvement in the family lives.

### **Child Care Subsidies**

A study by Rindfuss et al. (2015) covers the evolution of pro-natalist policies over the past three decades and the possible relationship between policies and fertility trends. Findings show that some countries were affected because policies were either implemented late or having too few benefits to encourage a high fertility rate. This study also aims to compare the timing and reach of pro-natalist policies in Singapore to policies in other low-fertility Asian countries, as well as to draw some preliminary conclusions about the relationship between policy and fertility in Singapore. Pro-natalist policies in countries aim to encourage more births through the use of incentives. In other words, the government is encouraging an increase in the fertility rate. By the year 1995, Singapore had implemented various financial intensives like income-tax relief, tax rebates, housing subsidies, and childcare subsidies to boost its fertility rate. Findings show that Singapore had more pro-natalist policies in place and was faster in implementing one as compared to other low-fertility Asian countries, especially South Korea and Taiwan. South Korea came up with an integrated package named the "Saeromaji Plan 2010" which includes only the tax rebates, expansion of maternity and childcare leave, and the improvement in childcare services as part of their pro-natalist measures. On the other hand, Taiwan's "Mega Warmth Social Welfare Program" introduced only the childcare subsidy system and the maternity and parental leave as part of their pro-natalist measures. Additionally, South Korea was slow in reversing its anti-natalist policies, and the Taiwanese government made a pro-natalist statement previously, but no actions were carried out. Also, Taiwan was greatly affected by the Chinese zodiac beliefs and the financial crisis in the year 1997 which contributed to the decline in the

fertility rate. Nevertheless, both countries had implemented their respective pro-natalist policies in the year 2006.

### **Fertility and Population Policy**

A study by Mui (2003) discusses that there is a relationship that the Singaporean experience between the population policy and fertility rate from various factors which are considered from Ethnic differential community, and Educational differential. The key results from the analysis of the research concluded that Singapore's procreation incentives that were created in 2001 to stimulate the better-educated mother to have children showed some effect in the early days of its introduction. Nonetheless, fertility rates have slightly turned back to the stage of the pre-policy regardless of some outlier data. Considering the Ethnic differential factor, the Malays were having the highest fertility rates and the largest family sizes. With the factor of education differential, it is said that the proportions of childless or with one child born tend to increase with better education. Moreover, the singlehood rates in Singapore among males and females increased to about 15% in 2001 from 8% and 6% in 1980, respectively. The data discovered that the age of first marriage has risen in both female ethnic and educational groups. Even though the researchers have found that Singaporean men and women continue to get married and have children, the younger married respondents were less likely than older couples to agree that married couples should have children.

The research conducted by Chen et al. (2017) focuses on distinguishing the success of Singapore's total fertility rate (TFR) by examining the pro-natalist initiatives endorsed by the government because the TFR has been constantly decreasing for the past ten years. This research presents feasible suggestions for Singapore and a deeper understanding of similar highly developed Asian countries also experiencing low fertility issues. An elasticity analysis was

constructed on a stochastic model aiming to evaluate the capacities of varying categories of women grouped by contributing factors such as age, marital status, and parity levels in regulating the TFR. Four household surveys, either quantitative, qualitative, or both, were all conducted in 2000, 2005, and 2010. The twenty to twenty-nine-year-old single women and thirty to thirty-four-year-old married but without children women age groups have the most significant effect on TFR as prospective pro-natalist targets. It was observed that the fertility elasticity analysis indicated that assistance must be rendered to accommodate couples delaying their marriage and first child. Lastly, a thorough review of policies was suggested to tackle the younger generations' priorities such as education, career establishment, financial stability, and housing schemes. Such policies must be lasting to observe a more likely notable rise in the fertility rate.

The research conducted by Jones (2007) discusses the idea of delayed marriage and the reasons contributing to low fertility in Pacific Asia. It acknowledges that the fertility transition was one of the significant developments between 1950 and 2000. Trends were observed in total fertility rates between 1995 and 2005 among five Pacific Asian countries, namely Japan, South Korea, Taiwan, Singapore, and Hong Kong. Moreover, the workforce involvement statistics were measured in age for females among Japan, Singapore, and South Korea, between 1970 and 2004. It was ruled out that marriage contributes significantly to the fertility drop in several Pacific Asian countries. Besides that, it was noticed that women often have an education or career before accepting to settle down and have children. This is evident with the eighty-four percent statistics of Singaporean women actively working in the twenty-five to twenty-nine age group. However, a different conclusion was drawn from married couples, as they find it difficult to balance between work and family responsibilities, unaware of policies supporting childbearing, and stressed on

the financial burden of raising a child. Lastly, it was recommended that more comparative research of the implemented policies is required to promote marriages and childbearing, especially in the extremely low fertility Asia countries.

## **Research Methodology and Analysis Report**

### **Research Question**

The main objective of this research is to discover the possibility of whether financial subsidies, lower costs of living, and better economic stability do allow for a higher birth rate and parent's decision-making in having a child. The research question aims to compare developed countries such as Singapore, OECD countries, and other developing countries to see whether countries with better economic growth will result in a higher birth rate. Considering these possible factors involved, our research topic will focus on "The impact in the costs of raising a child on parents' decision to have children".

### **Theoretical Framework**

The dependent variable of our study will consist of the birth rate, and the independent variables are the cost of raising children, cost of living, and income (GDP). Alongside the dependent and independent variables comes the control variables. The control variables for our study will be the average age of motherhood, level of education, and female labor participation.

### **Hypotheses**

The two hypotheses in our study involve the null hypothesis (H0) and the alternative hypothesis (H1). It examines the possibility of the cost of raising a child in Singapore, whether it affects a parents' decision to have children. Therefore, the hypotheses are given as:

Null Hypothesis (H0): The cost of raising a child in Singapore has no effect on parents' decision to have children.

Alternative hypothesis (H1): The cost of raising a child in Singapore has an effect on parents' decision to have children.

### **Study Design**

The study will be conducted in a quantitative form as we are dealing with Organisation for Economic Co-operation and Development (OECD) countries, affected countries, and Singapore. A few varieties of variables will also be included and compared. The type of data that we would collect comes from reliable secondary sources such as journals, articles, and reports from organizations with their research on specific nature of studies with relevant information. The analysis of data is based purely on previous studies that will be concentrated and related to our research questions. A descriptive statistic will be presented alongside the appropriate method of measure such as line graphs, T-Test, and regression analysis to determine the results.

### **Population and Sample**

The population size of this research covers the whole world. The sample size ranges from OECD countries to selected countries such as Singapore. However, our main focus concentrates on the economical context in Singapore and we will be comparing it with the other countries which do or do not have an effect on the parent's decision to have children. We will then conclude whether or not there are similarities between Singapore and other countries involved. The countries in our report are carefully selected to make sure information and dataset are available through scholarly sources. To address our research questions, we will be comparing the different factors and exploring how the different variables influence the parent's decision to have children. To avoid any chance of being biased, we chose the sample countries that are either more developed or developing, rather than those undeveloped. This will create a fair result without any special exceptions on a global level.

## **Variables and Measures**

The dependent variable this research focuses on is the birth rate. The birth rate of selected countries within the Organisation for Economic Co-operation and Development (OECD) coupled with several other countries including Singapore will be taken into account when collecting data regarding birth rates. The independent variables that are studied under the researched area of concentration include the cost of raising a child, cost of living, and income (GDP). Furthermore, the control variables under the researched area include the average age of motherhood, level of education, and female labor participation. These specified variables of dependence are evaluated individually to determine the probable relationships concerning the dependent variable of birth rate. In addition, the approach to how these variables are to be measured is also briefly touched upon.

The first independent variable includes the cost of raising a child. This is directed to the childcare services needed to raise a child. A higher cost of childcare services will lead to a decline in the fertility rate. Moreover, the childcare cost of bringing up a child had already made up a fair bit of percentage in the expenses of a parent's income. Thus, we can measure this by comparing the cost of childcare services in several developed countries to OECD countries. If the cost of raising a child relating to childcare services surpasses the average in some countries, there will be a high possibility that the affected countries will suffer a greater decline in their fertility rate. Hence, a price reduction or more government subsidies should be imposed. The connection between the cost of raising a child and the birth rate is reasonable because one must have sufficient income to support one's child's well-being before taking on the enormous responsibility of giving birth.

The second independent variable, cost of living is defined to be the amount of money needed by individuals to cover the expenses of basic necessities such as adequate housing, food, taxes, and healthcare (Banton, 2021). These basic needs signify the survivability of individuals in societies. Therefore, individuals must be able to sufficiently solidify a secure chain of financial flow to ensure that basic necessities for survival are facilitated. The percentile of individuals within a specified country who has secure chains of financial flow to attain the required capital to suffice the cost of living has an effect on the birth rates of countries. This relationship between the cost of living and birth rate is justifiable since one must be adequately equipped with more than the needed capital to fend for themselves before further approaches to life goals such as starting a family can be considered. The requirement of capital in addition to the coverage of the cost of living is crucial since individuals are obligated to invest money to nurture newborn babies till the age of financial maturity. This relationship between birth rate and cost of living can be measured by evaluating the birth rate trends and cost of living in specified countries where a pairing range of high costs of living with low birth rates and a pairing of low costs of living with high birth rates will signify the dependency of birth rate on the costs of living.

The GDP of a country is causally related to economic functionality and stability. Job allocation within a country that directly contributes to economic growth and stability varies in relation to the GDP of a Country. Countries with a high GDP have influenced the majority of the job positions to be of great importance and value to economic growth. This has compelled much personnel within job postings to undergo more work with higher rewards of financial satisfaction hence leading to the factor of time to be a pricy element to play around with (Vandenbroucke, 2016). This placement of greater value to the aspect of time is a contributing factor towards individuals being unwilling to contribute their time to start families, which is a source of cost

contribution rather than the latter option of financial gain. The unwillingness to contribute time to starting families due to the added value to the aspect of time through the high GDP of a country leads to low birth rates (Vandenbroucke, 2016). The opposite trend is analyzed when a country has a low GDP where personnel is subjected to less appealing financial gain, which in turn leads to the factor of time being a cheaper element in one's eye (Vandenbroucke, 2016). This in turn leads to high birth rates in countries with low GDPs (Vandenbroucke, 2016). This relationship can be measured by analyzing the correlation of birth rate with its respective GDPs where a negative correlation will indicate that higher GDPs of countries will lead to low birth rates.

### **Data Collection Methods**

To determine if the cost of raising a child affects a parent's decision on having children, we use a panel dataset containing 34 countries that are members of the Organisation for Economic Co-operation and Development (OECD) and four non-OECD countries. The four non-OECD countries include Singapore and its neighboring countries, such as Taiwan, Hong Kong, and Thailand. The chosen countries are either developing or developed countries. To determine a country's development, we used Gross Domestic Product (GDP) to compare. The data extracted to form a panel range from 2015 and 2018 to 2019. Due to limitations, we were not able to include all OECD countries and data for all non-OECD countries. A country like Chile did not share its recordings for *Net Childcare Cost for Parents using Childcare facilities*.

Data we found to determine a parent's decision on having children are based on our dependent and vital independent variables. The dataset includes figures from the following: birth rate crude, consumer price index (CPI), childcare cost, and gross domestic product per capita growth. The birth rate is measured per 1000 people, the CPI sets 100 as its indicator on the year

2010, childcare cost's indicator is the percentage of the average wage, and the GDP per capita growth is measured by annual percentage. We collected data about the net childcare cost in each country from OECD, an intergovernmental economic organization to stimulate economic progress and world trade. Other data such as birth rate, CPI, and GDP per capita growth for individual countries were collected from the World Bank website. The data collected are from secondary sources, and measures were taken to ensure the credibility and trustworthiness of the collected dataset.

2019 is the latest year in the dataset because there are no data recordings for the year 2020 in OECD; *Net Childcare Cost for Parents using Childcare facilities*. The World Bank website does not have recordings for birth rate, CPI, and GDP per capita growth for the year 2020. Thus, to maintain consistency, we set 2019 as the latest year. Table 1 shows the descriptive statistics of the dataset. It includes only the figures which we were able to access without a paid subscription.

**Table 1**

DESCRIPTIVE STATISTICS

<b>Variable</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>N</b>
<b>Birth Rate, Crude</b> (per 1,000 people)	10.60	2.53	5.9	21.3	102
<b>Consumer Price Index</b> (2010 = 100)	113.83	16.44	98.17	234.44	102
<b>Net Childcare Cost</b> (% of the average wage)	14.25	10.09	0.7	44	102
<b>GDP per capita growth</b> (annual %)	2.23	2.68	-0.50	23.99	102

\*Net Childcare Cost is the difference between childcare benefits of any type and the gross childcare fee.

Note: Due to limitations, data for Non-OECD countries such as Singapore, Taiwan, Hong Kong, and Thailand are excluded.

### **Data Analysis Methods**

Firstly, a line graph can be used with a dependent variable which is a birth rate. The line graph will assist to see the overall performance birth rate. It will show trend lines from each country and each year, so we will be able to compare developed countries and developing countries regarding the birth rate. For example, developed countries, such as Japan and Singapore, should have a lower birth rate than developing countries, such as Argentina and the Philippines.

Secondly, the t-test can measure the difference between the two groups. Two sample t-tests can be used in the analysis to show the hypothesis. The null hypothesis is that there are no differences in the birth rate between these two groups of countries which are Asian countries and Non-Asian countries, and the alternative hypothesis is that there is a difference in the birth rate between the two classifications of countries. We categorized these two groups to compare whether there is a difference in the birth rate between those Asian countries and Non-Asian countries. After we run the t-test, if the P-value is less than the set alpha value of 5% (0.05), we will reject the null hypothesis and accept the alternative hypothesis. Therefore, there is a statistical difference hence concluding that there is a difference in the birth rate between the two groups of countries.

Lastly, regression analysis is used to show the relationship between two or more variables. It is conducted by using an equation to explain the relationship of independent

variables that have influenced a dependent variable in a function term. In this case, the dependent variable is the birth rate of the countries and the independent variables are the cost of raising children, cost of living, and incomes.

$$Y = \beta_0 + \beta_1 X_{CRC} + \beta_2 X_{COF} + \beta_3 X_{INC} + \varepsilon$$

The equation above is the regression equation.  $Y$  represents the dependent variable which is the birth rate.  $X_{CRC}$  represents an independent variable of the cost of raising children which is childcare costs.  $X_{COF}$  represents an independent variable of cost of living which is the Consumer Price Index.  $X_{INC}$  represents an independent variable of income which is GDP.

By using the regression analysis, we can specify whether each independent variable has an effect on the dependent variable or not. Additionally, the regression table provides p-values of each independent variable to determine the hypothesis whether we can reject the null hypothesis or not. P-value from each independent variable leads to the conclusions of the connection between each independent variable and dependent variable. If the P-value is lower than the set alpha of 5% (0.05), we can reject the null hypothesis hence conclude that that independent variable has statistical significance towards the dependent variable. Moreover, we can check the relation by scanning the coefficient.

### **Conclusion**

In conclusion, the research will assist in determining if the costs of raising a child have an effect on parents' decision of having children. The data were collected from readily available, and credible sources, which are categorized under the criterion of secondary data. The results will provide further observations of the relationship between the birth rate and the costs of raising a child. Moreover, the findings will pave way for further explanations to support the

alternative hypothesis, which signifies that the costs of raising a child have an effect on parents' decision of having children in Singapore. The evidence will allow the public to recognize the current situation, enabling the government to find workable ways to assist parents by subsidizing more costs to increase Singapore's birth rate in the future. Additionally, the findings from this research study can help with further investigations and analysis relating to this topic of concentration.

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