



Are Children a Normal Good or an Inferior Good? A Critique to the Neoclassical Theory

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ARTICLE INFO	ABSTRACT
<p>Received: 24.01.2019 Accepted: 09.09.2019 Available online: 23.10.2019 Article Type: Research article</p> <p>Keywords: Demand for children, desired family size, Neo-classical approach</p>	<p>This study analyzes the neoclassical theory on the demand for children. Neoclassical theory assumes that child demand is not different from a commodity demand. The neoclassical theory takes child demand in the utility function, like any other commodities. But, the demand for children is different from things which increase our utility; such as car, refrigerator, elevator, and other goods and services, whose price is determined in the market through its sellers and buyers. However, demand for children is determined by socio-cultural things. It is certain that there is a relationship between economic growth and child rearing. For example, economic growth raises the cost of children due the time spent on child care becoming more valuable. But it cannot be called "child demand is an inferior good".</p>

Çocuklar Normal Mal Mıdır, Yoksa Düşük Mal Mıdır? Neoklasik Teoriye Bir Eleştiri

MAKALE BİLGİSİ	ÖZ
<p>Geliş Tarihi: 24.01.2019 Kabul Tarihi: 09.09.2019 Çevrimiçi Kullanım Tarihi: 23.10.2019 Makale Türü: Araştırma makalesi</p> <p>Anahtar Kelimeler: Çocuk talebi, ekonomik büyüme, düşük mal, neoklasik yaklaşım</p>	<p>Bu çalışma neoklasik teoriyi çocuk talebi üzerine analiz etmektedir. Neoklasik teori çocuk talebinin herhangi bir mal talebinden farksız olduğunu varsaymaktadır. Bu bakış açısından hareketle çocuk talebi, diğer tüm mallar gibi, fayda fonksiyonu içerisine dahil edilir. Ne var ki çocuk talebi faydamızı artıran araba, buzdolabı, asansör ve diğer mal ve hizmetlerden farklıdır, zira bu tür malların fiyatları piyasada satıcılar ve alıcılar tarafından belirlenir. Çocuk talebi ise sosyo-kültürel gerçeklikler tarafından tayin edilir. Ekonomik büyüme ve çocuk yetiştirme arasında bir ilişki olduğu muhakkaktır. Örneğin, iktisadi büyümeyle birlikte çocuğa ayrılan vakit daha değerli hale geldiği için çocuk maliyetini de artırmıştır. Yine de bu sonuç çocuk talebinin bir düşük mal olduğunu göstermez.</p>

1.Introduction

This study aims to raise awareness that the tools of neo-classical approach cannot be implemented in each field. According to Neo-classical approach, the determination of goods, outputs, and income

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distributions in markets is based on supply and demand conditions. Supply and demand together determine equilibrium price and quantity. If all other things being equal, the higher the price of a good, the less people will demand that goods. Also, neo-classical economics rest on rational choice theory, in which individuals strive utility maximization with constrained income; firms struggle to realize profit maximization with given production costs, and people act independently on the basis of full and relevant information. In neo-classical theory, there is a certain justification of any act of firms or individuals; for example, a firm's layoff decisions are based on a balance between the benefits of laying off an additional worker and the costs associated with this behavior. From the neo-classical point of view, there is rationality behind the decision of a student who has to work and thus cannot regularly attend to the class and thus passes with a low grade. Like firms' layoff decision, a student's nonattendance to class is based on rationality. A theory which assumes that a student's nonattendance decision is based on a balance between the benefits of working in a job and the costs associated with that action will be a neo-classical theory. Thus, rationality can be defined as all means to achieve ends.

Caplan (2006) expresses that in modern neoclassical economics, rationality includes responsiveness to incentives. From this point of view, everything is normal and rational to achieve the goal. Why do suicide bombers commit a crime even they know that they will surely die? Can we say that terrorists are not rational? Caplan, in his defense of the rational choice model, relies on responsiveness to incentives and makes logical and forceful explanations. For rational expectations, Caplan admits that terrorists have some rather irrational beliefs, but attempts to defend rational expectations by claiming that individuals form their irrational beliefs rationally. There is no doubt that Caplan does not have any idea about what Holy book says: "if a person whoever kills an innocent, it is as if he has killed all mankind; and whoever saves a person, it is as if he has saved all mankind."

This study emphasizes that some human behavior may not be explained in the context of the framework of neoclassical economics because all the results of human actions cannot be calculated precisely, meaning that benefits and costs of all human actions cannot be determined as explained above. Thus, Caplan's interpretation of the suicide bomber is not true, because God reveals that the one who kills an innocent person will not go to heaven and it is assumed that he kills all humanity. Calculating benefit and cost is not always possible and not rational as well. However, there are studies in the literature that explain the behavior of some human actions; for example, fertility in consumer theory. Gary Becker (1960) and Leibenstein (1974) have the pioneering works in the area of microeconomic theory of fertility. These economists applied microeconomic tools in order to understand fertility behavior and demand for children. The basic question is that whether the decline in child demand is a result of income growth or from an increase in the absolute or relative cost of children. If we claim that the demand for children has fallen as a result of the increase in income, we also accept that the demand for children is different from normal goods demand, that is, it is inferior goods.

Studies that examine household behavior generally take into account expenditure and savings of households, factors which determine household expenditure and savings or factors that determine investments. However, this study analyzes the household's demand for children. The emphasis is that the demand for children is strictly different from that of goods and services.

It is a fact that child demand and fertility rate have been declined, but this fact does not mean that child demand and goods demand have the same law and rules. With the increase in the level of education, the increase in the age of marriage has caused people to have fewer children. When this situation is expressed in terms of the microeconomic context, the fertility rate has decreased with the increase in the relative cost of children and result in an appropriate adjustment in decreasing child demand.

For the last 50 years, many demographers have expected that industrialization would decrease fertility rates, thus family sizes fell with industrialization. Graph 1 shows that fertility rates are falling steadily since 1960. Also, Graph 2 shows GDP per capita with current US dollars has increased regularly, except for certain years, such as currency crises and depression years. According to this explanation, the following hypothesis can be set up:

If it is assumed that all other things being constant, the more a country has higher GDP, the lower the fertility rate she has.

This hypothesis ignores some assumptions; for example, it does not consider increasing the number of years that women are in school delays marriage, which in turn reduces the time duration that women are exposed to the possibility of conception. Also, women's labor participation has been increased with education and the age of marriage has risen compared to previous years; for example, In Turkey, the age of marriage is 31 for men, while the age of marriage for women is 28. In the 1960s, it is a normal result that fertility was high when the age of marriage was 15 for women and 18 for men. In addition to change in marriage age and duration of education, contraception and necessity of birth control increased with education. All these changes have caused women to have fewer children. What should be noted here is that women have fewer children than they desire. That is, as the level of income increases, the hypothesis that fewer children are demanded can be evaluated as being correct without examining other factors, but the decline in fertility and decrease in child demand depend on increase in education level and the delay of marriages, meaning less demand for children is as a result of demographic and social change in society.

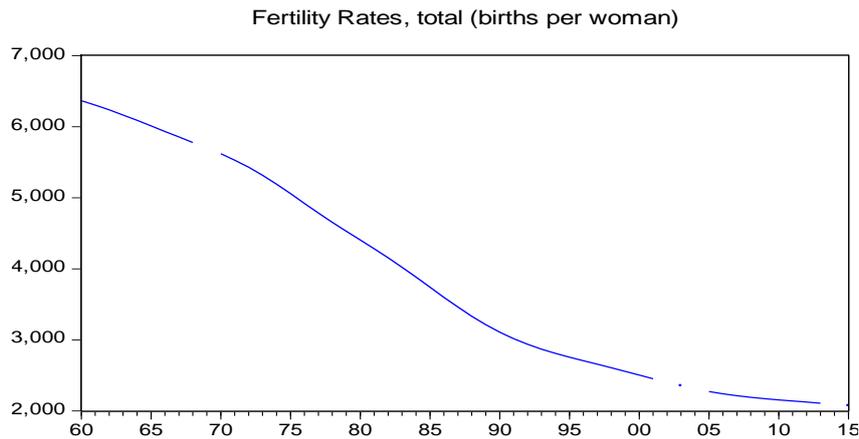
Dixon- Mueller (1993) suggests that women's participation in the labor market has given women a new identity and economic power. Thus, the dependence of women on men and children has been reduced. Dixon-Mueller concludes that women's level of education and women's labor participation, together with other commonly considered socioeconomic variables, including percentage of married couples using contraception, are important in quantifying the variation in total fertility rate.

Thus, can we make the following hypothesis?

Industrialization has reduced the demand for children.

There are two facts: The first is that the industrialization reduces demand for children, and the second is that children do not become inferior goods with increase in income. As the hypothesis implies, the increase in the level of education of women and the increase in their participation in the labor market lead to a decrease in the dependence of them on men and children. Industrialization and economic growth raise the cost of children due the time spent on child care becoming more valuable. This may not be true in the whole country. For example, rural fertility can be higher because the cost of rearing when children contribute work to maintaining the farm is lower than in the city.

Turkey is considered as one of the emerging economy for several decades. Recently, we witnessed that Turkey has elevated its status to an emerging power. Thus, it is important to see changes in fertility rates and GDP in Turkey. Graph 1 shows that fertility rates in Turkey have been significantly decreasing since 1960s. On the other hand, as shown in graph 2, GDP per capita in Turkey with current US dollar has been increasing since 1960s.



Graph 1. Fertility Rate in Turkey. (Source: Author's own elaboration using WDI data).

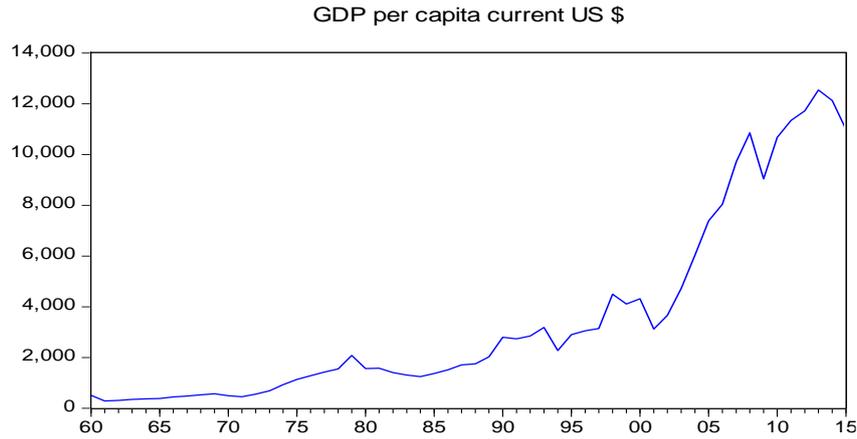
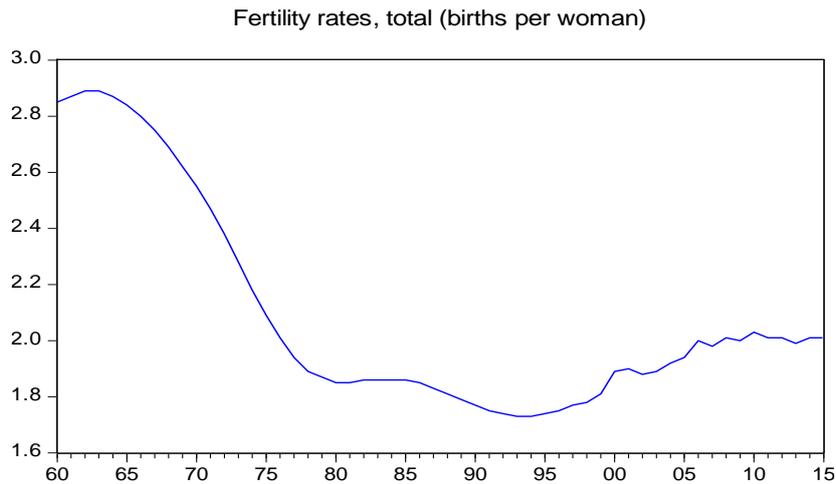


Figure 2. GDP per capita in Turkey with current US \$. (Source: Author’s own elaboration using WDI data).

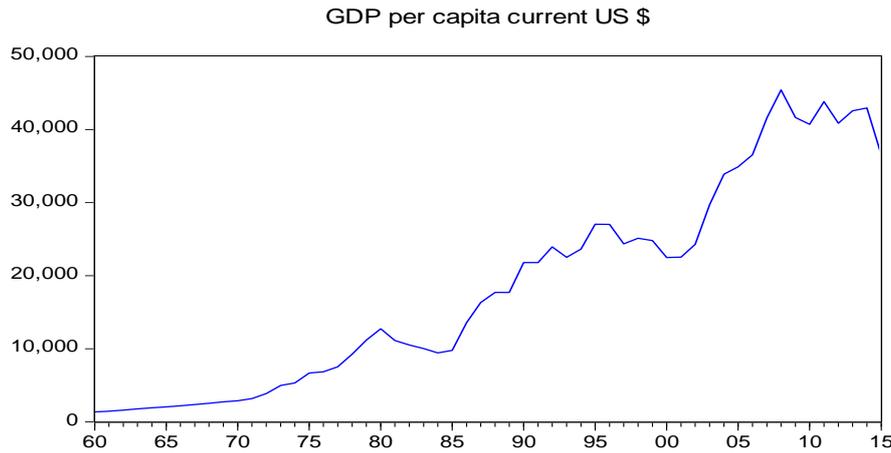
Since the decline of the fertility rate started in France earlier than other countries, France has been selected to represent the relationship between population growth and GDP in developed countries. The reason for choosing France is the increase in fertility rate due to the longstanding family policies implemented in recent years. Thus, France stands out from many European countries because of its relatively high and stable fertility.

With the economic development of France and the rise in income levels, birth rates and population growth rates have slowed down significantly since 1975. French government has begun to take measures to increase birth rates in order to prevent the negative consequences of this situation. Posters that families should have more children could be seen almost all over the country at that time. In addition to these incentives, the French government allowed the migration of foreign workers from other countries, especially Algeria, Morocco and Tunisia, in order to meet the labor needs.

Graph 3 and 4 show the fertility rate and the per capita income in France, respectively. In France as well, the fertility rate steadily declined from 1960 to 1995. But, per capita income has continuously increased, except during periods of crisis. We can also make interpretation what we did for Turkey to France. Although the child demand seems to have fallen with the increase in income, behind this, there are some factors which are mentioned above such as the increase in education level, the delay of marriage and the increase of women's participation in the labor market.



Graph 3. Fertility rate in France. (Source: Author’s own elaboration using WDI data).



Graph 4. GDP per capita with current US \$ for France. (Source: Author's own elaboration using WDI data).

The explicit application of micro-economic methods to the analysis of child demand began in the late 1950s and early 1960s when Leibenstein, Okun, Becker and others attempted to explain the effect of the level of income and economic development on a family's child demand (Cochrane, 1975).

An answer to what factors determine the number of children people will demand is given by Gary Becker who places family-size goals in the framework of economic theory by treating children as a consumption good analogous to cars, houses, and refrigerators (Blake, 1968).

Using the term 'the economic approach' to human behavior, Gary Becker and other neo-classical economists forcefully argue that economic efficiency determines household behavior.² They assume that household seeks to maximize exogenously given joint utility functions, like any firm behavior to maximize its profit, and they hypothesize that differences in household behavior represents efficient responses to differences in prices and incomes which households face (Folbre, 1984). As it is known that the theory of the firm assumes a profit maximization objective. Similarly, the theory of the consumer effectively assumes utility maximization, with many restrictions on what provides utility. Neoclassical economics focuses on prices, outputs, and income distributions in markets determined by demand and supply.

According to Becker and other neoclassical economists, there must be a relationship between child demand and income or standards of living. They state that as the rate of return to human capital and education level increase, the cost of rearing children goes up. On the other hand, the opportunity cost of mother's time goes up as higher wages draw women out of the household into labor market, and finally increase the cost of children. Therefore, the demand for children decreases and fertility level gradually adjust as wages paid to women increase.

Also, in an article named 'Child Endowments, and Quantity and Quality of Children', Gary Becker and Nigel Tomes (1976) include social interactions and special relation between quantity and quality of children. And, Becker and Tomes conclude that large increase in expenditures on children would reduce the demand for them because the cost of each child is directly related to the expenditure on each child.

In sum, it can be concluded that neoclassical theory states a negative relationship between the quality of children and their size in the family since after a point, which shows the optimum child demand, demand for children decreases.

² It is known that the primary goal of neo-classical economics is to provide efficient allocation of scarce resources.

2. Model

In this section, a child demand model will be created by using neoclassical tools. As it is known, the concept of marginal change has an important meaning in neoclassical theory. Therefore, neoclassical economists have been described as marginalists for a long time.

Since the neoclassical theory treats children as a commodity which is bought and sold and they also have a price, children can be included in the utility function.

$$U_i = u(C, X_i, Y, L)$$

where U_i is utility of person i , C is demand for children, X_i demand for X commodity, Y is income for i , and L is leisure.

$$Y = wW$$

where w is wage rate, and W is working hours.

$$Y = P_i X_i + P_c C$$

where P_i is the average price of commodities consumed by i .

$$T = W + L + C. \text{ Where } T \text{ is time spent on working, leisure, and on children.}$$

In these conditions, what does determine child demand?

For this purpose, we need to reorganize the utility function and to get the derivative of the utility function according to the child. Our aim is to find out how individual i 's utility changes when his/her child demand changes?

$$U_i = u\left(C, \frac{Y - P_c C}{P_i}, P_i X_i + P_c C, T - W - C\right)$$

To find the ideal child demand, it needs to be taken derivatives with respect to child and equal those derivatives to zero.

$$\partial U / \partial C = \partial U / \partial C + \partial U / \partial X_i (-P_c / P_i) + \partial U / \partial Y (P_c) + \partial U / \partial L (-1) = 0$$

According to this model, child demand is a function of child price³ (P_c), commodity price (P_i), income (Y), and leisure (L). This demand function can be expressed as followed:

$$C^* = f(P_c, P_i, Y, L)$$

Now, suppose that consumer i 's wage rate increases. How does demand for children affected from this increasing in wage rates?

In economic theory, income is a sole determinant to decide a good is a normal or an inferior one because an inferior good is a good that is bought in smaller quantities as an individual's income rises. According to this definition, if children were normal goods, then their parents would demand more children when they get richer. Thus, how the changes in wages and incomes affect child demand is important. Therefore, only the effect of income change on child demand has been considered in the model.

$$U_i = u\left(C, \frac{wW - P_c C}{P_i}, wW, T - C - \frac{Y}{w}\right)$$

³ The price of the child includes all expenses incurred to the child and the time allocated to him or her.

$$\partial U / \partial C = \partial U / \partial C + \partial U / \partial X_i (-P_c / P_i) + \partial U / \partial Y (P_c) + \partial U / \partial L (-1) = 0 \equiv H$$

If the equation above is called as H, the implicit function theorem can be used to answer the question.

$$\frac{\partial C^*}{\partial w} = - \frac{\partial H / \partial w}{\partial H / \partial C^*}$$

As it has been seen above, the implicit function consists of two parts, namely the numerator and the denominator.

The numerator:

$$\frac{\partial H}{\partial w} = \frac{\partial^2 U}{\partial C \partial X} \left(\frac{W}{P_i} \right) + \frac{\partial^2 U}{\partial C \partial Y} W + \frac{\partial^2 U}{\partial X^2} \left(\frac{W}{P_i} \right) \left(-\frac{P_c}{P_i} \right) + \frac{\partial^2 U}{\partial Y^2} W (P_c)$$

Sign: (+) (+) (-) (-) (+)

The sign of the numerator is positive.

Now, the denominator can be found as followed.

$$\frac{\partial H}{\partial C} = \frac{\partial^2 U}{\partial C^2} + \frac{\partial^2 U}{\partial C \partial X} \left(-\frac{P_c}{P_i} \right) + \frac{\partial^2 U}{\partial C \partial L} (-1) + \frac{\partial^2 U}{\partial X^2} \left(-\frac{P_c}{P_i} \right)^2 + \frac{\partial^2 U}{\partial X \partial L} \left(-\frac{P_c}{P_i} \right) + \frac{\partial^2 U}{\partial L^2} (-1)(-1) \text{ Sign: } ?$$

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The main problem is to determine the sign of $\partial^2 U / \partial C^2$ because the sign of the second derivative is ambiguous. If the second derivative of the utility function with respect to child demand is negative, the sign of the denominator will be negative and this means that there is a positive association between income and child demand. Thus, the derivative of child demand with respect to income has been found positive. On the other hand, this result is completely different from the graph showing the increase in income and the increase in population. Again, if the sign of $\partial^2 U / \partial C^2$ is accepted as positive, result will be indeterminate.

$$\frac{\partial C^*}{\partial w} = - \frac{\partial H / \partial w}{\partial H / \partial C^*} = - \frac{+}{-}$$

If it is accepted that the quality of children will be decreased as the number of children increase, the sign of the second derivative will be negative, it means that after a point, it will be less to have children as it is in the consumption of goods and services. Who determines that point? This is a crucial question. When you decide to have another child, nobody can say anything about whether utility from children will be decreased because of this new born, on the other hand, nobody can measure the quality of your children. Therefore, we cannot mention about the equilibrium of child demand since children are not a commodity whose values are determined by demand and supply conditions. The answer of the question of how many children people will have is related to socio-cultural things.

Neoclassic economists, Lucas (1988) and Romer (1990) introduced the human capital formation as an engine of growth. According to these authors, the stock of human capital determines long term economic growth. Therefore, I expect that developing countries should focus on to increase educated labor force and should increase the demand for children because the probability of genius children will increase as the number of children increases. Thus, when I think from Lucas and Romer’s perspective, child demand should increase contrary to other neoclassic economists, like Becker and others, to obtain a sustainable growth. Also, when we consider ‘the endogenous growth model’ introduced by Lucas (1988) and Romer (1994), we can understand why less developed regions should have rapid population growth than developed ones, but it is not true that poor countries are rational and thus they have higher fertility rate.

Unlike the explanations of neo-classical economists, it is possible to express why the poor countries in real life as having more children as follows:

There are multiple reasons why less developed countries have higher fertility rate. For example, in a primarily agricultural or herding society, children represent family's wealth (they're low-cost workers who can do simple tasks). Also, children provide old-age security in societies where they're expected to look after their parents. In countries where infant mortality are high, parents do not expect that all of their children will survive, thus they are more likely to have children than they really want.

3. Conclusion

The neoclassical theory takes child demand in the utility function, like any other commodities. But, the demand for children is different from things which increase our utility; such as car, refrigerator, elevator, and other goods and services, whose price is determined in the market through its sellers and buyers. However, demand for children is determined by socio-cultural things. In addition to these explanations, the neoclassic theory shows a contradiction to new growth theories, which emphasize human capital in order to increase long term growth rates, explained by Romer and Lucas. In Lucas and Romer's model, there is no any explanation about returns to human capital will decrease as child demand increases. Therefore, I can conclude that human being is a dominant factor to create value, and we cannot take child demand in a utility function like any commodity and services.

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