

# Lowest-Low Fertility and Governmental Actions in Japan: A Comment

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## 1. Introduction

The reasons of lowest-low fertility in Japan and the effect of governmental actions are important issues on the agenda posed by Toru Suzuki (2006). The main messages of Suzuki (2006) are the following two points:

- (1) based on previous studies, the effect of the policy coping with low fertility rate in Japan has not been confirmed or may be very small;
- (2) the Japanese low fertility rate may be strongly affected by its cultural factors.

I will reexamine these two points in Suzuki's paper.

This paper is composed by the following sections. Section 2 summarizes the points and implications of Suzuki (2006). In section 3, questions are posed. Section 4 contains the discussions. The conclusion is presented in section 5.

## 2. Points and implications

This section summarizes the points and implications of Suzuki (2006).

### 2.1. Policy interventions

Suzuki (2006) surveys a large number of previous studies. It mainly focuses on the effectiveness of the government policies. The Japanese government has been made many plans to cope with its low fertility rate. As for these government actions and plans, Suzuki concludes that they have been ineffective.

Secondly, Suzuki surveys the empirical studies about the effect of child allowance. Some empirical studies find positive evidences about the effect of

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child allowance on the fertility rate. Suzuki, however, points out the significance of these results are small. Thirdly, Suzuki discusses the effect of childcare leave on the fertility. As for this policy, previous studies find significantly positive effects.

Using the estimated parameters of those studies, Suzuki evaluates the quantitative effect on the fertility rate by introducing childcare leave in Japan. Suzuki finds that the actual quantitative effect is very small. To improve the TFR by 0.1, Suzuki (2006, p.15) points out “... impressive improvement [of the proportion of women who take childcare leave] from 9% to more than 40% is required. It would be difficult to make such an advance within a decade.”

Finally, Suzuki argues the effect of childcare service. The effect of childcare service is not sure or small.

## **2.2. Compatibility and micro-macro paradox**

Suzuki (2006, p.16) introduces a simple but interesting model to discuss the compatibility between wife's work and childbearing and the micro-macro paradox. Suzuki points out the fact that some countries succeeded in improving the compatibility between wife's work and childbearing with the negative correlation at the micro level.

According to Suzuki's analysis, “the higher the compatibility, the narrower the area in which the micro-macro paradox holds.” If the mechanism of this model stands, the compatibility between wife's work and childbearing at the macro level helps us much in improving the negative correlation at the micro level.

## **2.3. Cultural Factors**

In addition to the investigation of the economical factors, Suzuki focuses on the cultural factors for explaining the low fertility rate of Japan.

### **2.3.1. Historical background**

Suzuki refers the study of McDonald (2005). Using the TFR of each country, McDonald divides countries into two groups: one below and above the line of 1.5. Japan is categorized into the below 1.5 group. Suzuki (2006, p.21) quotes McDonald's assertion that this division has deep historical roots and is difficult to change.

Suzuki also pays attention to the theorem asserted by Reher (1998). Reher (1998) discussed the relationship between the women's position in the society and fertility by country. Based on the Reher's theorem, Suzuki (2006, p.21) concludes, “[G]ender equity and compatibility between wife's work and childcare in today's moderately low fertility countries have long historical background.”

### 2.3.2. Timing of home-leaving

Suzuki inquires the timing of home-leaving as one of other factors of Japanese low fertility. Suzuki points out that the timing of home-leaving of Japanese young female is late compared to male of Japan.

## 2.4. Implication

This subsection considers the implication of Suzuki's paper.

As for the question of "Can Japan recover its fertility rate?" Suzuki (2006) will replies "No" or "It may be very hard to recover." The reasons listed in Suzuki (2006) are followings:

- (1) many studies of Japanese fertility find only weak policy effects;
- (2) Japan is categorized into a different group from that of high fertility countries from the historical and cultural view point.

I suppose that the phrase of the "cultural factors" used in Suzuki (2006) means that part of the fertility rate which is not explained by economic variables.

## 3. Questions

In this section, the questions to be discussed are described.

First, Suzuki (2006, p.8) indicates the problem of educational cost. I agree that the educational cost matters when we consider the cost of childcare or child raring. Suzuki, however, uses the rate of college enrollment as the evidence of child cost. I think that this data is not adequate in evaluating the "cost" of child raring. The development of the rate of college enrollment means that many parents buy this service. If the rate of college enrollment is used, Suzuki has to explain the reason why parents buy this costly service. I suppose that the change of the unit price of education would be better indicator if we consider the education as a cost of child raring.

Secondly, Suzuki supports the viewpoint of cultural differences between Scandinavian countries and Asian –including Japan countries. I do not totally deny the importance of factors other than economic ones. However, we have to explain the reason of the decline of the Japanese fertility rate after Japanese society has been westernized and the position of Japanese women has been improved.

Thirdly, the model of compatibility and the micro-macro paradox introduced in Suzuki (2006, p.16) is interesting. The definition of parameter "g" is, however, ambiguous. At the beginning of the explanation, the "g" is defined as the proportion of working mothers, the index of result. On the contrary, the "g" is treated as the index of compatibility –the index of policy in advance, at the end of the explanation.

## 4. Discussion

This section sets two agendas to discuss related to the knowledge put in Suzuki (2006).

### 4.1. Does Japan differ from other countries?

First, this paper discusses the difference of the childbearing behavior of Japanese people. At a glance, the historical movement of Japanese fertility rate differs from other countries. In addition to that, the Japanese current TFR is one of the lowest among developed countries. However, we have to focus on the childbearing behavior, not the TFR itself when we consider the recovery of the fertility rate. My personal opinion is “No. Not so different.”

Some will say, “In fact, the TFR in Japan differs much!” As for this indication, I will answer “Not because of Japanese preferences, but because of economic variables.” Even if a Japanese household has totally the same preference or parameter in their behavior, the different magnitude of economic variables will cause seemingly different results. To confirm this hypothesis, we should confirm the *difference* directly based on the estimation of a comparable fertility rate function, not based on indirect evidences.

Yoshida (2006) made a comparable estimation of fertility function using the regional data of Norway and Japan. Yoshida (2006) estimates the MFR (Modified Fertility Rate: the number of 0-4 or 0-5 over the number of women aged 25-29) of each municipality by men’s income, women’s income, couple rate, and the coverage rate of the capacity of childcare institution over the number of children in each area.

The result is introduced in Table 1. The result says the following three things.

- (1) The men’s income has two effects. The positive coefficient means an income effect. The negative coefficient means a substitutional effect --- the opportunity cost of childcare.
- (2) The women’s income has mainly a substitutional effect.
- (3) The effect of childcare institution may be positive but the result is not decisive.

Statistically, the result of WLS (Weighted Least Square) is good. So, I will discuss based on the WLS result.

The most impressive result in Table 1 is: The signs of the coefficients of both countries are totally same for each variable. In addition, the estimated magnitudes of economic variables - income are near to each other. This implies the basic childbearing behavior of Japanese people does not differ from Norway - one of the highest fertility rate in Scandinavian countries. This means the

Japanese fertility rate can be changed if the economic environment will be improved.

**Table 1 Estimation of the fertility rate function**

	Norway		Japan	
	(I)	(II)	(I)	(II)
Intercept	3.058*** (6.271)	1.409*** (3.879)	3.106*** (2.880)	3.521*** (4.114)
Men's income	-0.0147*** (-3.965)	-0.0184*** (-7.031)	-0.0163 (-1.578)	-0.0198** (-2.322)
Men's income <sup>2</sup>	0.0475*** (4.454)	0.0504*** (7.946)	0.0281 (1.172)	0.0413** (2.207)
Women's income	-0.0124*** (-6.897)	-0.00717*** (-6.490)	-0.00286 (-0.824)	-0.00594** (-2.054)
Couple rate	2.981*** (6.150)	5.021*** (28.488)	1.139*** (2.961)	1.291*** (3.879)
Childcare institution coverage rate	-0.135 (-0.652)	0.305* (1.757)	0.00184 (0.017)	0.0974 (0.929)
Way of Estimation	OLS	WLS	OLS	WLS
Number of Observation	433	433	47	47
F-statistic	24.286	369.203	28.666	67.918
Adjusted R-square	0.212	0.810	0.750	0.879

*Source:*Yoshida (2006)

#### 4.2. Can Japan recover its fertility rate?

In previous subsection, I discussed the possibility of explaining Japanese low fertility rate mainly based on economic factors. This subsection considers the possibility of recovering the Japanese low fertility quantitatively using a simulation method.

I admit that previous studies find only weak evidences about the effect of family policies. This paper, however, indicates that these previous studies about Japanese policy are based on the data under current insufficient systems. In my personal opinion, the adequate policy measures that reduce the cost of children will work in Japan.

Using the result of Table 1, this paper makes a simple but concrete simulation about the recovery of Japanese fertility rate. This simulation assumes the time cost of women is reduced. The model estimated and used here is,

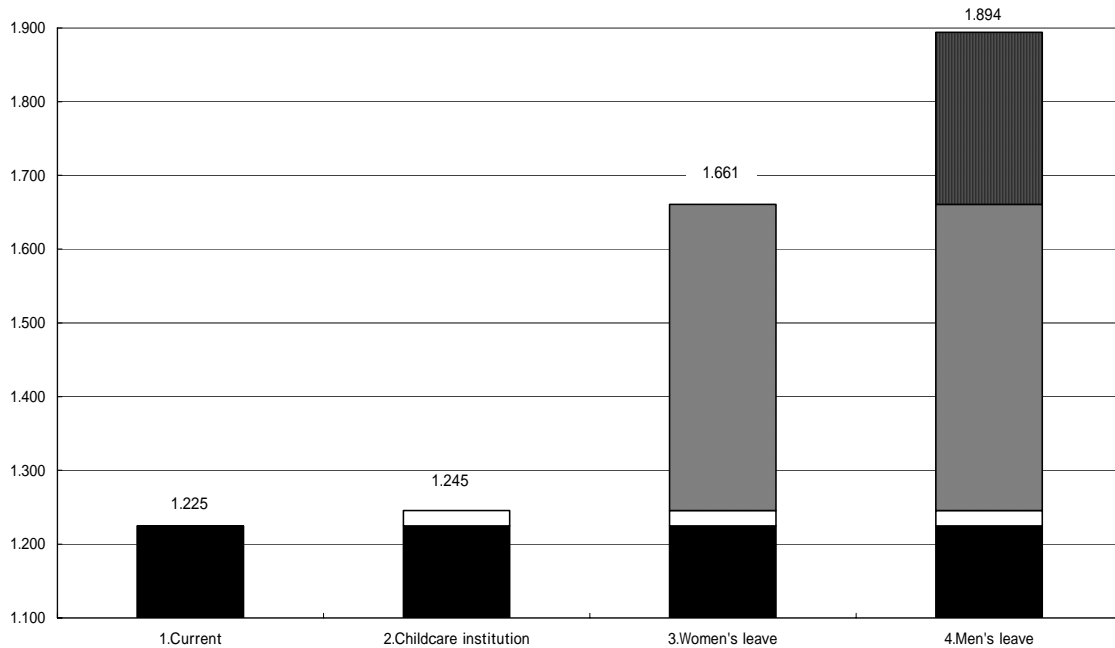
$$MFR=3.521 - 0.0198Y+0.0413(Y^2/1000) - 0.00594w+1.291(Couple\ rate)+0.0974CICR. (1)$$

*MFR:* Modified Fertility Rate.

CICR: Childcare institution coverage rate.

The result is shown in Figure 1.

**Figure 1. Simulation results of fertility rate recovery**



*Source:* Author's calculation based on the result of Table 1.

Figure 1 shows the results of four simulations. One is the current rate of MFR. This simulation explains the other three cases.

**(1) Improving childcare institutions**

This case assumes the coverage rate of Japanese childcare institution (31.6%) to be improved to the same rate as Norway (52.8%). The result does, however, not increase so much. This means that it will not be easy to recover the Japanese fertility rate only by improving the coverage rate of childcare institutions.

**(2) Women's maternity leave**

The Statistics Norway (2006, p.6) reports followings.

Norway's relatively high fertility rate is assumed to be related to the parental leave scheme, which makes it easier for women to combine a career and

children. Three out of four women are now entitled to such leave, and three out of four choose to stay at home for 52 weeks with 80 per cent pay.

The earmarked part of the parental leave (father's quota), up to four weeks, is taken by around 87 per cent of fathers who are entitled to such leave.

However, almost 40 per cent are not entitled to such leave, which means that in total only around 50 per cent of fathers take paternal leave. Fathers take 23 days leave on average, and this figure has been stable since 1994.

Based on this report, the second simulated case assumes that 3/4 women are entitled to maternity leave and 3/4 women use this leave with 80% pay. To see the effect of this scenario, the  $w$  in the equation (1) will be substituted with  $w'$ .

$$w' = (1 - 3/4 \times 80\% \times 3/4)w. \quad (2)$$

The result says the gross effect of women's maternity leave – including the effect of childcare institutions, improves the fertility rate to 1.661. This will be a good value.

### (3) Men's maternity leave

This case assumes that 60% of men are entitled to maternity leave and 87% of men use this a 23 days leave. To see the effect of this scenario, the  $Y$  in the equation (1) will be substituted with  $Y'$ .

$$Y' = (1 - 60\% \times 87\% \times 23/(365 - 128)) Y. \quad (3)$$

The figure of 128 in the equation (3) is the number of holidays in Japan. Since this leave gives fathers only time, not money, this simulation considers only the substitutional effect. So, the  $Y$  of +0.0413( $Y^2/1000$ ) is not substituted with  $Y'$ .

The result says the gross effect of men's maternity leave – including the effect of childcare institutions and women's maternity leave, , improves the fertility rate to 1.894. This value is near the TFR of Norway.

## 5. Conclusion

This paper reexamined the results of Suzuki's paper. Suzuki (2006) says the effect of the policies coping with low fertility rate in Japan is not valid in many cases and the structure of Japanese fertility rate is different from other countries. If we follow these results, we cannot hope for the recovery of the Japanese fertility rate.

On the contrary, this paper made a comparable regression of a fertility rate function using the regional data of Norway and Japan. The result says that the basic behavior of childbearing in Japan is explained by the same model as Norway's one. Especially the signs and magnitude of estimated coefficients are the same or close. Based on the result of this regression, we can simulate a recovery of the Japanese fertility rate near to 1.9 in the maximum case.

## References

Suzuki Toru (2006), "Lowest-Low Fertility and Governmental Actions in Japan", a thesis for the international conference on declining fertility in east and Southeast Asian countries at Hitotsubashi collaboration center, Tokyo, December 14-15, 2006.

McDonald, Peter (2005) "Fertility and the State: The Efficacy of Policy," XXV International Population Conference.

Reher, David Sven (1998), "Family Ties in Western Europe: Persistent Contrasts," *Population and Development Review*, Vol. 24, No. 2, pp. 203-234.

The Statistics Norway (2006), "Women and men in Norway: What the figures say," available from [http://www.ssb.no/ola\\_kari\\_en/ola\\_kari\\_en.pdf](http://www.ssb.no/ola_kari_en/ola_kari_en.pdf).

Yoshida Hiroshi (2006), "Nihon no Syussyou-ritu Kaifuku ni Kansuru Simulation Bunseki (The Simulation Analysis of the recovery of the Japanese Fertility Rate)," Tohoku Economic Research Group, Discussion Paper, No.213, (*in Japanese*).