

# Comparison of Fertility Behaviour of Four Northern States (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh) with Tamil Nadu: A Decomposition Analysis

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## Abstract

There are various factors which influence fertility behaviour and each factor operates with different strength. Previous literatures has identified female education, place of residence, wealth index predominantly influence the fertility rate of any region. So in this study the analysis is carried out to see if the education, wealth and place of residence of the four northern state (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh) same as Tamil Nadu then their fertility will be as same as Tamil Nadu? But this study reveals that these factors are not the main fertility declining factor in Tamil Nadu. There are other state specific factors which are influencing more on fertility reduction than the aforesaid factors. Then the question arises, What are the other state factors?

**Keywords:** Fertility, Decomposition, Wealth, Education, Cultural

## 1. Introduction

Fertility, mortality, and migration are the three major demographic events which affect the population size of an area through births, deaths, and migration. In these three events, fertility plays a very important role, and fertility depends on numerous socioeconomic, cultural and other factors.

The term fertility embraces many different aspects of this capacity depending on the context. Fertility sometimes refers to the likelihood of being able to conceive (fecundity). It is often used as a measure of the numbers of babies being born in total or per capita in a given time (period measure). In the words of Lewis and Thompson (Dasgupta, 2012, p. 65), "Fertility is generally used to indicate the actual reproductive performance of a woman or a group of women". Arokiasamy et al. (2004) say that positive educational externality is one of the main reasons of fertility decline in some southern states. According to Sujatha and Reddy (2009) education will affect fertility by bringing changes in the duration of breastfeeding, increasing age at marriage, increase in the practice of contraceptive, reduction in the preference for son and large numbers of children.

On the basis of the study by Arokiasamy (2009), decline of fertility among illiterate women in India takes place because of the improved health and development conditions. In this study the increase in contraceptive prevalence rate among uneducated women has been larger and faster among educated women. In a study by Roy et al. (2004) indicators of women's empowerment found a regional divide, between Tamil Nadu and Uttar Pradesh. This divide is mainly because of socio-cultural variations in the level of empowerment. Education plays a major role in women's self esteem and favourable attitude towards girl's education and use of contraceptives across both cultures (Tamil Nadu and Uttar Pradesh). The two different societies which are prevailing in India are having the rural culture and urban culture. We can see, in rural areas the lifestyle is oriented more towards the community than family, while in urban areas the lifestyle is more individualistic and family oriented. This type of behaviour is more seen in Uttar Pradesh than Tamil Nadu.

## 1.2. Purpose of the Study

In this study, an attempt has been made to examine the magnitude of influence of the various socioeconomic and demographic determinants of fertility behaviour. It is hypothesised that fertility behaviour is an outcome of the complex interplay of social, economic, demographic and geographical situations. In this study, two different societies have been chosen for an empirical analysis, which is different in their level of fertility behaviour as well as in terms of socioeconomic, cultural and geographical settings. These two societies are four states of north India, i.e., Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, and one state of south India, i.e., Tamil Nadu.

## 1.3. Objective

The study is designed to see why fertility in the four states, Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh is higher than that in the southern state of Tamil Nadu. However, the main objective of this paper is to identify the factors responsible for the differences in fertility in the four northern states on the one hand and Tamil Nadu on the other.

## 1.4. Data and Methodology

This study will utilise secondary data from the National Family Health Survey (NFHS- III 2005-06). In the

methodological part, decomposition analysis has been utilized in order to achieve the prime objective of this study. The major reason to use decomposition method for this study is to identify the dominance of most influencing factor which is acting behind the phenomena of fertility differential among northern states and Tamil Nadu. Decomposition helps to know differences due to composition factors (like education, wealth, and Place of residence) and other socio-cultural factors which prevail in the states of the study area. The procedure is described below:

Let,

$TFR_o$  = TFR of standard state (Tamil Nadu in this case)

$TFR_i$  = TFR of state i.

Further,

$TFR_{ij}$  = TFR for education category j in the state i.

$P_{oj}$  = Proportion of population in education category in the standard state. Then,

TFR of state i standardised for education =  $\sum TFR_{ij} \times P_{oj}$

This would be the TFR of state i if it had the same educational composition of the standard state.

Then,

$TFR_i - \text{Standardised } TFR_i$  = Effect of difference in composition by education.

And  $\text{Standardised } TFR_i - TFR_o$  = Effect of other factors.

The total difference in TFR, ( $TFR_i - TFR_o$ ) is thus decomposed as:

$(TFR_i - TFR_o) = (TFR_i - \text{Standardised } TFR_i) + (\text{Standardised } TFR_i - TFR_o)$  = Effect of difference in educational composition + Effect of other factors

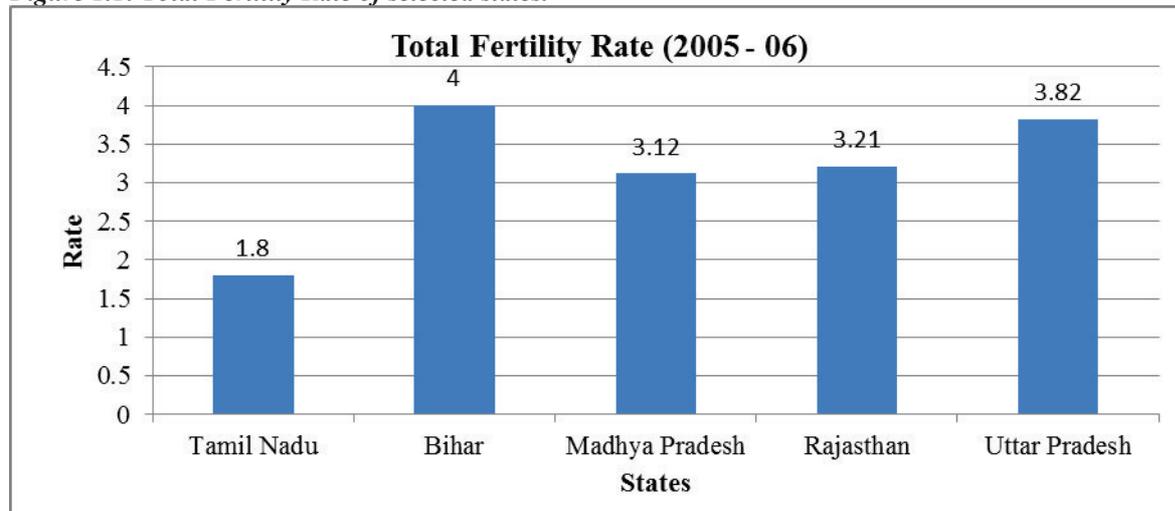
The same procedure has been followed for other background factors. Decomposition with the place of residence and wealth index has been followed by the decomposition of TFR. And in the contraceptive use category, the same method is used to obtain the decomposition results.

## 2. Results

The available literature suggest that the principle cause of declining fertility changes in the demand for children as well as diffusion of new attitudes about birth control and greater accessibility of contraception provided by family planning programmes. In turn, these depend on socioeconomic factors. However, the critical question is how much fertility change in a particular state can be attributed to each of these broad explanatory factors. It is possible to quantify the role of a key independent factor with the help of a decomposition analysis. The decomposition procedure permits us to delineate factors that may have contributed to observe a decline in fertility as it gives the answer to the question that “how much the prevalence of fertility differentials are attributable to differences in state’s socioeconomic conditions?”

Figure 1.1 shows the total fertility rate in the study area, in which Tamil Nadu (1.8) shows a very low fertility compared to all the northern states. Here Bihar is experiencing higher fertility (with TFR 4) than all other northern states, whereas there is not much difference prevailing between these northern states. Among all northern states, only Madhya Pradesh has lower fertility, but its TFR is above a critical level of 3.

**Figure 1.1: Total Fertility Rate of selected states.**



Source: NFHS III India Report, 2005-06.

### 2.1. Decomposition of Total Fertility Rate

As we can see, the actual fertility rate of the four northern states is very high as compared to the actual fertility of

Tamil Nadu. To know whether the education, wealth, and place of residence factors contribute to this wide difference of Fertility between them we used decomposition method, with each of the four states standardised to the composition of Tamil Nadu.

**Table 1.1: Decomposition of TFR with Education.**

State	Actual TFR	Standard (By T.N Education)	Tamil Nadu TFR	Difference	
				Due to Education Factor	Due to Other Factors
<b>Bihar</b>	4.06	3.55	2.04	0.51 (25.2)	1.51 (74.8)
<b>Rajasthan</b>	3.23	2.82	2.04	0.41 (34.5)	0.78 (65.5)
<b>Uttar Pradesh</b>	3.86	3.52	2.04	0.34 (18.7)	1.48 (81.3)
<b>Madhya Pradesh</b>	3.26	2.97	2.04	0.29 (23.8)	0.93 (76.2)

**Source:** Computed from NFHS-3 Report. Figures in brackets are in percentage.

The decomposition shows that while the TFR in Bihar is 4.06, it would have been 3.5 if Bihar had the same educational composition as Tamil Nadu, that is proportioned in each category in Bihar were hypothetically the same as in Tamil Nadu (Table 1.1). Thus, the TFR in Bihar is higher by 0.5 points (4.06 – 3.55) than Tamil Nadu due to the unfavourable educational conditions in Bihar. But TFR in Tamil Nadu is 2.04. The difference of 1.5 points (3.55 – 2.04) is attributable to the influence of other factors. Thus, of the total difference of 2.0 points in TFR between Bihar and Tamil Nadu (4.06 – 2.04), only 0.5 or 25 percent is because of the poorer education conditions. But the remaining 1.5 points (or 75 percent) is because of other differences between Bihar and Tamil Nadu. Clearly, the high (higher than Tamil Nadu) fertility in Bihar is only partly due to the education factor. Results from other states (Table 1.1) are similar with minor variations.

The highest difference due to educational factor is 34.4% and lowest of 18.6%, in Rajasthan and Uttar Pradesh respectively. The contribution of other state factors to the difference in fertility is highest in Uttar Pradesh (81.3%) and the lowest 65.5% in Rajasthan.

**Table 1.2: Decomposition of TFR with Wealth Index.**

State	Actual TFR	Standard (By T.N Wealth Index)	Tamil Nadu TFR	Difference	
				Due to Wealth index Factor	Due to Other Factors
<b>Bihar</b>	4.12	3.50	1.80	0.62 (27.6)	1.70 (73.0)
<b>Rajasthan</b>	3.30	3.10	1.80	0.20 (13.5)	1.28 (86.5)
<b>Uttar Pradesh</b>	3.94	3.59	1.80	0.35 (16.5)	1.77 (83.5)
<b>Madhya Pradesh</b>	3.19	2.83	1.80	0.36 (26.3)	1.01 (73.7)

**Source:** Computed from NFHS-3 Report. Figures in brackets are in percentage.

The decomposition shows that while the TFR in Bihar is 4.12, it would have been 3.50 if Bihar had the same wealth composition as Tamil Nadu that is proportioned in each category in Bihar were hypothetically the same as in Tamil Nadu (Table 1.2). Thus, the TFR in Bihar is higher by 0.62 points (4.12 – 3.50) than Tamil Nadu due to the unfavourable wealth conditions in Bihar. But TFR in Tamil Nadu is 1.80. The difference of 1.70 points (3.50 – 1.80) is attributable to the influence of other factors. Thus, of the total difference of 2.32 points in TFR between Bihar and Tamil Nadu (4.12 – 1.80), only 0.62 or 27 percent is because of the poorer wealth conditions. But the remaining 1.70 points (or 73 percent) is because of other differences between Bihar and Tamil Nadu. Clearly, the high (higher than Tamil Nadu) fertility in Bihar is only partly due to the wealth factor. Results from other states (Table 1.2) are similar with minor variations.

The highest difference due to the wealth index factor is 26.9% in Bihar and lowest of 13.5% in Rajasthan. The contribution of other state factors to the difference in fertility is highest in Rajasthan 86.4% and the lowest 73% in Bihar.

**Table 1.3: Decomposition of TFR with Place of Residence.**

State	Actual TFR	Standard (By T.N Residence)	Tamil Nadu TFR	Difference	
				Due to Place of Residence Factor	Due to Other Factors
<b>Bihar</b>	4.20	4.10	1.85	0.10 (4.2)	2.25 (95.8)
<b>Rajasthan</b>	3.25	2.96	1.85	0.29 (20.1)	1.15 (79.9)
<b>Uttar Pradesh</b>	3.84	3.58	1.85	0.26 (12.8)	1.77 (87.2)
<b>Madhya Pradesh</b>	3.14	2.99	1.85	0.15 (11.3)	1.18 (88.7)

**Source:** Computed from NFHS-3 Report. Figures in brackets are in percentage.

The decomposition shows that while the TFR in Bihar is 4.20, it would have been 4.10 if Bihar had the same urban composition as Tamil Nadu, that is proportioned in each category in Bihar were hypothetically the same as in Tamil Nadu (Table 1.3). Thus, the TFR in Bihar is higher by 0.10 points (4.20 – 4.10) than Tamil Nadu due to the unfavourable Urban conditions in Bihar. But TFR in Tamil Nadu is 1.85. The difference of 2.25 points (4.10 – 1.85) is attributable to the influence of other factors. Thus, of the total difference of 2.35 points in TFR between Bihar and Tamil Nadu (4.20 – 1.85), only 0.10 or 4.2 percent is because of the poorer education conditions. But the remaining 2.25 points (or 95.8 percent) is because of other differences between Bihar and Tamil Nadu. Clearly, the high (higher than Tamil Nadu) fertility in Bihar is only partly due to the wealth factor. Results from other states (Table 1.3) are similar with minor variations.

The highest difference due to the place of residence factor is 20.1% in Rajasthan and lowest of 4.2% in Bihar. The contribution of other state factors to the difference in fertility is highest in Bihar 95.8% and the lowest 79.8% in Rajasthan.

### 3. Conclusion

Fertility behaviour in India, as anywhere else, is governed by the prevailing social and economic conditions as well as cultural and religious traditions as there are a number of groups belonging to different economic strata, different social groups with different religious view towards fertility and finally vast regional differences are exist. With a significant variation in the determinants of fertility behaviour there exists a considerable range of variation in the fertility levels from one region to another. Moreover this variation can be understand by North-South divide, which reflect the dominance of patriarchal value system, low level of economic development, predominance of *Brahminical* influence and exclusion of women from education and societies like Uttar Pradesh, Madhya Pradesh, Bihar and Rajasthan. On the other hand, in south India, the state Tamil Nadu got the pioneer position not only in low level of fertility but in other demographic settings as well. This study concludes as the difference in fertility due to education, wealth, and place of residence is observed to be relatively low and other state factors are found dominating in these four northern states. The education, wealth, and place of residence are not factors which influencing the predominantly fertility of these northern states, the other states factors (predominantly cultural factors) are the main reason for large differences in fertility between these northern states and Tamil Nadu.

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