

Understanding Contemporary Fertility Transition in Rural West Bengal: A Critical Review

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Abstract : Rural West Bengal has witnessed fertility transition (from high fertility to low fertility) during the last two decades. According to SRS 2018, it has now the second lowest (1.6 children/woman) TFR among all other states in India. The provisional data of Socio-Economic Caste Census (SECC 2011) revealed that in terms of rural development, West Bengal is lagging behind most of the states in important indicators. Therefore, fertility decline in rural West Bengal had taken place in seemingly unfavourable conditions and almost nullified several pre-existing theories of the same. The present study tries to hypothesize that fertility transition in rural West Bengal cannot be simply understood through the conventional wisdom of positively linking proximate determinants of fertility. Instead, it could be 'distress-driven', or regulated by aspiration towards a child or ideas/values related to low fertility, or it can be a culmination of various factors that initiate a reduction in demand for children at first and then the supply-side factors come into its track and fertility reduces.

Keywords : Spatial Clustering of Fertility, Fertility Transition, Innovation Diffusion Hypothesis, Rural-Urban Fertility Differentials

Introduction

The world has experienced fertility transition (high fertility to low fertility) in varying degree (Bongaarts, 2009). The process of fertility transition was initiated in Europe, especially in France, in the second half of the nineteenth century and later spread throughout the world (Lee, 2003). It has been widely accepted that, factors like, age at marriage, contraceptive practice, post-partum amenorrhea (Bongaarts, 1978), female education and occupation (Black and Juhn, 2000; Dolado et al., 2002) and socio-economic status (Skirbekk, 2008) have great influence in fertility transition. Explaining why ideal family size would fall over time, researchers argued that it is a matter of quality of children or otherwise, a trade-off between quantity and quality (Becker and Lewis, 1974) and increasing aspiration for upward social mobility (Davis, 1963; Greenhalgh, 1988)

India has been witnessing fertility transition since 1960s. Currently, the Total Fertility Rate (TFR) (number of children per woman of reproductive age group) of

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India is 2.2 in 2018 (Registrar General of India (RGI), 2018), which is only 0.1 points higher than the replacement level of fertility (TFR 2.1) albeit substantial regional variations. Fertility has reached a low level or near replacement level in all the southern states due to improvement in female education, implementation of efficient family welfare programmes, mass media exposure, enhanced status of females in household etc (Bhat and Rajan, 1990; Guilmoto and Rajan, 2001; Nair, 2010; Kulkarni, 2011; Guilmoto and Rajan, 2013). However, the effect of strong patriarchy, farm based economy and lack of women's autonomy and empowerment remain the causes for high fertility in the northern states (Guilmoto, 2000; Guilmoto, 2013). Thus, the states of India can be classified into two extreme geographical regions of fertility where the northern states having high fertility and son preference; the southern states having relatively low fertility (Ghosh, 2015).

The eastern state of West Bengal – a middle-ranking state in terms of human development indicators, with more than 68% of rural population– does not fall into the 'popular north-south demographic dichotomy' (Dyson & Moore, 1983; Basu & Amin, 2000). However, it shows a considerable decline in fertility during the last four decades. The fertility transition in West Bengal had started well before independence (Dyson, 2002) and now it has already reached below replacement level fertility (1.5 births per SRS, 2018) along with the 'ultra-low' fertility zone of Kolkata. According to the SRS data of 2013-15, the total fertility rate (TFR) in rural Bengal was 1.7. It was 4.8 during 1981-83 which came down to 3.9 during 1988-90 and has achieved replacement level of fertility during 2006-08. The percentage-points decline in average level of TFR between the periods 2001-03 and 2013-15 was the highest (32 percentage-points) in the rural West Bengal among all other states in India (SRS, 2013-15). Notably, most of the districts which have witnessed significant fertility decline during 2001-2011 rank low in the Human Development Index (West Bengal Human Development Report, 2008) with a share of rural population, having low female literacy rate. Thus do not fulfil the prerequisites of fertility fall. An empirical study is all we need to unfold the fascinating situation of west Bengal that might enlighten a different narrative of fertility transition in the developing countries. This study is basically an attempt in this direction.

Fertility Trends and Differential in West Bengal and India

State level differentials in TFR

Figure 1 reveals that the gap of TFR between West Bengal and India was minimal during the 20th century which started to widen up after circa 2000 AD. The average decadal fertility change in WB has long been remained marginally high (> -0.8, 1971-2010) compared to national average (-0.7) [Guilmoto, 2009].

Rural-Urban fertility differentials in West Bengal, India and other adjacent states

The statistical reports of the Sample Registration System (SRS) of India reveal that total fertility rates (TFR) in India had declined by nearly 28% between 1985-86

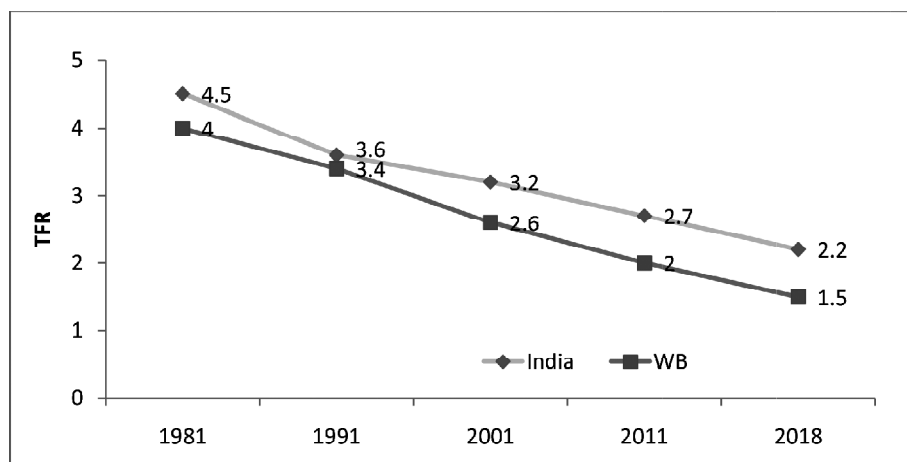


Figure 1: Fertility trends and differential in West Bengal and India

Source: Registrar general of India, occasional paper, 1997, Guilmoto and Rajan (2013) and SRS 2018

and 2000-01, while between 2000-02 and 2015-16 it decreased by 25%. If we compare rural and urban areas, the decline of TFR was faster in urban areas compared to rural areas between 1985-86 and 2000-01 (30% in urban areas against an approximate 24% in rural areas); however, the opposite holds between 2001-02 and 2015-16 (18% in urban areas against about 27% in rural areas) (Becker and Lewis 1974).

The performance of West Bengal in terms of fertility decline seems exceptional during the last four decades, given the lower pace of fertility decline in the other states of eastern India, namely, Bihar, Jharkhand, Assam, and Odisha (RGI 2016). In the rural areas, only Odisha, out of the four adjacent states of West Bengal, reached replacement-level fertility as recently as during 2014-16. Urban TFRs are low in each of these states, except Bihar (Table 1). However, a recent study by Haque et al. (2019) depicts that there is no significant spatial dependence in the district-level TFR of West Bengal with the proximate districts of the adjacent states; rather it is surrounded by the high-TFR districts of east Bihar, Sikkim, and some districts of Jharkhand (Das 2014).

Spatial Clustering of Fertility in West Bengal

Following (Figure 2) are the maps of fertility differential of four successive census years – 1981, 1991, 2001, and 2011. The four consecutive maps divulge that the pace of decline of TFR was faster in 2001-2011 than in 1981-1991. Most of the districts have already reached below replacement level fertility that too with the ‘ultra-low’ fertility zone in Kolkata. The decline seemed highest in the northern part of WB during 2001-2011 than their southern counterpart. The region comprising of below replacement level fertility started to diffuse up to the entire southern Bengal

Table1. Rural-Urban convergence in Fertility differences, West Bengal, India and other adjacent states; SRS, Various Years

Year	Total fertility Rate (TFR)									
	West Bengal		Odisha		Jharkhand		Bihar		Assam	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1990-92	3.6	2.0	3.4	2.4	NA	NA	4.7	3.4	3.6	2.1
1993-95	3.3	2.0	3.3	2.5	NA	NA	4.7	3.0	3.7	2.4
1996-98	2.8	1.8	3.2	2.3	NA	NA	4.5	3.1	3.4	2.1
1999-01	2.7	1.6	2.8	2.1	NA	NA	4.7	3.3	3.3	1.8
2002-04	2.5	1.6	2.7	2.0	3.9	2.3	4.4	3.1	3.1	1.7
2005-07	2.2	1.4	2.6	1.7	3.7	3.0	4.3	3.0	3.0	1.5
2008-10	2.1	1.3	2.5	1.6	3.4	3.0	3.9	2.8	2.8	1.6
2011-13	1.8	1.2	2.2	1.5	3.0	2.0	3.6	2.5	2.5	1.5
2014-16	1.7	1.2	2.1	1.5	2.9	2.0	3.3	2.5	2.4	1.6

Source: calculated from compendium of India's fertility table and SRS statistical report, various years

Note:

- Data on TFR was not available for Jharkhand until 2003.
- From 1999 onwards, TFR of Bihar has been calculated excluding Jharkhand.
- Excludes Jammu & Kashmir due to non-receipt of returns from 1991 to 1995.
- Estimates of vital rates at the national level up to 1995 do not include Mizoram as the SRS was not operational in Mizoram till 1995.
- Excludes Nagaland (Rural) due to part-receipt of returns from 1995 to 2003.

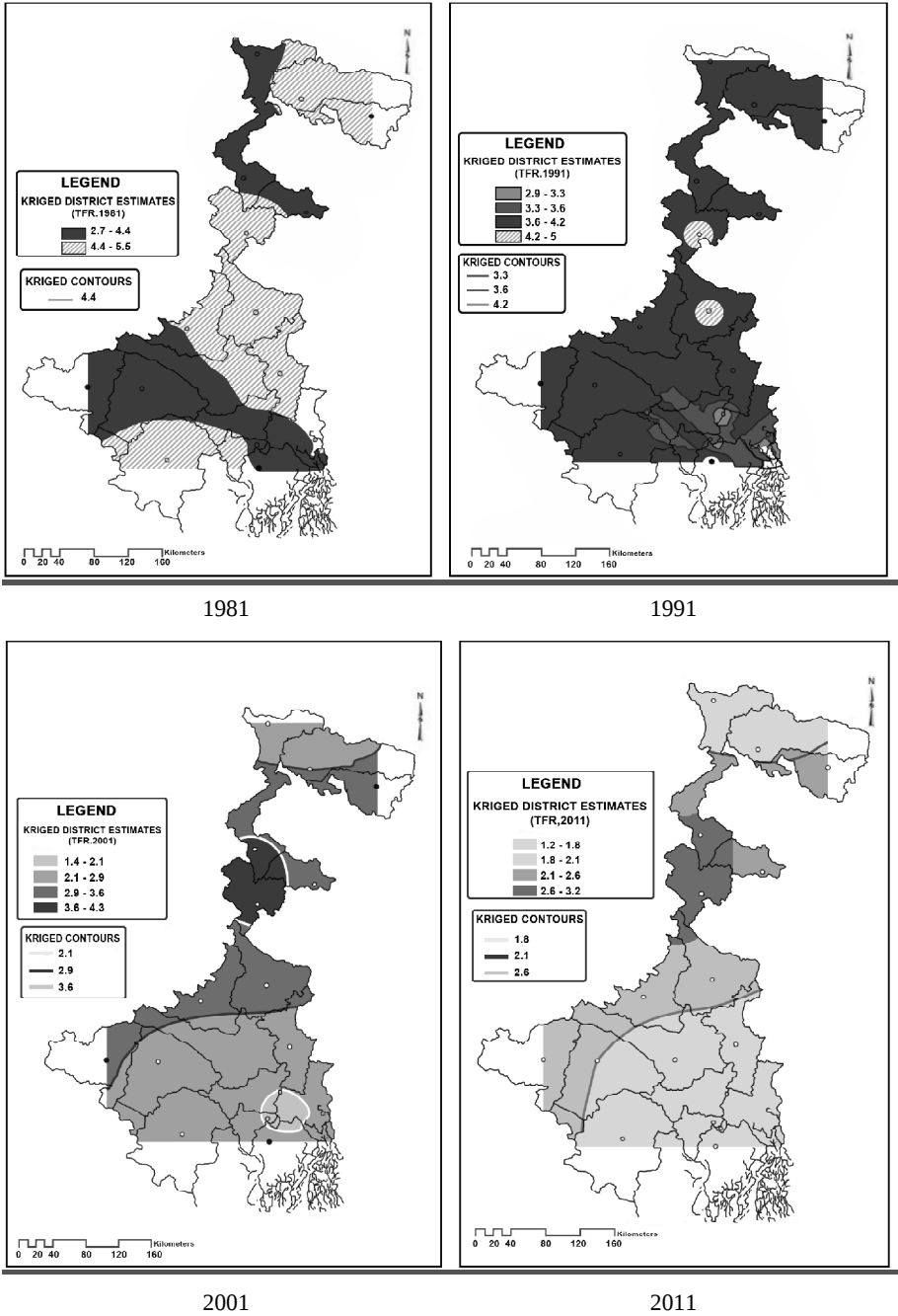


Figure 2: Spatial clustering of fertility level in West Bengal, 1981to 2011

Source: Registrar general of India, occasional paper, 1997, Guilmoto and Rajan (2013)

and some parts of North Bengal during 2001. A region having lowest TFR, lower than 1.8, also started to develop in 2011. The TFRs in Maldah, Uttardinajpur, Dakshindinajpur, Jalpaiguri, Kochbihar etc. decline substantially in 2011.

Dichotomy between Existing Literatures and the Particulars of WB

Fertility transition is the essential result of conscious choices (Coale, 1973):

Available literature suggests that fertility transition is the result of ‘calculus of conscious choices’ (Coale, 1973). These choices are generally subjective to the ‘quantity-quality trade-off of childbearing and childrearing’ (Becker and Lewis, 1974). According to this theory couple choose to have a small family because it is considered to be advantageous (Kulkarni, 2011). These choices could be manifested by the increase in use of contraception and adoption of family planning programmes.

Table 2. Contraceptive preferences, number of living children among respondents aged 15-49 by place of residence in various NFHS rounds, West Bengal

NFHS Rounds	Current use of types of contraceptive method (in percent)				Mean number of living children
	Not using any method	Natural/ Behavioural	Modern Reversible method	Sterilization	
NFHS1					
Rural	39.3	18.1	5.5	37.1	3.1
Urban	33.6	26.0	11.9	28.6	2.7
NFHS2					
Rural	31.0	15.8	13.2	40.0	2.5
Urban	21.4	27.4	19.4	31.7	2.1
NFHS3					
Rural	25.6	19.2	17.0	38.3	2.4
Urban	19.4	26.2	21.3	33.1	1.9
NFHS4					
Rural	20.6	15.6	29.9	33.9	2.0
Urban	27.9	18.4	29.7	24.1	1.7

Source: calculated from unit level data of NFHS (Women’s file), four rounds (1992-93 to 2015-16)

Note: Natural/behavioural methods consist of folkloric methods, periodic abstinence/rhythm/safe period, and withdrawal

Modern methods consist of IUD, pill, injectables, implants, Norplant, condom (including female condom), and female and male sterilisation.

Table 2 shows that there is a sizeable increase in usage and choice of contraception over the various NFHS rounds. The use of natural methods declined from 18.1% in 1992-93 to 15.6% in 2015-16 in rural settings and from 26% to 18.4% in urban settings.

On the other hand, the use of modern temporary methods increased by nearly 13 percentage points in the rural areas and only by 8 percentage points in the urban areas between 2005-06 and 2015-16. Irrespective of place of residence the mean number of living children decreased over the survey rounds. This mainly due to rise in child survival that modifies couple's choices as the need to have a large number of births to ensure sufficient surviving children declines. Infant mortality rate (IMR) in the rural areas shows a secular declining trend up to 2009, commensurate with the improvement in maternal health-seeking behaviour over the years. During 2016-18, rural IMR dropped to 23.8, while urban IMR decreased to 21.5 (SRS, 2016-18).

Fertility transition can be a result of increasing status of women

Additionally, with increasing personal aspiration stems from improvement in women's education and work participation directs a socio-psychological change at the societal level enables women to decide for themselves 'on the availability of opportunities for [them] to fill non-familial roles and earn prestige from them' (Ryder 2010: 613). Generally, it has been argued that there is a negative relationship between literacy rate of females and the fertility rate. In West Bengal, there has been an increase in female literacy rate from 39.3% in 1991 to 70.5% in 2011. In other words, in the last twenty years West Bengal's performance in female literacy is far better than that of India and a significant and negative relation between TFR and female literacy can be found from Figure 3. This might be a plausible cause for improvement of the fertility in West Bengal. However, it is interesting to note that virtually there was no difference in TFR between rural illiterate and literate during 2011-13 (Figure 3) (SRS 2018). The TFR was higher among below primary and primary completed women, 1.7 and 1.9 respectively, compared to their non-literate counterparts. Thus difference between the fertility rates across groups cannot be simply attributed to the literacy level.

Secondly, the data on workforce participation rate shows that there has not been any significant change in the workforce participation rate for rural women in West Bengal (It decreased to 19.35 percentage points in 2011 to 20.9 percentage point in 2001, census of India 2001 & 2011), while in India it has actually declined. Amusingly, a positive and insignificant association can be found from the Figure 4 though. Thus, it can be said that it is not the case that more women (proportionally) are participating in employment because of which there is a decline in fertility.

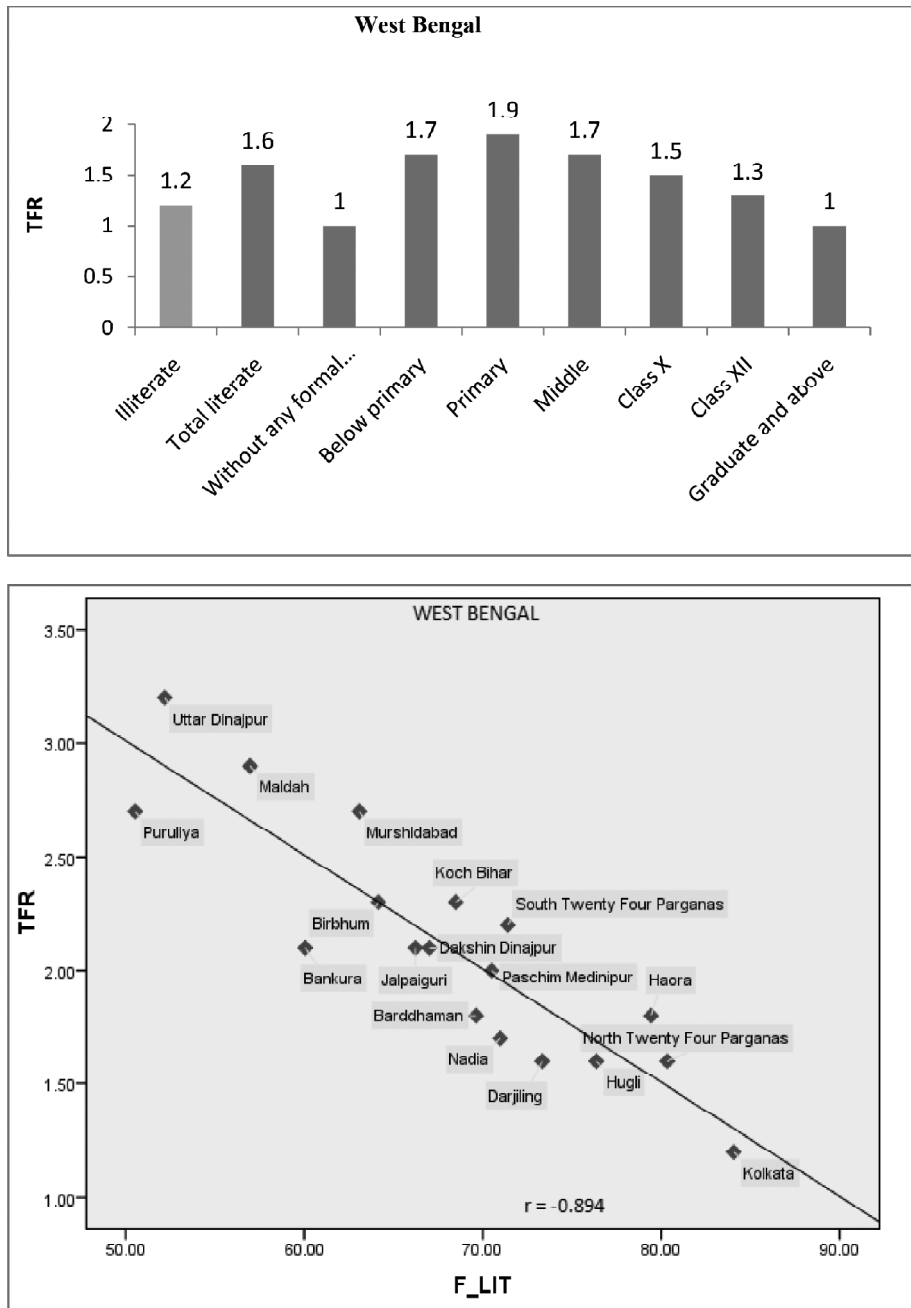


Figure 3: Total Fertility rate by female literacy status, West Bengal, SRS 2018

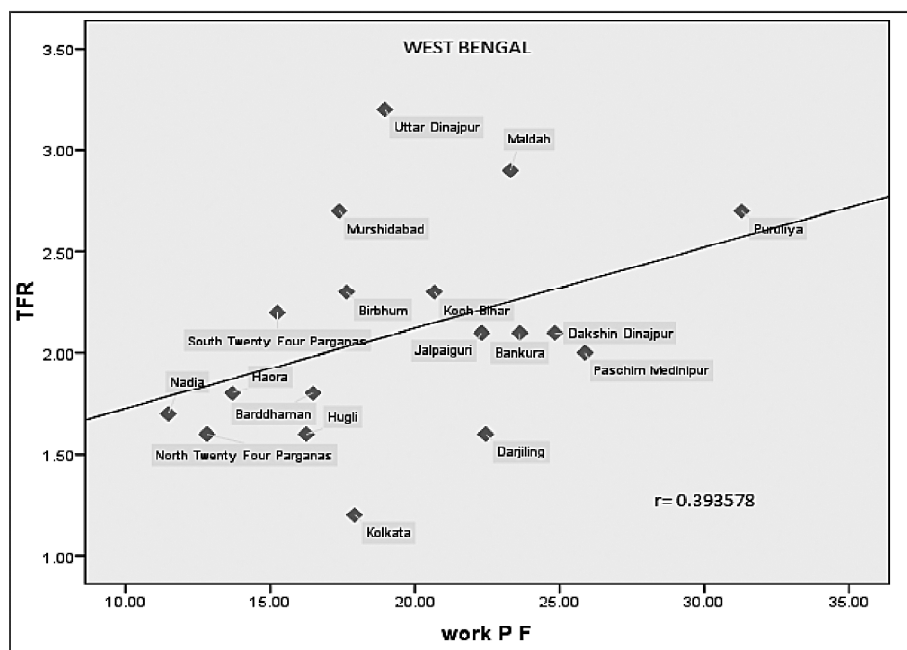


Figure 4: Association between female workforce participation and TFR, West Bengal

Source: Census 2011 and Guilmoto and Rajan (2013)

Innovation diffusion hypothesis (Basu and Amin, 2000)

Alternatively, to explain fertility transition among poor and less educated ‘innovation-diffusion’ hypothesis was brought in and emphasis was given to role of ideational change among non-elite to explain elite-led fertility decline in West Bengal (Basu & Amin, 2000). It is mention worthy that fertility transition in Kolkata started long back since 1970s and restricted mostly in elite classes. During the same period, however, the TFR lies between 4 and 5 predominantly in rural districts of West Bengal. Even during 1984-90, the fertility rates had reached the level of 4.8 in these areas. To add, from Figure 5 it can be say that the regions having moderate to highest fertility decline during 2001-2011 situated away from Kolkata. Moreover, Ghosh (2016) empirically found that ‘ultra-low’ fertility in Kolkata was actually related to ‘diffusion of aspiration for own and for children’ from ‘elite’ to ‘non-elite’ and not fertility norm *per se*. Therefore, it can be said that the hypothesis of ‘elite-led’ diffusion process in changing fertility attitudes does not apply for West Bengal; rather rural-urban interaction was weak (Ghosh, 2008).

Urbanization and fertility rates in West Bengal

Table 3 also reveals an inconsistent and cascading pattern of urbanization and fertility decline in West Bengal. Negative, but statistically insignificant correlations were found between relative change (in%) in TFR and percentage of urban

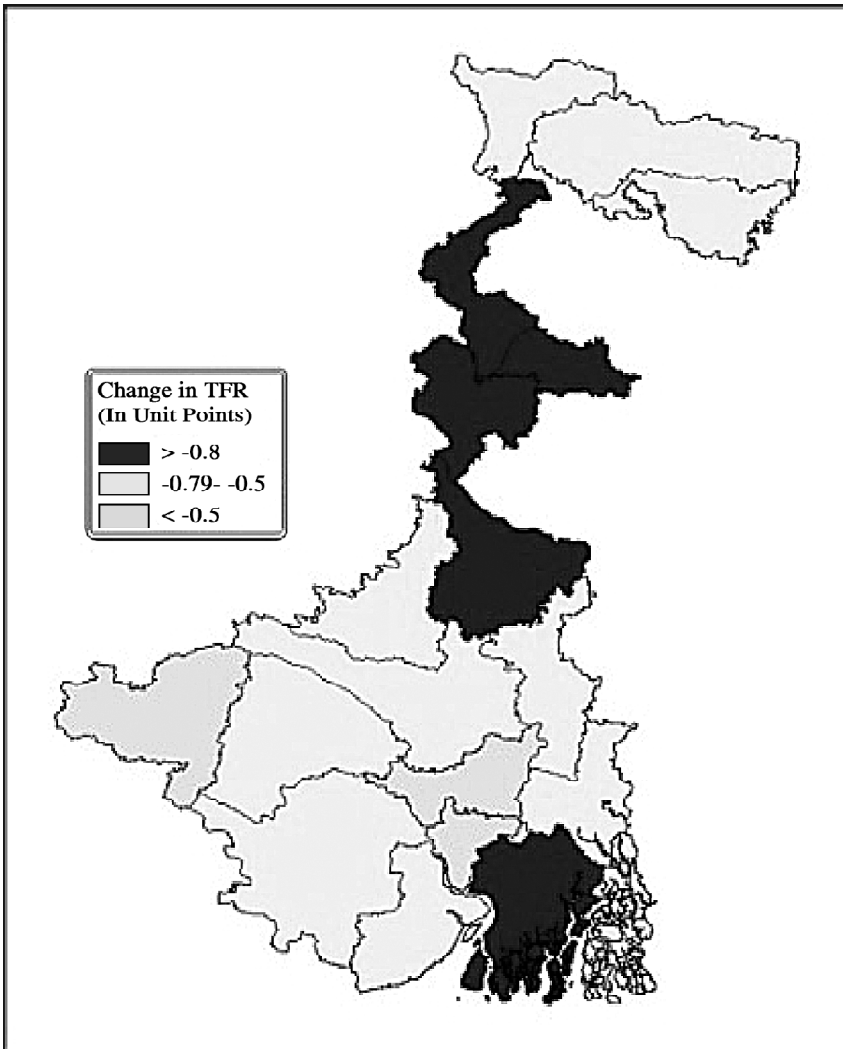


Figure 5: Change in absolute TFR in West Bengal between 2001 and 2011

Source: Computed from TFR values; Guilmoto and Rajan (2013)

population (between 1991 and 2001, Pearson's r was -0.35, while it was -0.34 between 2001 and 2011). One can observe that during 1991-2001, districts with higher proportionate increase in urban population (in relative terms) – such as Murshidabad (19.8%), South 24 Parganas (18.2%), and Koch Bihar (16.6%)– exhibited somewhat the same proportionate decline in their TFRs as those which experienced anegative urban population growth (Bankura and West Dinajpur) during the same period (see Table 3). In line with the trend in 2001-11, Maldah, with the highest increase in its urban population (85.5%), witnessed nearly the same decline in its fertility rates as

West Dinajpur, which had the lowest increase (4.0%) in its urban population. From the above discussion an insubstantial influence of urbanization on fertility decline can be concluded. Yet fertility transition West Bengal has taken place.

Table 3. Relative change in total fertility rate (TFR) and percentage of urban population in West Bengal, district level, 1991 to 2011

Districts	Relative Change (In percentage) ^a			
	TFR ¹		per cent of urban population ²	
	1991-2001	2001-2011	1991-2001	2001-2011
Darjiling	-40.0	-23.8	6.1	21.9
Jalpaiguri	-28.2	-25.0	9.0	53.5
Koch Bihar	-26.8	-23.3	16.6	12.9
West Dinajpur ^b	25.7	-25.6	-5.7	4.0
Maldah	-20.0	-27.5	3.5	85.5
Murshidabad	-28.6	-22.9	19.8	57.9
Birbhum	-21.1	-23.3	-4.6	49.7
Bardhaman	-36.1	-21.7	5.3	8.0
Nadia	-35.1	-29.2	-6.0	30.9
North 24 Parganas	-36.4	-23.8	6.0	5.5
Hugli	-31.0	-20.0	7.3	15.2
Bankura	-25.7	-19.2	-11.1	13.0
Puruliya	-24.4	-12.9	6.7	26.5
Haora	-41.7	-14.3	1.6	25.9
Kolkata	-54.8	-14.3	100	100
South 24 Parganas	-38.8	-26.7	18.2	62.6
Medinipur ^c	-29.7	-23.1	3.9	16.5
West Bengal	-29.0	-22.2	4.8	30.6

Source: ¹Calculated from IIPS (2005) and Guilmoto and Rajan (2011)

²Census of India, PCA, 1991, 2001 and 2011

Note: ^aRelative change is the proportionate change between two successive (given) data points (Years)

^bWest Dinajpur consists of Uttar Dinajpur and Dakshin Dinajpur

^cMedinipur consists of Purba Medinipur and Paschim Medinipur

Average relative change of per cent of urban population was calculated by excluding Kolkata

Notably, most of the districts which have witnessed significant fertility decline during 2001-2011 rank low in the Human Development Index (West Bengal Human Development Report, 2008), rank high in rural poverty index (West Bengal State Development Report, 2010) and have a high rural population. Therefore, fertility decline in these districts had taken place in seemingly unfavourable conditions and, thus remain as paradox.

Theorizing Three Alternative Hypotheses to Understand Low Fertility in Rural West Bengal

Limitation of the pre-existing hypotheses led to the formulation of following three hypotheses which individually or interactively could possibly elucidate the present condition in west Bengal and need to be tested empirically:

Effect of preference to male child on fertility could reduce fertility rates:

In India, the child sex ratio has been declining even with increasing affluence and education (Census 2011; Gosavi and Naik 2016). According to Clark (2000), sex composition of children could be manipulated by following three mechanisms – first, the biological factors, secondly, due of sex-selective abortion once technology is available and finally, differential stopping behaviour (DSB) practiced by couples. Significant son preference has been observed in north-western parts and northern region of India (Roy and Retherford 2003). However, in West Bengal son preference is ‘attitudinal’ and not in ‘practice’ (Gosh and Begum 2013). Das (2014) has observed strong and significant association between declining child sex ratio and fertility transition. From such findings, it can be hypothesized that, in rural West Bengal, due to attitudinal son preference, couples who have delivered a son at their first parity could stop childbearing further even without attaining desired sex composition.

Table 4 supports the argument and shows a considerable decline in both mean number of living children and want of future children between 1992-99 and 2005-16. In line with these findings, results show that in rural Bengal, fewer than half of the women chose permanent sterilization at second parity after having two sons (47.4%) and/or one girl and one son (46.2%) between 2005-06 and 2015-16. For urban Bengal (data not shown), the corresponding figures were 42.5% and 41.3% respectively.

‘Diffusion of aspirations’ from elite to non-elite could reduce fertility;

A probable hypothesis could be the ‘diffusion of aspirations’ from elite to non-elite, particularly, aspirations for social mobility. The term was first coined by Dumont in 1890s where aspiration was understood on the stand point of social upward mobility. It further reframed by Becker and Lewis (1974). According to them, the aspiration towards a child resulted in a quality-quantity trade-off of childbearing and childrearing. Arguably, the aspiration of the rural poor is quite different from the earlier idea in the context that latter is restricted primarily to the economic and material aspects and cost for achieving this is possibly quite high for

Table 4: Number of living children, number of living sons, and want of children among respondents aged 15-49 by place of residence in various NFHS rounds, West Bengal

NFHS Rounds	Mean number of living children	Mean number of living sons	Not wanting future children (in percent)
NFHS1			
Rural	3.1	1.6	48.8
Urban	2.7	1.4	65.5
NFHS2			
Rural	2.5	1.3	73.3
Urban	2.1	1.1	80.1
NFHS3			
Rural	2.4	1.2	74.9
Urban	1.9	1.0	79.3
NFHS4			
Rural	2.0	0.9	77.5
Urban	1.7	0.7	78.9

Source: Calculated from unit level data of NFHS (Women's file), four rounds (1992-93 to 2015-16)

them. Therefore, by lowering the desired family size, rural illiterate, poor and marginalized population of West Bengal might have tried to fulfil their own aspirations and for their children as they see children of others are getting educated and finding jobs and vocations (Kulkarni 2011).

Fertility transition in rural West Bengal could be 'distress-driven'

According to Census 2011 and table 5 a substantial decline in the proportion of cultivators in West Bengal was mainly compensated by a rise in the proportion of agricultural labourers along with landlessness and high agricultural input cost during last decade (RGI 2011; Agri census 2011; Khasnabis 2008). It is seen that around 6.33 lakh farmers (main and marginal combined) left cultivation in West Bengal between 2001 and 2011 (Census 2001, 2011). These facts together imply the agriculture is no more profitable activity and, the demand and importance of family-based labour in the form of child labour could decrease in peasant households (Land-labour-demand hypothesis) (Cain 1977 ; Adnan 1979). In short, agriculture does not remain an attractive employment option with increasing landlessness and declining size of holdings. The unattractiveness of agriculture also stems from a significant increase in input prices because of withdrawal of subsidies in fertilizer, electricity,

etc (Khasnabis, 2008). As a result, the family labour based peasant household is losing importance in the rural areas. Though Agricultural labourers increase, they do not usually constitute production units based on their family labour (Adnan, 1998).

Table 5: Structure of Workforce in Rural West Bengal (% of total workers)

	2001	2011
Cultivators	25.52	20.56
Agricultural Labourers	33.08	40.88
Household Industries	7.85	6.67
Other Workers	33.55	31.89

Source: Census of India, 2001 and 2011

Thus, with increasing landlessness (table 6) coupled with pressure on progressively smaller plots of land, increasing the family size for production is uneconomical, which could have realized by the rural poor. These economic hardships perhaps resulted in fertility decline in rural West Bengal which could be termed as “distress-driven” (The Telegraph Sep 5, 2015).

**Table 6: Change in percentage of landholdings in West Bengal
(% of total workers)**

Size	1995-96 to 2000-01 Area (Hectare)	1995-96 to 2010-11 Area (Hectare)	2000-01 to 2010-11 Area (Hectare)
Marginal	44.3	51.33	54.34
Small	30.18	30.32	29.69
Semi Medium	19.44	14.75	13.93
Medium	5.92	3.34	2.03
Large	0.16	0.06	0.01

Source: Agricultural Census of India of different years (Electronic Data).

Conclusion

Fertility transition is generally attributed to social mobility, women empowerment, ‘modernisation- fertility’ effects, awakening of marginalised population etc. Most of the existing studies, in this regard, have been nullified and become futile to generalise the present-day state (rapid decline in TFR) of West Bengal, particularly of its rural part. Though some work has been done on the urban Bengal (Ghosh 2016), causes of fertility transition in Rural Bengal at primary level are yet

to be tested and thus, remained a paradox. Accordingly, the present piece of writings is a critical review of the failure of the pre-conceived theories of fertility decline and assumes some alternative hypotheses to understand the causes of fertility transition in rural West Bengal.

From the above discussion one can suppose that there has been a decline in fertility level in the state given that the probability of survival of children has increased along with an increase in the use of contraception. Alternatively, drawing from 'innovation-diffusion' one can still postulate another hypothesis that neither poverty, nor the diffusion of idea, rather diffusion of behavioural imitation from elite to non-elite lowers the desired family size among rural poor in West Bengal. Additionally, in the absence of sex selective abortion (Das 2014) couple might try to achieve a small family with at least a son which will eventually hinder childbearing in future. The increase in conscious choices, particularly in the poor and socially marginalized couples/women, might be induced by a significant change in their mind setup on a given regime. The discussion of the paper has tried to highlight that the fertility transition in rural West Bengal cannot be simply understood through the conventional wisdom of positively linking proximate determinants of fertility. Instead, we have tried to propose the above hypotheses. An in-depth and empirical further research in this direction is needed to ascertain the exact nature and causes of fertility decline in West Bengal which might enlighten a different narrative of fertility transition in the developing countries.

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