Extended Abstract 2-4 pages

Second Demography Transition in India: Comparison of States vis-a-vis Selected Asian and European Countries

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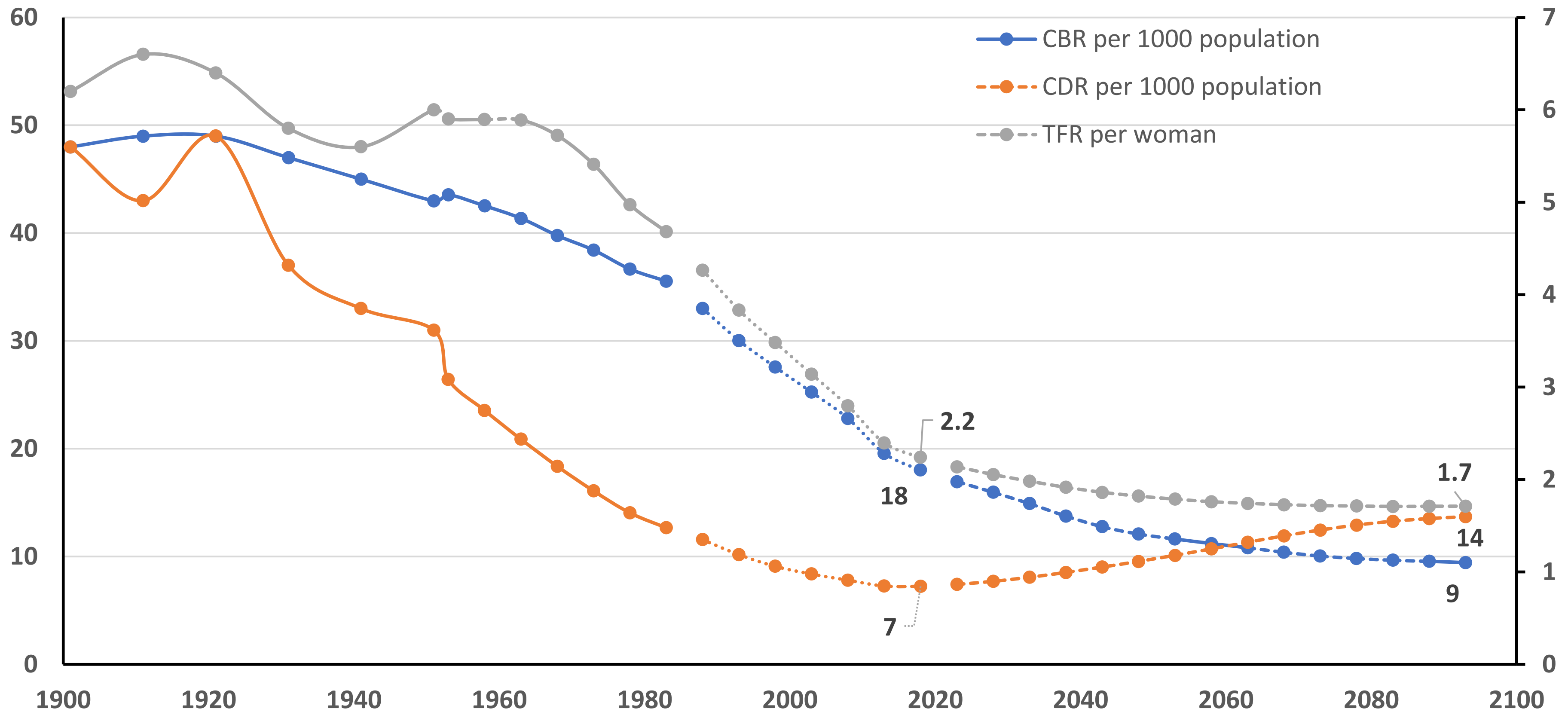
Background

The first demographic transition (FDT) described a pathway common to almost every country that had to go through along the path of its development process; from a primitive agrarian economy to the modern industrial economy. The demographic pathway is about decline in birth and death rates (henceforth fertility and mortality) from high to low level. There is no escape from such pathway for any country (Kirk 1996). The initial texts dealing with the Demography Transition Theory (DTT) lack exclusive mention about FDT (Kirk 1996, Kaa 1987, 2002, Lesthaeghe and Surkyn 2004, Lesthaeghe 2014).

Figure 1: India's demographic journey: 1901 to 2100



Data sources:

1. Estimates for the period 1901 to 1983 using indirect methods
2. Estimates for the period 1984 to 2018 from Sample Registration System, RGI India
3. Estimates for the period 2018 to 2100 UN estimates

India attained a TFR of 2.2 children per woman in 2018 (RGI, 2018). Fig 1 provides India's journey of the FDT for over two-centuries (1901 to 2100). The UN estimates suggest that India is likely to complete its FDT by 2024 with TFR reaching replacement level. The factors navigating the pathways during the FDT in India have varied considerably across its geographies. To place our discussion within the Indian context, we would rely on the experiences of the Indian states that have already completed FDT and have in fact attained fertility below replacement level. We further attempt to superimpose these state experiences into the pathways and factors responsible for the transition in comparison to a few Asian and European countries.

Data and Method

The eight bigger states of India have achieved replacement fertility at least more than 5 years ago suggesting that these states have completed the FDT five years ago. Of these states, Kerala was the first state that completed FDT in 1988 followed by Tamil Nadu (1993), undivided Andhra Pradesh (2004), Punjab and West Bengal (2005), Karnataka and Maharashtra (2006) and Odisha (2012). This provides us with sufficient time to assess secular trend for the SDT. We use data from the Sample Registration System and the National Family Health Survey. We use UN (2019) data bank for Asian and European countries and sometime DHS data/publications for relevant data for the selected Asian and European countries.

FDT in the selected Indian states

In view of the onset of transition and availability of data we set 1971 for the states as our starting point of the analysis except for West Bengal where data is available from 1981 onwards. Ram, et al (1996) examined onset fertility transition in India and its states. Previously, researchers estimated fertility and mortality mostly using indirect method such as reverse survival method or Rele method. Ram et al (1996) estimated TFR using Rele method and found that fertility transition began in circa 1960 in Karnataka, Kerala, Maharashtra, Punjab Tamil Nadu and West Bengal and in the late 1960s in undivided Andhra Pradesh and Odisha (Table 1). An important point to note is that at the time of onset of fertility transition, TFR ranged from a low of 4.8 children per woman in Tamil Nadu to nearly 7 children per woman in Punjab and West Bengal. For West Bengal we take indirect estimate of TFR for 1971 and 1976 from Ram et al. (1996). Like TFR, levels of mortality and female literacy too varied substantially across the states at the time fertility transition began. This aligns with global literature (Kirk, 1996, Cleland and Wilson 1987).

Table 1: Year of onset of fertility transition, level of TFR, IMR and female literacy rate aged 5-years and older (FLR5+) for the eight Indian states at the time of onset of FDT

State	Year/Period of onset of fertility transition	Indicators at onset of transition		
		TFR	FLR5+	IMR
Andhra Pradesh (undivided)	1968 (1966-71)	5.4	24.6	106.0
Karnataka	1956(1951-61)	6.4	29.8	103.0
Kerala	1956 (1951-61)	5.5	45.6	89.0
Maharashtra	1963 (1961-66)	5.7	19.8	135.0
Odisha	1968 (1966-71)	5.9	16.3	131.0
Punjab	1956 (1951-61)	6.9	14.0	123.0
Tamil Nadu	1963 (1961-66)	4.8	21.1	119.0
West Bengal	1963 (1961-66)	6.7	20.0	83.0

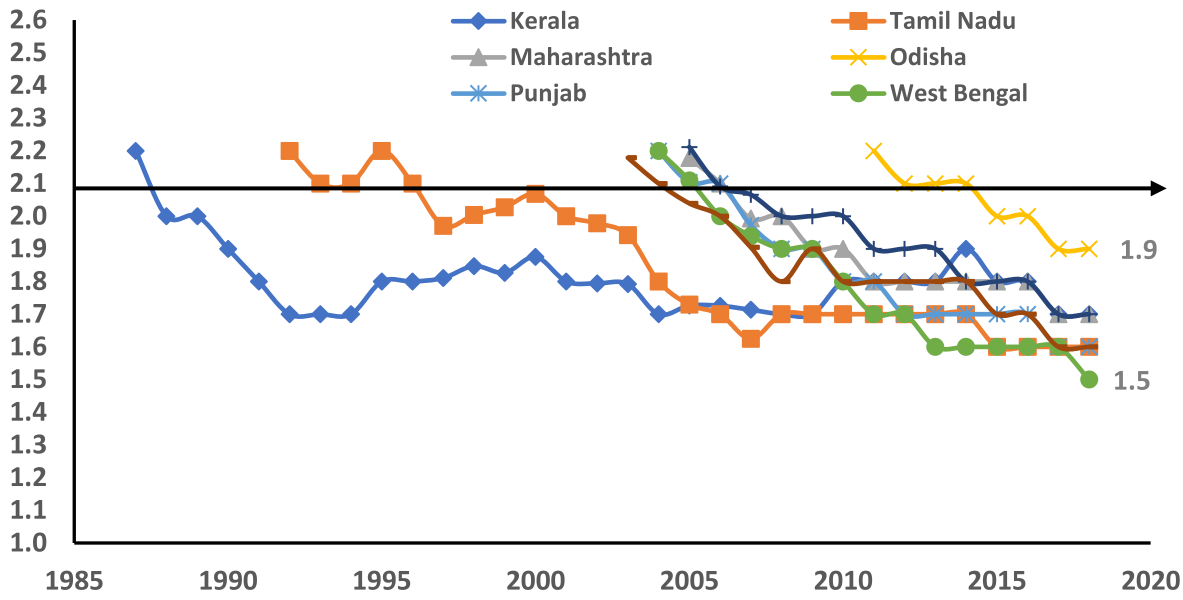
SDT in the selected Indian states

Kerala is the first India state to enter the SDT in 1987 followed by Tamil Nadu (1995) and other states (2004 or later) (Table 2 and Figure 2). Odisha is the latest to enter SDT in 2012. Kerala has completed over three decades since it entered SDT, however, the state TFR crossed below 1.7 mark. Except Odisha, other states too have spent 13-23 years and the TFR has hovered around 1.5-1.6 per woman.

Table 2: Year of onset, duration of SDT and level of TFR in 2018 for eight Indian states

State	Year of SDT onset	Duration (in years) since onset of SDT	TFR in 2018
Andhra Pradesh (undivided)	2004	14	1.6
Karnataka	2005	13	1.7
Kerala	1987	31	1.7
Maharashtra	2005	13	1.7
Odisha	2012	6	1.9
Punjab	2004	14	1.6
Tamil Nadu	1995	23	1.6
West Bengal	2004	14	1.5

Figure 2: Trends in TFR since the onset of SDT to 2018 for the eight Indian states

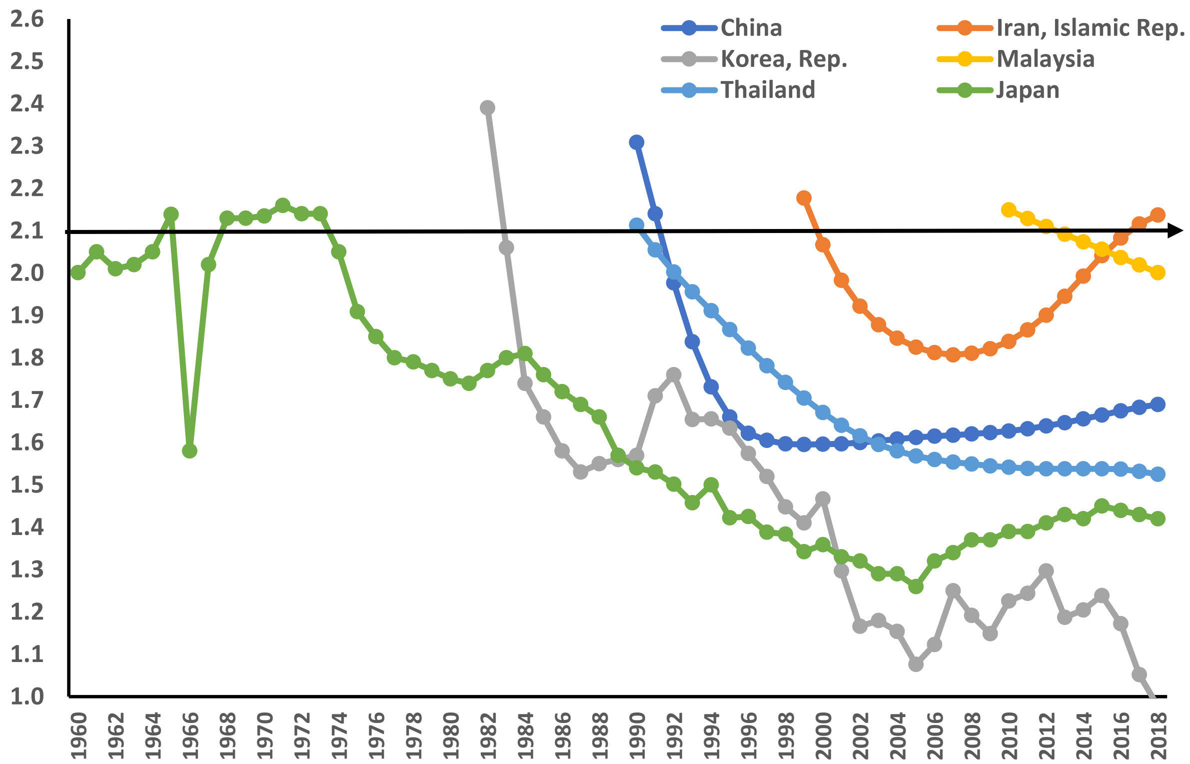


The immediate question comes is - how do the pathways observed in Indian states compare with counties in the Asia (viz. China, Iran Islamic Republic, Japan, Korea Republic, Malaysia, and Thailand) and Europe (viz. Denmark, Finland, France, Germany, Italy, Norway, Spain, Sweden, and Switzerland)?. In the subsequent text we discuss same with help of Figures 3 and 4. The selection of countries has been based on the uniqueness associated with the transition of the country.

SDT in the selected Asian countries

Japan in Asia recorded fastest FDT post world war II as its TFR declined from 4.5 in 1947 to 2.0 in 1957 (Figure 3). Since entering SDT, with the exception of 1966, Japan maintained its TFR around replacement until early 1970s. The year 1966 Japan recorded a TFR of 1.6, year of the Fire Horse, traditionally considered an unlucky for female birth (Hodge and Ogawa, 1991). Post 1973, Japan TFR reached to 1.26 in 2005 and showed an upward trend and remained around 1.4 per woman. South Korea experienced unparalleled journey as its TFR dropped from 2.4 in 1982 to replacement level in 1983 and further to 1.5 in 1987. The TFR fluctuated upward and downward in subsequent period in South Korea and reached one of the lowest level of fewer than one child per woman, lowest any country has ever experienced. China too depict very rapid SDT as TFR declined from replacement fertility in 1991 to 1.6 in 1998 and has remained around 1.6/1.7. Thailand has shown smooth transition as its TFR declined to replacement level in 1990 and further to 1.5 in 2005 and maintaining the same. Among selected countries, Iran has been a surprised. The Iran TFR reached replacement in the year 2000 and have shown an increase thereafter with a similar pace seen during period of decline reaching to replacement level again in 2017. Malaysia, known for pro-natal policy, has experienced decline in TFR to replacement level in 2011 and remaining around 2 in 2018.

Figure 3: Trends in TFR since onset of SDT to 2018 in the selected Asian countries

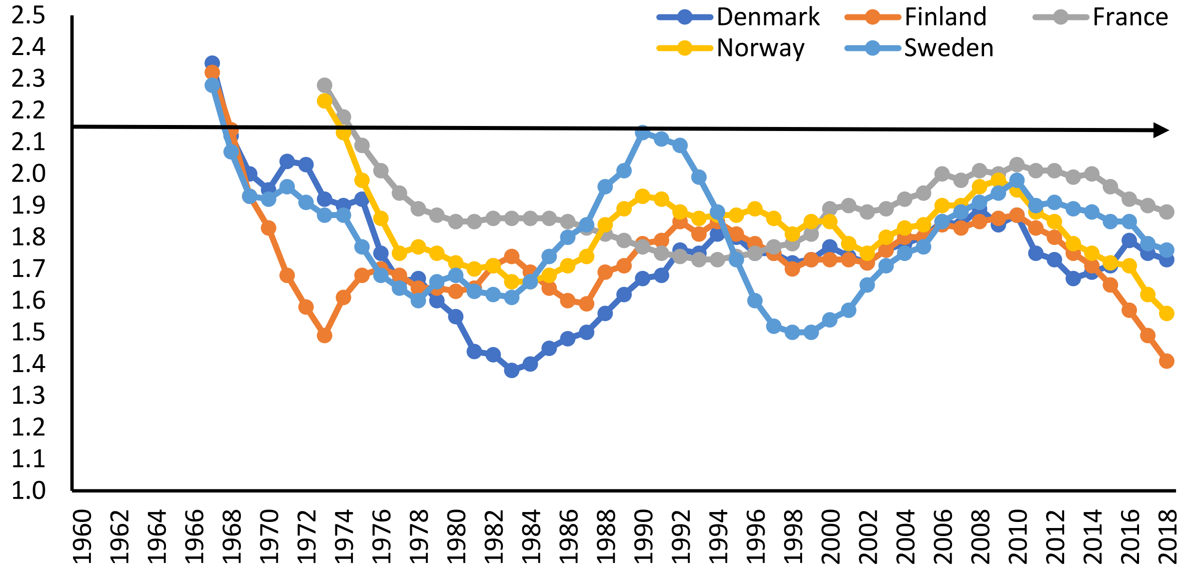


SDT in the selected European countries

We have presented the results of the European countries in two separate figures based on the patterns of the trends in TFR post onset of SDT. Denmark, Finland, France, Norway, and Sweden) showed a cyclical pattern over the period (Figure 4A) while the trend is somewhat secular for Germany, Italy, Spain, and Switzerland (Figure 4B).

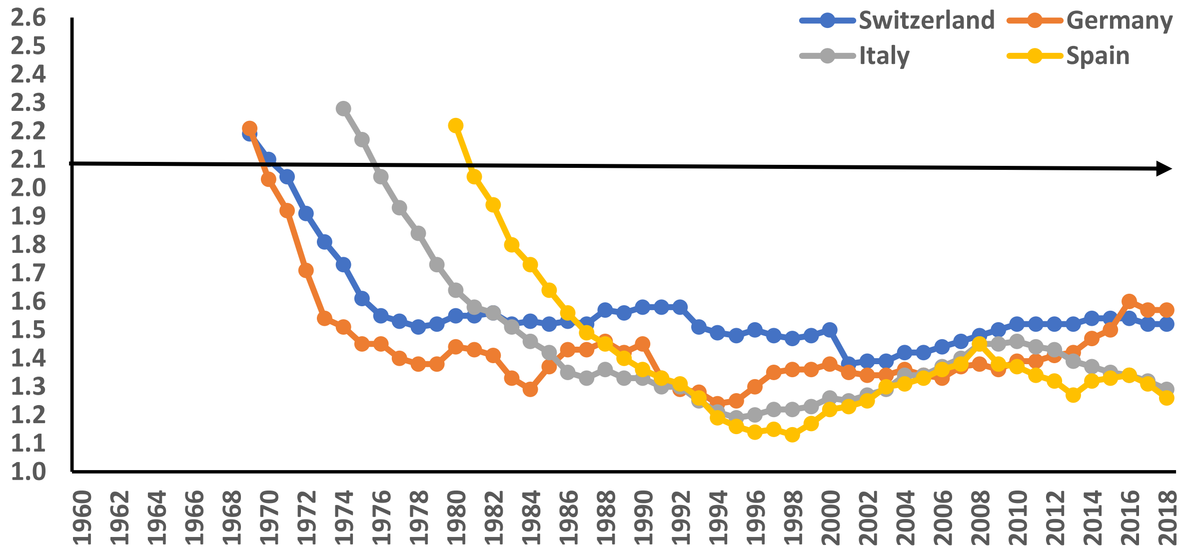
Sweden entered SDT around 1966-67 and in 1983 attained a TFR of 1.6, before bouncing to replacement level in 1990. Circa 2000, the Sweden TFR reached 1.5 and rose closer to replacement in 2010. Denmark too followed similar pattern of Sweden. Both countries have a TFR of 1.8 in 2018. Finland and Norway also experienced fluctuating patterns in TFR and showed lowest TFR of 1.4 and 1.6, respectively in 2018. While Denmark, Sweden and Finland have in SDT over five-decades (1966-2018), France and Norway have completed over four-decades (1973-2018).

Figure 4A: Trends in TFR since onset of SDT to 2018 in the selected European Countries



Switzerland and Germany began SDT journey late 1960s whereas Italy started in the mid-1970s and Spain five years later. These four countries experienced rapid decline in TFR from replacement to 1.4 and 1.5, respectively, in the later 1970s in Germany and Switzerland and to low of 1.1/1.2 in Spain and Italy in just before the end of the twentieth century. The countries showed an upward mobility and recorded a TFR is 1.3 for Italy and Spain and 1.5 for Germany and Switzerland in 2018.

Figure 4B: Trends in TFR since onset of SDT to 2018 in the selected European Countries



The analysis above suggests similarity in sub-replacement transition between Indian states and the selected Asian and European countries. The observed fluctuations (some even cyclical) in the TFR by these countries that have spent longer time in the SDT suggest that the people response to fertility boosting policies. The European countries have depicted larger fluctuations and at the same time recovery closer to the replacement fertility, however, with a TFR lower than 2.1 children per woman. Asian countries (except Japan) and the eight Indian states have spent rather short time in the SDT, and hence suggesting no concern towards pro-natal approach, especially for Indian states.

However, Indian states experiences suggest no commonality as far as determinants postulated based on European SDT is concerned. All states in India experience universal marriage mostly arranged, individualism may be catching up but far away from other countries, gender equality is still a dream, female education is poor and work participation is low and declining. Most important proximate determinants for Indian states are the use of contraception and delaying age at marriage driven expanding by female education.