

## Original Article

### Population Stabilization in India: A Sub-State level Analysis

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**Abstract:**

The study aims at analyzing economic and policy factors impinging upon population stabilization measures at the district (sub-state level) in India. It reflects upon popularly debated notions, namely, that development is the best contraceptive or whether contraceptive is the best development. In order to reflect upon this notion, we hypothesize that the factors determining the success of population stabilization measures are likely to be different across rich and poor states. It is more likely that in a rich state economic development becomes a significant factor for population stabilization relative to a direct intervention by the state. By contrast, in a poorer state, direct intervention acquires main significance relative to supporting influence of economic development. To test the validity of our assumption, we have the district level data for the three categories of Indian states belonging to different income levels relative to overall average of the country. Thus we focus on the district level information of the three states, namely, Maharashtra, Madhya Pradesh and Orissa, which in terms of per capita income, belong to rich, middle income and poor category of states respectively. Our regressions using district level data for three states depict the significance of difference in influential variables across the categories. The results thus confirm our hypothesis that direct intervention acquires main significance at a lower level of per capita state income and economic development becomes a major influential factor at higher levels of per capita state income. The results also support our earlier results using state level data. In the light of these results, it could be emphasized that in the long run development is the best contraceptive. However, in the short run, a considerable achievement could be made by improving basic health and family planning services and by increasing the level of facilities including basic amenities, media and infrastructure development.

**Key Words:** Population Stabilization, India, Sub-State level Analysis, Regression

**Introduction:**

With her total population exceeding one billion mark, India is the second most populous country in the world. This is despite its more than fifty years of family planning efforts since 1952.(1,2,3). In this long span of population stabilization, numerous policy measures have been attempted. At present, the country has a National Population Policy (4) and some of the states including Andhra Pradesh (A.P), Maharashtra, Madhya Pradesh (M.P), Rajasthan, Uttar Pradesh (U.P) and Tamil Nadu (T.N) have their state level policies too.(5-10)

There is now universal awareness of the need for and methods of family planning. Over the decades, the couple protection rate (CPR) has quadrupled from 10.4 percent to 44 percent (1999) and total fertility rate (TFR) has declined from 6.0 (in 1951) to 3.3 (in 1997). Nonetheless the disconcerting fact of adding annually a population of 15.5 million is a matter of concern for planners. It has been recognized that there is a considerable amount of unmet need for contraception and provision of integrated service delivery for basic reproductive and child health care. In the National Population Policy (NPP), meeting these unmet needs forms the immediate objective along with a medium term objective to bring down the TFR to replacement levels by 2010 through implementation of inter-sectoral operational strategies.

Keeping in view the NPP and the suggestion of Swaminathan group, the state level population policies (5-10) have also brought out their objectives, goals and strategies for greater efforts towards population stabilization and related programmes. For instance, population policy in AP, , aims at lowering its TFR from current level of 2.5 to 2.1 (in 2000) and 1.5 by 2010. It proposes to setting up of

institutional structure at the state, district and sub-district level (i.e. mandals, village and town panchayats and nagarpalikas). This will facilitate population stabilization plans which incorporate demographic goals, expected level of achievements for each year, charter of social actions and differentials in prevailing demographic and socio-economic conditions. Some of the interesting features of AP population policy include its emphasis on marketing the population stabilization programmes through IEC, improvement in quality of services, making primary health services a special category service, and involvement of NGOs and women's groups in the programme. The population policies in high fertility states of Rajasthan and MP seek to lower the state level TFR from 4.1 (in 1997) to 3.1 (in 2007) (Rajasthan) and 4.0 to 3.0 by 2005 and 2.1 by 2011 (MP).(6,8) These states also plan rapid decline in the level of infant, child and maternal mortality. Importance of interdepartmental coordination and formation of committees for coordination at district levels and development and involvement of NGOs are also the features of these policies. Likewise the population policy in another state, namely, Maharashtra seeks to bring down TFR from its current level of 2.5 to 1.8 in 2010.(7) Thus there are laudable objectives and policy documents for population stabilization both at national and state levels, including the states with high fertility levels.

#### **Materials and Methods:**

This paper aims at analyzing economic and policy factors impinging upon population stabilization measures at the district (sub-state level) in India. It reflects upon popularly debated notions, namely, that development is the best contraceptive or whether contraceptive is the best development. In order to reflect upon this notion, we hypothesize that the factors determining the success of population stabilization measures are likely to be

different across rich and poor states. It is more likely that in a rich state economic development becomes a significant factor for population stabilization relative to a direct intervention by the state. By contrast, in a poorer state, direct intervention acquires main significance relative to supporting influence of economic development. To test the validity of our assumption, we have the district level data for the three categories of Indian states belonging to different income levels relative to overall average of the country. [The rich category includes the states like Punjab (Rs.15800), Gujarat (Rs.16779) and Maharashtra (Rs.16479) whose per capita income(indicated in parentheses) is above all India average of Rs11779 in 2003-04 at constant (1993-94) prices The middle income states like Karnataka(Rs.13141), Kerala (Rs.12109) and Tamil Nadu (Rs.12976) (where income is above all India average but lower than high income states) and low income states like Orissa (Rs.6487), Madhya Pradesh (Rs.8284) and Rajasthan (Rs. 8571) where income is much below all India average. However, we have chosen MP as representative of a middle income state as its income is much higher than Orissa.] Thus we focus on the district level information of the three states, namely, Maharashtra, MP and Orissa, which in terms of per capita income, belong to rich, middle income and poor category of states respectively in relation to all India average. The following section provides an analysis of district level data to assess the impact of economic and policy factors on fertility decisions. The policy implications are discussed below.

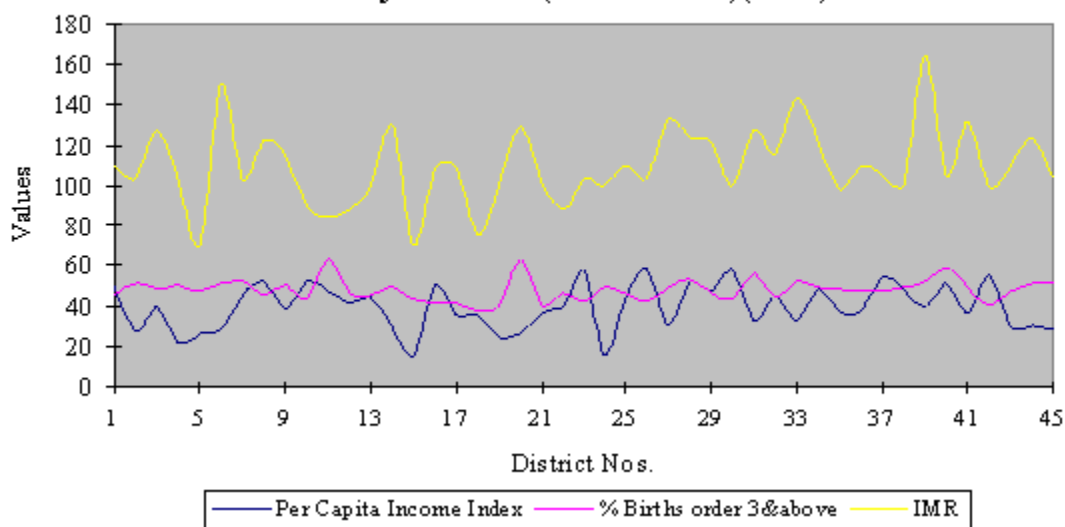
#### **Impact of Economic and Policy Factors on Fertility Decisions**

Our earlier analysis highlights some of the significant relevant features, which have their influence on family planning efforts and fertility decisions in low-income states.(11) At the state level, our analysis utilized information for 25

Indian states for a cross section for the year 1998.(11) It was hypothesized that fertility decision as indicated through TFR is influenced by the demand for living children or reproductive goals. It is pertinent to observe that impact or significance of economic or policy variables tend to differ with the level of aggregation at which the analysis is carried out. It is likely, therefore, that district level significance of economic variables in determining fertility might be different. This fact has also been recognized by the state level population policies. [The policy documents at state level describe differences in the level of development in terms of geographical terrain, agro-climatic conditions, cultural diversity, socio-economic conditions and status of women.](8) Nevertheless, inadequacy of data at the district level becomes a major constraint in carrying out such an analysis in detail. Based on the data availability, we have chosen to focus our discussion on two of the low income and BIMARU states, namely M.P and Orissa. A comparison is

carried with a better off state with high fertility levels, namely, Maharashtra. In case of M.P, for the purpose of reckoning population stabilization program, at the district level desegregation, there is considerable variation across districts in terms of per capita income, fertility indicator and IMR. This is depicted in Chart 1 below. [In fact, three types of districts could classify the state. These are: a) districts where the family planning performance is above the state average (of 47.3) in terms of couple protection rate. There are such 19 districts that account for 36.4 percent of state's population. The range of CPR in this category lies between 48-75.1. Districts where the performance is below the state average of CPR and it ranges between 34-47.1. Total number of such districts are 20 and these cover 52.9 percent of M.P's population and c) six districts which range somewhere between the above two categories with CPR interval of 45.1-55.3. These account for 10.7 percent of M.P's population.]

**Chart 1: Per Capita Income Index, Fertility Indicator and IMR for Madhya Pradesh(District-wise)(1998)**

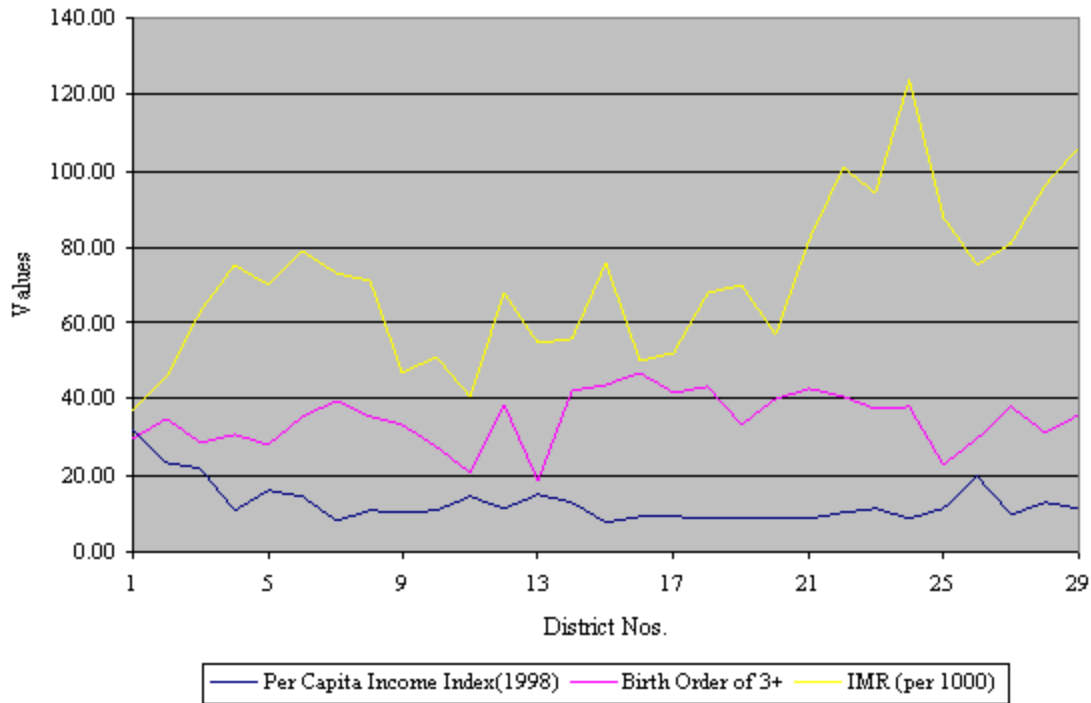


Source: Government of Madhya Pradesh, 2002. (9).

The relative behavior of the three variables indeed suggests that reproductive goals are defined based on per capita income and number of living children. Thus a higher mortality will compel the couples to have more children ensuring an adequate number of living children defined by their goals.

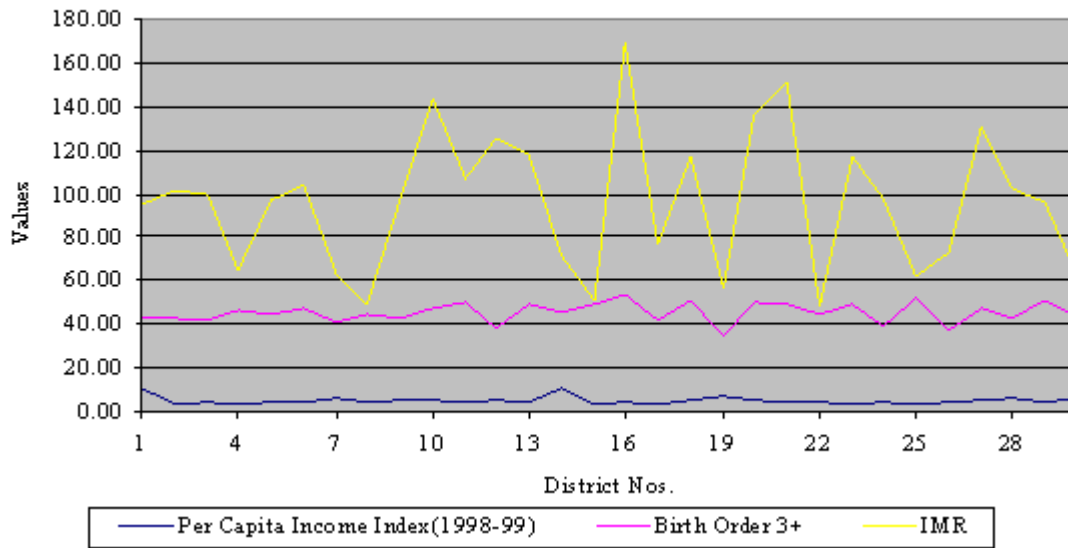
This phenomenon of variability is not unique to a middle-income state like M.P. Even rich states like Maharashtra and poor state like Orissa also depict considerable variability across the districts (Chart 2 & 3).

**Chart 2: Per Capita Income Index, Fertility Indicator and IMR for Maharashtra(District-wise)(1998)**



Source: Government of Maharashtra, 2002. (7)

**Chart 3: Per Capita Income Index, Fertility Indicator and IMR for Orissa (District Level)(1998)**



Source: Government of Orissa, 2004. (12)

Our focus in this section is to highlight the impact of some of the economic and policy factors on fertility decisions in these three states at the district level segregation. Taking clues from our state level results and availability of district level data, we focus on three types of dependent variables that depict couple protection rate (CPR), fertility (Birth of third or higher order) and life expectancy (LEXP) or IMR. We have used three categories of independent variables representing demographic factors, health facilities and socio-economic factors. The results (available with the author) of our regressions carried out using district level data for Madhya Pradesh (MP) depicted that Couple Protection Rate is influenced by high fertility (BIRTHS3), female participation in the labor force (FWRATIO), inadequate education (DROPTOT) and infrastructure development denoted by roads (DISMIRD). The last of these variables is having the highest coefficient (-.452) depicting an inadequate level of development hampering reach and availability of family planning methods. These results are further reinforced by the results of other dependent variables. In the regression re-

sults for BIRTHS3, for instance, denoting high fertility, impact of DISMIRD and HABFUL, representing development of infrastructure pertaining respectively to roads and water supply, is positive depicting an inadequate development resulting in high fertility. It should be noted that the impact of male education does not seem to be important in reducing high fertility. Its coefficient is negative with magnitude .248. However, inadequacy of female literacy seems to be a deterrent in higher life expectancy (LITRFM=-.480). The positive impact of increase in income (ADJINMAL=.44) and couple protection rate (CPR=.361) in leading to higher life expectancy is visible in M.P's results. It is important to note that influence of government intervention in extending facilities for delivery through skilled attention had a positive impact in reducing high fertility (SAFEDELPT=-.338). Nonetheless, overall inadequate coverage of health facilities led to a negative impact on life expectancy (AREAMI=-.301).

In line with the results of M.P, the regression results using district level data for Orissa depict inadequate in-

come (MALEINCM=-.400) and inadequate area coverage of health and family welfare institutions (APMI04=-.951) as deterrent in better acceptance of family planning (FPACCP). However, impact of direct intervention of government in terms of reproductive health services (RHIR=. 413) and emphasis on female empowerment and health facilities is reflected in GDIVALUE (coefficient=1.662). It should be noted that overall inability of existing family welfare system in reducing post delivery complications (HPDCOMP=. 373) and lack of educational opportunity (ADILLTR=. 936) have been major factors leading to high fertility in Orissa. Consequently the burden of higher order births has led to high IMR (BHOBI=. 288) in the state.

A distinct difference in the results between poor and rich state for the dependent variables of CPR and BIRTHS3 could be observed from the results of Maharashtra. A better level of inputs in terms of growth in government medical institutions between 1991-2000 (MEDIG912=. 439) and improved schooling facilities for girls (PRM-SCLGR=. 375) seem to have a positive impact in increasing CPR in Maharashtra. However, the major impeding factors towards higher CPR in the state is higher density of population (DENPOP=. 884) and consequent unmet need for family planning (UNMET=-.469) in the state. Further the impact of inequality in terms of per capita income (PCI= -.260) and existence of poverty within prosperity (BPLF= .335) is notable for the richer state. Despite the intended impact of CPR (coefficient= -.473) on high fertility, a major deterrent in reducing the fertility appears to be dropout of boys at early stage in schooling (DROPB7= .252) and early marriage of females (GM-B18=. 271).

### Policy Implications

Our analysis has focused on the efficiency of population stabilization programmes at the district level.

Our regressions using district level data for three states at different levels of per capita income, categorized as poor, middle-income and high-income states depict the significance of difference in influential variables across the categories. The important socio-economic variables for poor state include low per capita income, road development, female empowerment and lack of educational opportunity. Inadequacy of existing government intervention emerges from significance of variables indicating inadequate area coverage by health and family welfare institutions and inability of the family welfare system in reducing post delivery complications. The results of middle-income state also denote the significance of above set of variables. However, they differ in two aspects to indicate that: a) government intervention of enhancing skilled attention played a positive role in reducing high fertility in middle-income state and b) impact of female participation in labor force and infrastructure variable like water supply was positive for fertility in the state. By contrast, the results for the rich state depict positive impact of growth in medical institutions and improved schooling for girls as impeding factors in high fertility. The main deterrents for the success of family planning efforts in the rich state are high population density and consequent unmet need for family planning and inequality of per capita income and existence of poverty within prosperity. These results thus confirm our hypothesis that direct intervention acquires main significance at a lower level of per capita state income and economic development becomes a major influential factor at higher levels of per capita state income. These results also support our earlier regressions using state level data, which depict the important role played by urbanization, deliveries in medical institutions, total unmet demand for family planning, and household availability of basic amenities like piped water. In the light of these results, it could be emphasized that in the long run development is the best

contraceptive. However, in the short run, a considerable achievement could be made by improving basic health and family planning services and by increasing the level of facilities including basic amenities, media and infrastructure development.

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