FP2020 goals, age structural changes and poverty reduction strategies in Pakistan

Abstract

Family planning is a crucial and cost-effective intervention toward poverty reduction and accelerating dependency ratio. The study purpose is to assess the impact of family planning on age structural transition and poverty reduction strategies. Specific aims are: identify the relationship between dependency ratio and poverty using PSLM surveys, to assess the impact of contraceptive use on dependency ratio retrospectively, and to evaluate the effect of FP2020 goals (eliminating unmet need) on dependency ratios and poverty reduction strategies in future. Three patterns emerged; first, high dependency ratio is associated with poverty as poverty is three times higher in household with high dependency ratio compared to household with lower dependency, another pattern suggesting contraceptive use has substantial impact on population growth, age structure and dependency ratio in the past as well as in future, and finally by achieving FP2020 goals and subsequent fertility decline have substantial impact on the age structure and poverty. This will lead to low dependency ratio, greater household savings, and a reduction in poverty.

Literature Review

Family planning, fertility transition and population growth

Family planning programs provide a win-win solution for development .The evidence is compelling; voluntary family planning programs improve the health and survival of mothers and children, empowers women, and helps women and their families to escape from poverty. The welfare of individual women and children improves, and with it come economic benefits. These issues are reflected in international agreements, such as the United Nations Millennium Development Goals (until 2015) to which Pakistan is a signatory. However, progress has been slow, and Pakistan lags behind.

Family planning can also play a significant role to cater the high level of population growth, which would improve the quality of life, accumulate human capital, and reduce poverty and hunger (Bloom et. al. 2006). Better family planning empowers women to decide their family size and to seek better reproductive health services for themselves and their children, which ultimately enhances their contribution to family wellbeing and overall national development.

The world began to pay attention to the advantages of investment in family planning in the 80's when many poor countries began to show its development benefits. Perhaps, the best known example of the impact of family planning on fertility declines and comes from Matlab, Bangladesh. The Matlab experiment began in 1978, when about half of the villages in the Matlab district were included in an experimental area and other half of the villages into control areas. The experimental areas received extensive and comprehensive high-quality family planning services, while the control areas received the same services as the rest of the country. The experimental areas were provided free services and supplies of range of contraceptive methods. The services included regular home visits of well-educated female family planning workers to address health concerns. The impact of these intensive services on reproductive behavior was very significant.

Within the first few years of the Matlab program, the proportion of women using contraceptives rose substantially—from 5 percent to 28 percent. Furthermore, fertility fell to levels 22 percent lower in the experimental areas that received the intensive family planning services compared to the control areas (Bongaarts et al 2012). The comparison of the fertility transition in Pakistan and Bangladesh is a similar testimony to the gains that can be made through intensive investments in family planning programs. In the early 1970s, the two countries had nearly the same high level of fertility—about 7 births per women. However, trends deviated significantly in subsequent decades. Fertility in Bangladesh had declined to 3.3 births per women by the late 1990s, while in Pakistan's fertility still stood at 5 births per women. During the decades of 1990s and after 2000, the pace of fertility transition in Bangladesh continued declining rapidly and reached about replacement level fertility in 2011—2.3 births per women (NIPORT, Mitra and ICF 2012).

The distinct fertility trend in these two countries needs a comprehensive explanation; what factors are attributable for divergent fertility trends in Pakistan and Bangladesh, even though both countries have similar social, economic, cultural and religious characteristics. In this regard, Bongaarts et al (2012) have evaluated the history of fertility transition in both countries and conclude that difference is in the family planning programs. They found that, "Pakistan's program has been very weak and ineffective; lacking government funds and commitment. In contrast, Bangladesh has implemented one of the world's most effective voluntary family planning programs, using the experience and lessons from the Matlab experiment. A unique feature of the program is its staff of literate female workers who advise women and distribute supplies at their doorsteps, thus overcoming the barriers posed by *purdah*" (Bongaarts 2012). In sum, due to these ground breaking family planning efforts, the levels of unwanted fertility and unmet need are considerably lower in Bangladesh than in Pakistan. Fertility is of course one of the vital components of population change in developing countries. Any family planning induced fertility decline will significantly change the future population growth trajectories. Thus, any delay in fertility transition will have the great repercussions for future population growth. To illustrate the impact of fertility decline on population size, we pick the forward population projections and backward estimates of population for Pakistan and Bangladesh from United Nations World Population Prospects 2008. Though, the family planning program in Pakistan started in 1965, it failed from its onset to provide the adequate services, availability and counseling about the family planning. Thus, Pakistan's decision not to encourage family planning in the 1970s and 80s had led to much more rapid population growth than in Bangladesh. In 1980, population of Pakistan was 8 million smaller than Bangladesh's, but by 2010, its population has 20 million higher than Bangladesh. Furthermore, the population projections shows that population of Pakistan will be 51 percent larger in 2050 than Bangladesh (222 vs. 335 million) (UN 2009).

Iran is another example of the benefits of a successful family planning program. Until the 1980s, Iran had experienced a high level of fertility—more than six births per women—and family planning has never been the priority for the Iranian government. However, in 1989, Iranian government had realized the negative consequences of the rapid population growth and abruptly reversed the population policy and become strong supporters of family planning programs (Roudi-Fahimi 2002; Bongaarts et al 2012).

A vigorous IEC[1] campaign was initiated to introduce the benefits of small families; an extensive network was established through village health workers to provide free contraceptive services and deliveries. The response of this rigorous family planning program was immense. In about twelve years, a remarkable fertility decline has observed in Iran from more than 5 births in late 1980s to 2 births per women in 2000. It is argue that the family planning program has substantial impact on the fertility decline and other development outcomes in Iran (Abbasi-Shavazi & McDonald 2006).

Family planning and poverty

A number of studies show that family planning is a determinant to reducing poverty. Arnstein et al. (2005) stated that "Overall our analysis shows that both improved labour market and educational opportunities and improvements in family planning. The use of family planning enhances per capita share of income of household members and help reduce poverty in a country at macro level strengthening the economy leading to political stability. Shareen (2012) has provided the evidence that "a set of studies from Bangladesh suggests that declines in fertility and child mortality contributed to poverty alleviation". Women who observe spacing in children are more likely to seek employment and as a result can increase household income leading to reduce extreme poverty (Population Action International, 2010). Women who have fewer children have more time to earn wages outside the home, which boosts family income and quality of life and reduces poverty. Families could save more and begin to break the grip of poverty and communities could make greater investments in education, health care, and infrastructure (Bongaarts et al 2012). Kerala, India, also provides good examples where policy makers regarded excessive family size as a root cause of poverty and felt the need to be dealt with an integral part of general development strategy (Randall 2012).

Improved reproductive health and family planning services provide more working time to women and lead to increased household income and savings. Savings, once invested will further enhance the income and prosperity of a family. In Sri Lanka "a 70 percent drop in maternal mortality risk between 1946 and 1953 created a 15 percent increase in life expectancy for school age girls, which led to increasing female literacy by 2.5 percent and female years of education by 4 percent"(Jayachandran & Llera-Muney 2008)

FAMILY PLANNING 2020 (FP2020)

Family Planning 2020 (FP2020) is a global partnership that supports the right of women and girls to decide, freely, and for themselves, whether, when, and how many children they want to have. FP2020 works with governments, civil society, multi-lateral organizations, donors, the private sector, and the research and development community to enable 120 million more women and girls to use contraceptives by 2020. FP2020 is an outcome of the 2012 London Summit on Family Planning where more than 20 governments made commitments to address the policy, financing, delivery and socio-cultural barriers to women accessing contraceptive information, services and supplies. Donors also pledged an additional US$2.6 billion in funding.

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[1] Information, Education and Communication (IEC) campaign

Pakistan commits to working toward achieving universal access to reproductive health and raising the contraceptive prevalence rate to 55% by 2020. Pakistan will take forward its 2011 commitment with the Provinces for all public and private health facilities to offer birth spacing services. The amount spent on family planning, estimated at US $151 million in 2011/12 will be increased to nearly US $200 million in 2012/13, and further in future years. The federal government assesses the contraceptive requirement as US $186 million over the period 2013 to 2020, which will need to be provided for. Contraceptive services will be included in the essential service package of two provinces in 2012, with the others following in 2013. Supply chain management, training and communication campaigns will be strengthened. Family planning will be a priority for over 100,000 lady health workers, who cover 70% of rural areas. Public private partnerships and contracting out mechanisms will help scale up access, and work with religious leaders and men to promote the benefit of birth spacing will continue.

Hypothesis

Our main objective of this paper is to evaluate the impact of contraceptive prevalence on the intensity of the poverty and on demographic dividend in Pakistan. The objectives of the paper are summarized as follows:

1. Identify the relationship between dependency ratio and poverty using PSLM surveys,
2. To assess the impact of contraceptive use on dependency ratio retrospectively, and
3. To evaluate the effect of FP2020 goals (eliminating unmet need) on dependency ratios and poverty reduction strategies in future.

Data Sources and Methodology

We use the multiple data sources in our study to provide the empirical evidence of the impact of family planning on dependency ratio. Two main data sources have been used for this study. We use several rounds of the PSLMS from 2001 to 2011, which provide a nationally representative sample of 14,000–16,000 households. These surveys collect a broad range of information on all household members, including demographic characteristics, education, health, employment, household assets, household amenities, population welfare, water supply and sanitation, and economic characteristics. Table 1 illustrates all the data sources that have been utilized in our analyses.

Table 1: Data Sources: Pakistan

Data	Period
IPUMS Micro level Census data	1971, 1981 and 1998
Pakistan Demographic and Health Survey (PDHS)	1990-91 and 2006-07

Pakistan reproductive health And family planning survey	2000-01
Pakistan Contraceptive Prevalence Survey	1984-85
Pakistan Social and Living Standard Measurement Survey (PSLM)	**2000-01, 2005-06 and 2010-11**

Table 2 shows the household dynamics and changes in poverty status in Pakistan covering the period from 2001 to 2011. Overall, 34 percent of the population in 2001-02 has fall below the poverty line in Pakistan. A substantial decline has been observed in poverty status during last ten years and latest evidence shows that about 13 percent of the total population lives below poverty line. Significant heterogeneity has been observed in poverty status by background characteristic, such as household size, dependency ratio and household headship.

Table 2: Household dynamics and Changes in poverty[2] status in Pakistan

Household dynamics	2001-02	2005-06	2010-11
Overall	34.38	22.32	12.95
Household size			
<= 5 member	13.78	7.15	3.84
6-8 member	31.28	19.28	13.44
>=9	46.64	33.13	19.20
Dependence ratio			
Low	19.54	11.20	6.03
Medium	36.10	24.63	12.96
High	44.16	29.64	19.66
Household headship			
Male	35.19	23.09	13.26
Female	21.94	10.95	8.99
Sample size	**106,619**	**110,816**	**108,933**

Source: Pakistan Social and Living Standard Measurement Survey

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[2] Poverty defines as headcount ratio based on poverty line as defined by Govt. of Pakistan.

Table 3 shows effects of socio-economic and demographic characteristics on poverty status in Pakistan from three rounds of PSLM surveys. In order to capture the variation in poverty status by background characteristics, we add socio-economic, household and demographic characteristics in our regression model. We set dependent variable as poor and non-poor. As illustrated by the results of the logistic regression presented in table 3, household size and dependency ratio has significant impact on the poverty.

Table 3: Effects of socio-economic and demographic characteristics on poverty status (relative risk ratio)

Characteristics	Odd ratios			Pooled
	2001-02	2005-06	2010-11	
Education				
No education	1	1	1	1
Primary	0.58*	0.53*	0.63*	0.56*
Secondary+	0.32*	0.26*	0.33*	0.29*
Place of residence				
Urban	1	1	1	1
Rural	0.42*	0.37*	0.43*	0.43*
Employment	1.39*	1.33*	1.28*	1.36*
Female-headed household	0.66*	0.59*	0.71*	0.62*
Household size				
<= 5 member	1	1	1	1
6-8 member	2.44*	2.92*	3.66*	2.90*
>=9 member	5.44*	6.81*	6.43*	6.20*
Dependence ratio				
Low	1	1	1	1
Medium	1.40*	1.64*	1.52*	1.50*
High	1.93*	2.24*	2.33*	1.98*
Livestock	0.87*	0.47*	0.41*	0.62*
Land Ownership	0.55*	0.57*	0.68*	0.69*

*p<0.001
Source: Pakistan Social and Living Standard Measurement Survey

Methodology in brief

The details are summarized as follow;

Part I

1. Overview the household dynamics and changes in poverty status in Pakistan during the last decade (2000-2010) by using Pakistan Social and Living Standard Measurement Surveys (PSLMS).
2. To assess the impact of socio-economic and demographic characteristics on poverty status at household level in Pakistan by running multivariate logistic regression model.
3. To estimate the effect of dependency ratios (classified as Low, medium and high) on poverty in term of odd ratios and probabilities.

Part II

1. Obtain the population by age and sex for 1970-75, total fertility rate trend, life expectancy at birth and international migration ranging from 1970-75 to 2005-2010 by using UN 2012 World Population Prospects.
2. Collect the empirical evidence for proximate determinants of fertility in Pakistan ranging from 1975 to 2010 using the datasets presents in table 1 and establish the "Bongaarts" proximate determinants of fertility model.
3. By using standard statistical smoothing methods (Spline in this case), we develop the proximate determinant model for every five years period from 1970 to 2010.
4. In order to capture the effect of contraceptive use on fertility, keep contraceptive use of 1970 constant throughout the period and estimate the total fertility rate.
5. We run the cohort component population projections for two fertility rate scenarios.
6. Produce the graphs from total population, dependency ratio according to two fertility rate scenarios.
7. Evaluate the effect of dependency ratios (according to two fertility scenarios) on poverty by using odd ratios estimated in part I.

Part III

1. Three different fertility assumptions based on the contraceptive use by using the proximate determinant of fertility models has been calculated from PDHS 2006-07[3]. Table 4 illustrates the total fertility rate scenarios based on the different contraceptive use scenarios.

Table 4: Total fertility rate scenarios based on contraceptive use

	2010	2030	2050
Medium fertility (PC2012)	3.9	2.8	2.0
Current level of FP efforts (1% annually)		2.0 (2035)	2.0
Moderate level of FP efforts (1.5% annually)		2.0 (2030)	2.0
Accelerated level of FP efforts[4] (2.5% annually)		**2.5 (2020)**	**2.0**

2. We run the cohort component population projections for four fertility rate scenarios and produce the graphs from total population, dependency ratio accordingly.
3. Using projected probability of the effect of dependency ratio on poverty status estimated in part I, implications of FP2020 goals on dependency ratios and poverty is discussed.

Initial results

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[3] This will update when the PDHS 2012-13 micro level dataset will be available in December 2013.
[4] Achieving FP2020 goal in 2020 (eliminating unmet need for family planning)

Figure 1 shows the proximate determinants of fertility in Pakistan from 1984 to 2007. During the decades of 1980s, proportion married has substantially contributed in fertility decline in Pakistan. However, during the decades of 1990s contraceptive use played a vital role in fertility decline along with abortions in recent years. We developed the proximate determinants of fertility for every five years (not shown here) starting from 1970 to 2010. Using the proximate detriments equation (Bongaarts 1970), we calculate the estimated total fertility rate based on different contraceptive use assumptions and held constant other determinants. Figure 2 shows the total fertility rate for two different scenarios. It is important to note that contraceptive use during the past three decades has contributed a decline of two children.

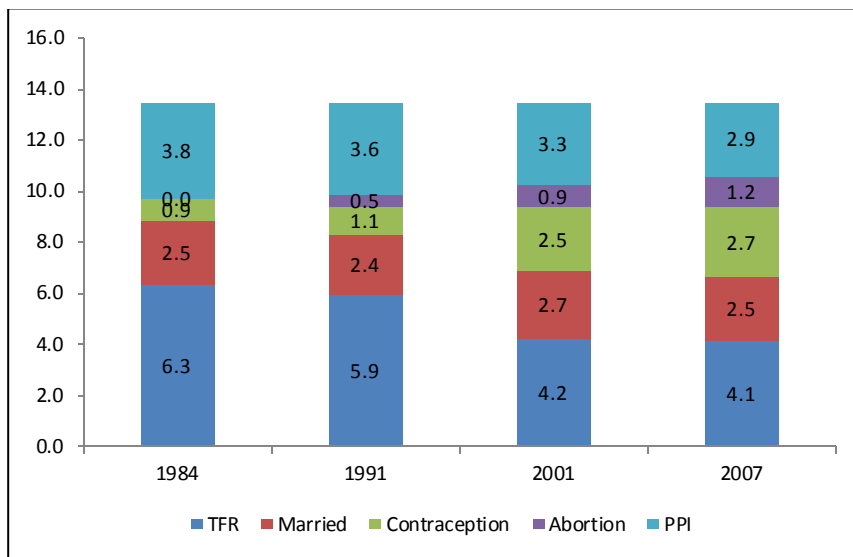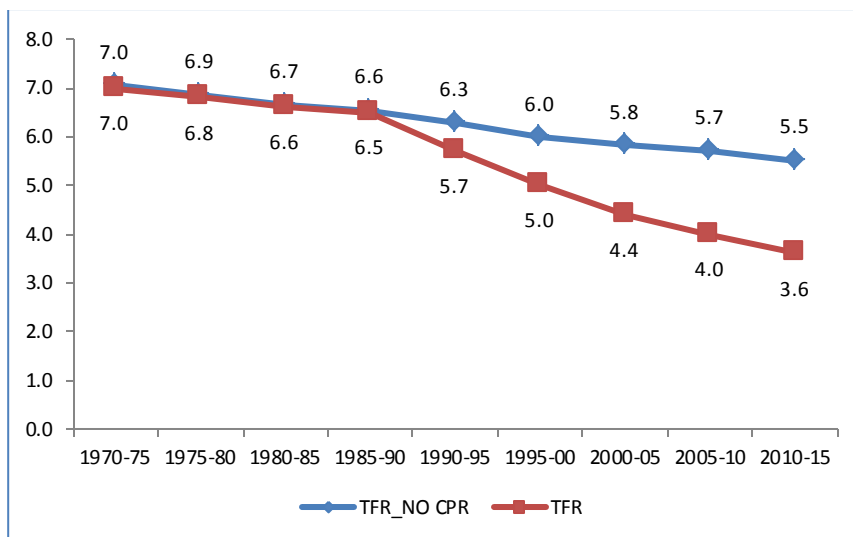Figure 1: Proximate determinants of fertility in Pakistan, 1984-2007

Figure 2: Estimated total fertility rate based on medium TFR (UN2012) and with constant CPR at 1970 level.

Using cohort component population projections methodology, we execute the population projections by age and sex for two different fertility scenarios presented in figure 2. Base year population and component of population changes has been obtained from UN 2012 World Population Prospects. Figure 3 represent the total dependency ratio in Pakistan according to two fertility scenarios (Medium and ConstCPR) from 1970 to 2010. As shown in figure 3, contraceptive use has significant effect on the dependency ratio retrospectively.

Figure 3: Total dependency ratio in Pakistan according to two fertility scenarios (Medium and ConstCPR) from 1970 to 2010.
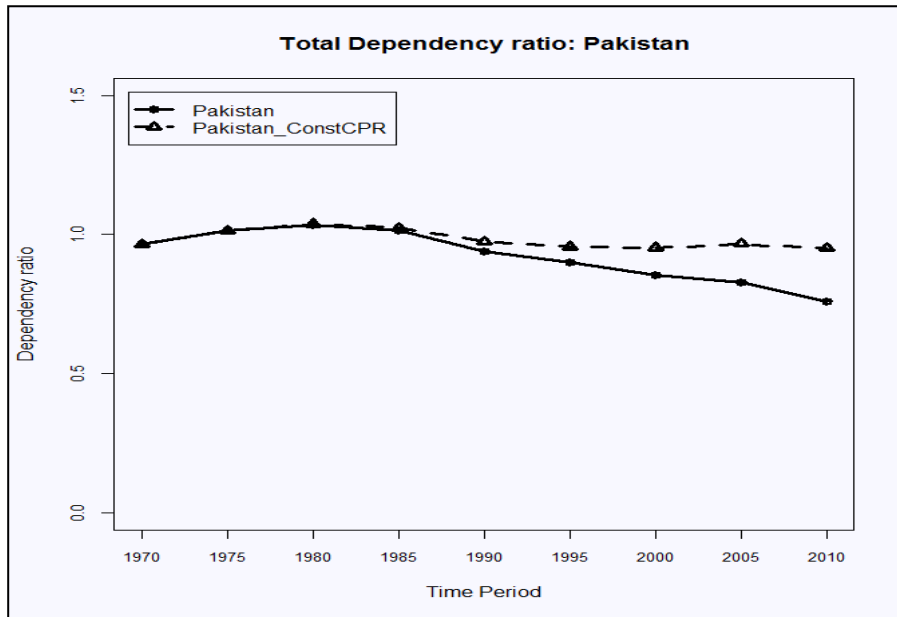

Figure 4 shows total dependency ratio in Pakistan according to different contraceptive use scenarios from 2010 to 2050f in Pakistan. As shown in figure, by achieving accelerated level of FP efforts (FP2020 goals), dependency ratio is declining rapidly compared to the medium fertility scenarios. We are working on the relationship between poverty and dependency ratio in future and policy implications.

Figure 4: Total dependency ratio in Pakistan according to different contraceptive use scenarios from 2010 to 2050.
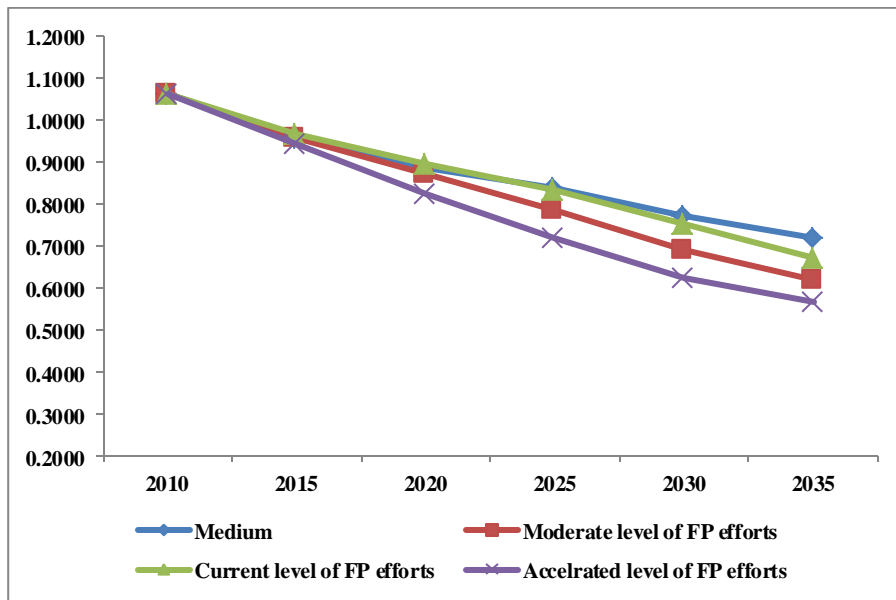
Conclusion

- Dependency ratio and household size has significant effect on poverty status in Pakistan.
- Contraceptive use has a greatest impact on fertility and dependency ratio in Pakistan during last four decades and poverty.
- By achieving FP2020 goals of eliminating unmet need for family planning, substantial reduction is expected in dependency ratio and subsequently in poverty reduction.

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