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Demographic Transition, Window of Opportunity, and Population Bonus: Toward a New Population Policy in Iran

By:
Hatam Hosseini*

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* Assistant Professor of Demography, Department of Social Sciences, Faculty of Economics and Social Sciences, Bu-Ali Sina University, E-Mail: h-hosseini@basu.ac.ir

Abstract
This paper examines demographic transition and its consequences with an emphasis on demographic window in Iran. The results show that Iran is entering the third stage of demographic transition. The window of opportunity which opened in 2006 with its potential population bonus provides a golden opportunity for the Iran's economy. Based on an intermediate scenario of the UN population projections (2009), Iran's window of opportunity will remain open for almost four decades from 2005. This demographic dividend needs to be managed efficiently in order to be transformed into a better and sustainable economic growth. Thus, there is a need for a comprehensive population policies to not only manage the window of opportunity but also to introduce policies for maintaining fertility at its current level so that Iran will not be facing the prospects of very low fertility experienced in other Asian countries.

Key Words:
Demographic Transition, Window of Opportunity, Iran, Population Bonus, Population Policy.

Introduction
Population and its various aspects always have been subjects of many thinkers and scholars. Different theories and insights in relation to population are formed in history. Human societies until about 2500 years ago probably had the shared vision about the population. Population growth in the teachings of Confucius was specifically encouraged. The characteristic of the reign of Julius Caesar and August in the Roman Empire was evidently support the doctrine of population growth (Weeks 1999: 75). Followed the unset of the Roman Empire, the two population doctrines has emerged in favor and opposed to population increase in the community of Christianity. During the middle ages, Europeans believed that the number of population would monitor by the God better than anyone. At the same time, Ibn-Khaldun argued that population growth increases specialization and division of social work and consequently income in the cities. Weeks (1999) argued that European cultural awakening took in the shadow of population growth. Behalf on Mercantilism, population growth was seen as the basic factor of national revenue. Danish economist, Fredric Lutken, in mid eighteen century stated that: "The number of people and their more over are the largest and most magnificent wealth that are set to achieve to all the other wealth" (Zanjani et al 1999: 2).

With the advent of Malthus and publishing his essay in the late eighteen century, this position was dominated and strengthened that disproportionate population growth has negative impact on economic development. Following advances in disease treatment and control technologies in more developed countries and reduce at the level of mortality and fertility during the years following the First World War, the above position subsided and low population has become the problem of the industrialized society. Due to the import of new technology for postponement of death and stability and continuity of high fertility level after the Second World War, population growth accelerated in developing countries. Malthus's concern was emerged again. Although, population growth was not a concern as it had been projected to reach at zero percent in 1970, it actually reached to a rate at 2.7 percent in 1970 that brought up the concern that economic development cannot afford the needs of an increasing population.

Consequently, adopting policies to moderate population growth and creating the balance between population growth and economic development were agenda of most Third World countries. About 85 percent of developing countries in 2001, therefore, called for a reduction in fertility (UN 2004). As a result, fertility declined in more developing countries*.

From early 1980s and following remarkable fertility changes in developing countries, concerns on population growth and its negative consequences somewhat subsided. Consequently, another approaches formed about the relationship between Population and Development. Julian Simon is the most famous figure of the recent position. He says that people are the ultimate source, people with skill, happy, and hopeful that uses the will and power of insight and imagination in ways to benefit them and all of us (Dyson 1996). Although, Simon emphasizes on the role of creativity of the population, but in addition to the ability of creativity, the population is consumer too. The use of ability, knowledge, effort and creativity of individuals needs basic (food, clothing, shelter) and secondary (employment, education, health, leisure and recreation, transport and transport ...) needs to be provided. Thus, in addition to the size, annual growth rate and age and sex composition of population, its management is very important.

Studies (Abbasi-Shavazi and McDonald 2005, 2006, Abbasi-Shavazi 2001, Abbasi-Shavazi and Hosseini 2007, Hosseini-Chavoshi et al 2007) show that despite the diversity in economic, social and cultural conditions of the provinces of Iran, there is a kind of convergence in fertility behavior. The latest reports (UN 2009, PRB 2010) and also estimates based on 2006 population census (Abbasi-Shavazi et al 2009: 52) shows that today below replacement fertility in Iran has been pervasive. In fact, it can be said that the goal of family planning for moderated population growth, has been reached earlier than the predicted time by Scholar.

Despite achieving family planning goals, earlier than predicted, no specific new goal has been determined for the future. Family planning program and control of population growth goes to the unknown point on the steep sharp garlic. In such circumstances, the issues facing the country in the future will be unknown. So, any one not knows that which population with which features is desirable for the country? This approach will lead national and regional development planning to adopt population policies. Migration, population redistribution, urbanization and marginalization, population aging, low fertility, employment and empowerment of women, internal and international migration and..., requires a multidimensional look to the populations. It seems that the place of this approach to the population, and its effects and consequences on the country's macro planning is empty. In other words, still policymakers point of departure in terms of demographic changes is unclear.

* Number of developing countries reached replacement level fertility is growing. In the Asian continent in 2003, fourteen countries have total fertility were at or below-replacement level (Gubhaju and Durand 2003). The number of these countries reach to 18 and 21 countries in 2006 (PRB 2006: 9-8) and 2010 respectively (PRB 2010: 8-6). Also, in Iran during the last three decades especially the period 1986-1996, fertility was decreased unprecedentedly. During 2003-2006, Iran also joined to the countries that were at replacement or below replacement level fertility (PRB 2006: 9-8).

In this context, certain questions are raised that they need to be responded. These questions include: 1) whether the primary objectives of family planning have been achieved?; 2) whether the continuation of family planning will lead to lower fertility levels in the country?; 3) if current trends continue, whether Iran and different regions of the country will not encounter negative population growth?; 4) to prevent further reduction in fertility, what policies should be adopted in the country?; 5) considering the population age structure, what is the proper population policy for the country at this situation?

In this paper, I will try to answer these questions and to study the demographic transition in Iran in a 175-year period, while illustrating the patterns of population change and its future, discussing changes that occurred in the population age structure and the golden opportunity resulted from this change with an emphasis on the concept of the window of opportunity and population bonus. Additionally, I will try to give answers to the questions as to when the population window was opened to the country. How long far will it stay open? What is the appropriate population policy for the country in this situation?

Data and Method

This study is a secondary analysis. The required data has been extracted from the results of Iran's population Census at different time points, and fertility and mortality estimates by the scholars for the country as a whole. Moreover, data used for the study of population prospects is mostly taken from UN Population Division (World population Prospects: the 2008 Revision).

Demographic Transition and Changes in Population Size and Growth

Change is inherent characteristic of any population. No population can be found without a change. The Process of population change takes place over time and affected by fertility, mortality and migration. These variables determine most of the essential characteristics of each population and also its demographic future. Demographic transition is one of the major issues in population studies. The subject in this theory is that how populations with high birth and death rate and consequently low natural population growth (old balance) will shift to a new situation with low birth and death rates and yet low natural population growth (new balance). What is emphasized in this theory is that the conditions of communities along the transition from a pre-modern to an urban and industrial modern society, birth and death rates and thus the size, growth and population structure will be changed. All countries almost are at different stages of demographic transition.

Mortality and fertility Transition are the two main forces determining the demographic transition. I will try to depict Iran's demographic transition phenomenon and discuss on its effects on age structure transition and its consequences. Finally, I will have a discussion on swings in fertility limitation in Iran. Then, I will conclude that what is the proper population policy for the country in current situation.

Mortality Transition

Saraei (1997) attributes the onset of a continuous mortality decline and the first stage of demographic transition in Iran to the years after the World War I (1914-1918). Amani's findings (1995) also confirm this. This situation in Figure 2 is seen as a movement of growth of 0.6 percent to 1.5 percent for the period 1921-1926. Based on estimates of Amani (1995) the continuous reduction of mortality from 1875 onwards can be divided into four specified periods.

First period from the beginning to the year 1905: A fixed and stable mortality trend is observed in this period. Birth rate has also been fluctuating at a high level. The output of such a situation was a low population growth, approximately four per thousand (Table 1).

Second period, 1905 to 1930: Mortality declined from the year 1905. The gap between birth and death rates raised rapidly and then followed with a gradual and almost constant trend until 1930. The population growth rate increased from about 5.7 per thousand in the period 1905-1910 to about 9 per thousand in the period 1925-1930.

Third period, 1930 to 1950: The level of mortality that had started since the previous period was still continuing, and the gap between birth and death rates was greater. Despite fluctuations in mortality levels and a significant increase in the period 1945-1950, population growth was still ascending and the size of population increased.

Fourth period, 1950 to 1990: Despite the reduction in mortality since 1930, the level of mortality increased during 1950s. This situation did not continue, as the level of Iran's population mortality decreased specifically during 1950-1955. The estimates of Saraei (1997) and Mirzaei (2005) about life expectancy for the year 1955 were respectively 40 and 37.5 years. Therefore, it can be said that the mortality transition, as the first stage of demographic transition in Iran, are expected to have taken place during 1950-1955. In this period, mortality declined dramatically and the gap between birth and death rates increased. As the results of the fall in mortality and fertility fluctuations at a high-level, the population growth accelerated and the population size increased dramatically. From 1991 onwards, the level of mortality stayed relatively stable.

Fertility transition

Fertility transition in Iran, before and after the Islamic Revolution, has been the study subject of a large literature (Amani 1995, Aghajanian and Mehryar 1999, Aghajanian 1991, 1994, 1995_a, 1995_b, Saraei 1997, Paydarfar and Moeini 1995, Mirzaei 2005, Mehryar and Gholipour 1995, Mehryar and others 1999, Abbasi-Shavazi 2001, 2000, 2001_a, 2002, Abbasi-Shavazi and McDonald 2005, 2006, Hosseini-Chavoshi and others 2005, 2005, Erfani 2005, Kazem et al 2002, SCI 2000). Despite various classifications of the transition suggested by the studies, they have commonly pointed to some key features of the transition, including the onset of the transition.

Aghajanian and Mehryar (1999) tried to use the theories of modernization and institutional explanation to explain the fertility transition in Iran in three time periods 1966-1976, 1976-1986 and 1986-1996. Amani (1995) distinguished five periods in the transition and described trends in birth rates in each of these periods. Erfani (2005) based on estimates by Amani (1995) and SCI (2000) depicted the fertility transition in Iran in five stages. Abbasi-Shavazi (2000) also believes that the fertility transition in Iran took place in five stages and different trends in each stage have been experienced.

Table 1. Crud Birth Rate (CBR), Crud Death Rate (CDR), and Natural Population Growth Rate (NPGR), Iran: 1875-2050

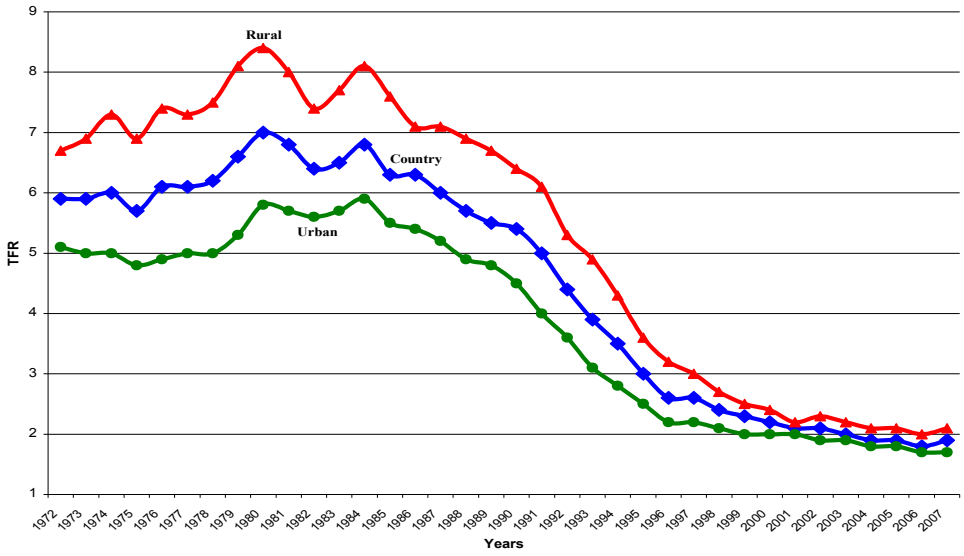
Period	Rates		Annual Natural Growth Rate (in 1000)
	CBR (in 1000)	CDR (in 1000)	
1875-1880	40.10	36.10	4.00
1880-1885	40.00	36.00	4.00
1885-1890	40.00	36.00	4.00
1890-1895	40.10	36.10	4.00
1895-1900	40.00	36.00	4.00
1900-1905	40.00	35.70	4.27
1905-1910	39.90	34.20	5.74
1910-1915	39.70	33.00	6.66
1915-1920	39.60	32.90	6.66
1920-1925	40.50	32.80	7.72
1925-1930	40.60	31.70	8.95
1930-1935	40.20	28.20	12.03
1935-1940	39.40	25.50	13.95
1940-1945	40.70	24.50	16.18
1945-1950	47.60	26.80	18.76
1950-1955	47.00	22.80	24.20
1955-1960	45.80	20.20	25.70
1960-1965	45.40	18.00	27.40
1965-1970	44.60	15.40	29.30
1970-1975	42.50	13.20	29.30
1975-1980	43.70	11.70	33.00
1980-1985	45.50	10.70	41.60
1985-1990	38.80	8.20	31.70
1990-1995	28.90	6.50	18.40
1995-2000	20.60	5.90	14.60
2000-2005	19.90	5.80	11.20
2005-2010	18.90	5.70	11.80
2010-2015	18.00	5.50	11.30
2015-2020	16.10	5.40	10.50
2020-2025	13.60	5.40	8.00
2025-2030	12.40	5.90	6.30
2030-2035	12.30	6.60	5.50

Source: data before 1996 census has been taken from the Amani (1995: 73 and 80) and the rates related to 1996 and 2001 are taken from SCI (2000 and 2001). Values for 2001-2006 and later years were adopted of the United Nation Population Division (2009).

First stage, fertility reduction in early 1970 after a long period of experience of high fertility: Before the year 1945, crude birth rate was relatively high and estimated about 40 in thousands. Years 1945 to 1965, the crude birth rate increased slowly and reached

to 40.7 and 48.6 per thousand, respectively. The size of population increased by about 83 percent during this period, from 14.2 million people to more than 25 million (Amani, 1995: 73, 80, SCI 2000_a). Fertility rates slightly decreased during 1966 to 1976, mainly due to the family planning program that was in place under the Pahlavi regime. The crude birth rate decreased by 14.5 percent from the 48.6 per thousand in 1966 to 40.1 per thousand in the year 1976. The total fertility rate decreased by 12.9 percent and reached from 7 in 1966 (Mirzaei 2005, Amani 1995) to 6 child per mother in 1976 (Abbasi-Shavazi and McDonald 2005). The significant point about the first stage of fertility transition in Iran is that in spite of implementation of family planning programs in 1970s, fertility trends during 1972-1976, except 1975, has been relatively stable.

Fig 1. Fertility Transition in Iran, 1972-2007



Second stage, fertility increase during 1976-1980: In two years, leading to the Islamic revolution in Iran, fertility increased at the country and urban and rural area and reached its peak in 1980. This situation undoubtedly was affected by specific conditions of the early revolution. During this period, the total fertility rate in the country increased by 14.8 percent. Corresponding increase in urban areas was higher than rural areas, respectively 18.3 percent and 13.5 percent. The lower decrease in rural area's fertility can be attributed to higher fertility levels in rural compared to urban areas. These trends could also have resulted from the failure of family planning program implemented by the Pahlavi regime monarchy in the two years leading to Islamic revolution (Abbasi-Shavazi and McDonald 2005: 10).

Third stage, a relatively stable trend of fertility until 1984: Although, the Leader of Islamic revolution accepted the use of family planning methods in 1979, but family planning was suspended, and the revolutionary government in contrast to the previous regime encouraged the high fertility and the rapid population growth. Consequently, the

fertility rate that had begun an ascending trend from previous years was fluctuating at the high level till 1984.

Fourth stage, slowly decreasing fertility since 1985 to 1988: Despite continuing indirect policies encouraging childbearing, a high fertility regime did not last and the fertility rate in mid 1981s started decreasing. At the national level, the total fertility rate decreased 9.5 percent. The fertility reduction was slow until resuming and adoption of the national family planning program in 1989.

Fifth stage, dramatic fertility decline from 1989 onwards: In the first national development plan in late 1980s, the goal of family planning was to reduce the total fertility rate to 2.3 children per mother until 2010. Some demographers (Zanjani 1992: 54-55) according to experience of fertility reduction in some Asian countries and the noncompulsory nature of family planning program in Iran had predicted that achieving TFR 3.8 children per women in the period 2016-2021 would be difficult. But, the decreasing trend of fertility which had started from the mid 1981s continued until the mid 1991s. In fact, the aim of family planning was achieved a decade earlier, so that in 2000 the fertility rate was very close to a replacement level (2.2 children per woman).

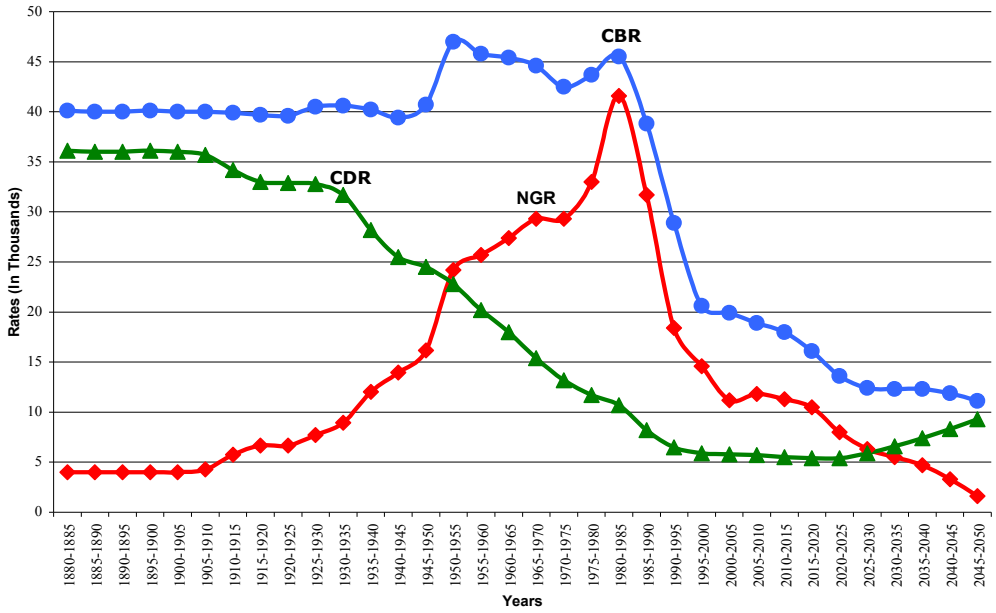
Although various studies has been emphasizing on the acceleration of fertility transition in Iran after implementation of the national family planning program from 1989 onwards (Aghajanian and Mehryar 1999, Mehryar and others 1999), but Abbasi-Shavazi (2000) argues that fluctuations in fertility during 1976-1985 show that increasing and decreasing fertility in Iran has been independent of family planning program. Therefore, emphasizes on the role of social and ideational changes beyond family planning (2000 Abbasi-Shavazi 2000_a: 3-2). The other point about the fertility transition in Iran is the continuous of fertility transition. Abbasi-Shavazi and McDonald (2006: 230) believed that an important factor in the continuation of descending fertility trends is the national family planning program in the late 1980s. Abbasi-Shavazi (2000a) show that approximately 85 percent in the fertility reduction was due to marital fertility decline during the 1986-1996. Generally speaking, the experience of fertility transition in Iran shows that although family planning program has an important role in accelerating fertility decline, but people's reproductive behavior, has been formed under effect of factors, conditions and other contexts that should always be considered in analyzing fertility trends.

Demographic transition is the immediate result of the transition in birth and death rates. Saraei (1997) argues that the first decade of the 20th century is the threshold of entering the first stage of demographic transition in Iran. Based on the theory of demographic transition, before the transition, there are equilibrium between birth and death rates. Consequently, the rate of population growth is low. The situation is clearly visible in Figure 2.

In the next stage, mortality level gradually decreased but births remained constant at the high level. Consequently, population growth accelerated. The second stage of Iran's demographic transition specified from the years mid 1980s and specifically since 1988 when birth rates began to decline. During 1986-1991, crude birth rate comparing to its previous period decreased 31.5 percent. This trend continued later. During 1996-2001,

CBR reached 18.3 per thousand. Thus, Iran was on the eve of entering into the third stage of demographic transition characterized by low birth and death rates, leading to a low population growth.

Fig 2. Demographic Transition in Iran, 1880-2050



Based on the United Nations Population Division (2009) projection, relative stability of mortality in low levels along with continuing declining fertility trends will result in the annual population growth rate equivalent to a 0.63 per cent in the period 2025-2030. From that time until mid 21th century, due to changes in the population age structure mortality rate will increase gradually. These trends along with the continuation of mortality reduction will cause a population growth at zero percent.

Population Size, Growth and Changes: Past Trends and Future Perspective

Population changes and trends in its annual growth during demographic transition, is the resultant and the balance of birth and death rates. Presenting accurate information of changes in Iran's population and its characteristics in the past is difficult and sometimes impossible. Valuable efforts in this direction have been done. Large amounts of estimates are based on speculations. Zanjani (1992) believed that in a situation where the exact population censuses may not be prevalent, speaking about the real number of population is not without difficulty. However, Amani (2001) evaluated desirable and useful estimates, and believed that the information that these estimates are based on have not been far from the truth and we can profit from them.

In the study of historical demography of Iran two periods can generally be separated from each other. The first period goes back to the years before the first census of population and housing in 1956. The figures reported for the population of Iran and

other indicators before 1956 are conjectures. Second period include the years after 1956 census. Since then, population censuses with regular intervals of ten years were conducted in the country. The latest census was conducted in November 2006. Different estimates of Iran's population have been made at the eve of 20th century (Zanjani 1996, Zanjani and others in 1971, Saraei 1993, Meraat 1995). Estimated figures fluctuate in the range between at least 8.56 and 10.72 million people. However, the estimated average figures show a figure of less than 10 million people. Therefore, it can be said that until the eve of 20th century people living in the Iran was less than 10 million and population growth rate was very slow (Zanjani 1992: 12-13, Saraei 1993: 25). During 1881-1921 the population of Iran has a constant annual growth rate equivalent to 0.6 percent (Table 1) that can result from the stability of high birth and death rates.

During the decades in the early 20th century, population growth accelerated and consequently the country's population reached more than 14 million in 1946. From this time onwards, in line with the general trend of changes in mortality in developing countries, with a relatively constant level and with a high level of fertility, the Iran's population size increased rapidly. According to Saraei (1993: 25) the annual population growth rate for the period 1940-1956 was 2 percent. The growing population size and annual growth rates which specifically started from 1940, except for period 1966-1976, continued to increase till 1986. In the period 1956-1966, the population of Iran increased 36 percent and reached to more than 25 million in 1966 with annual population growth rate equivalent to 3.2 percent. This situation made Pahlavi regime implement national policies on family planning in 1967. Although, the program was not much received by people, the annual population growth rate reduced to 2.7 percent and the size of population compared to decade 1956-1966, increased less than 31 percent.

After the Islamic revolution in the early 1979 and the suspension of the family planning program, the decreasing trend in population growth stopped. Political, economic, social and cultural changes during the years immediately after the revolution led to change in the majority community attitude towards birth control, and led to behavioral changes that one of its immediate consequences was an increase in the annual population growth rate of 3.9 percent in the period 1976-1986. The population of Iran, during 1956-1986, increased annually 3.3 percent. So, annually one million and finally more than 30 million were added to the population of Iran. Yet, world population during the same period experienced annual growth rate equal to 1.9 (Saraei 1991: 104).

Ascending trends of population growth did not continue. The results of the first general census of population and housing in 1986 had caused a kind of concern among officials after the revolution. Moreover, other factors such as revolutionary emotion gradually were changing attitude to the population as operating power and priority in war, and more important pressures and economic problems caused in some kind of rotation in government population policies, in line with family planning and birth control in 1988 and its practical implementation in 1989. Population growth started to decline and reach to 2.5 and 1.5 percent per year respectively in 1986-1991 and 1991-1996. Although, in the period 1986-1996, the country experienced a net population

increase about 21.5 percent, or 10.6 million, but the annual population growth rate decreased to 1.96 percent, indicating the great transformation in family planning and birth control in the country. Descending trends in annual population growth rate continued and reached 1.5 percent in 2006 population and housing census. However, the population size increased more than 10 million and a net increase equivalent to 16.7 percent reached to over 70 million in 2006 census and slightly more than 75 million 2011 (SCI Website). Based on the UNPD projection, descending trends in population growth which has begun during 1986-1991, will continue so that decreased to 0.16 percent during 2045-2050.

From Population Transition to Population Bonus

Iran, as we have seen, is on the eve of the third stage of demographic transition. Although, the size and population growth is important during the transition, but at the end of the second stage and on the eve of the third stage of transition, what will be more and more important is population age composition. Issues arising from the Iran's population transition in the current situation have determined a situation that in each country occur only once. Demographers know this phenomenon as window of opportunity and economists call it as population bonus or population dividend.

In the first stage of demographic transition, the population age structure is extremely young. At this stage*, as a result of relative stability of elderly population (65 years and older) and a tremendous increase in population under 15, the population of working age and economic activity will decrease and conditions will be emerged that are not incentive to economic development. In these circumstances, the number of mouths open to feed is far more than persons they do work. Because this population are more consumer and not creative and productive, so any surplus investment that eventually lead to infrastructure development will be very difficult. Most of populations are largely consumer and consequently the government finance resources largely will be spending for the provision of primary and secondary needs of the population. In such circumstances, population size and growth will take the challenge of any national development program.

As the results of demographic transition and below replacement level fertility, the relative share of population under 15 is diminished. In contrast, because of increases in the life expectancy and mortality reduction in older ages, the percentage of the population 65+ will increase**. Undoubtedly, with a relative stability of percentage of underage population, an increase in the ratio of elderly population will be concomitant with decline in the ratio of working age population. Consequently, because of affiliation of old adults, the pressure on the working age population increases and many resources will be spending to them.

* This stage in Iran is equivalent to the 20 years leading to 20th century until 1986.

** This situation has been emerged in many European countries and other countries including Iran are going toward it.

Between these two conditions, there is a period in which because of relatively a rapid fertility decline and slowly changes in the level of mortality, the population structure keep distance from the young structure and the ratio of elderly in the population drops sharply. United Nations Population Division defined window of opportunity as a period in which the ratio of under 15 population reaches to less than 30 percent of the total population and the ratio of 65 years and older population is still less than 15 percent (UN 2004). Since, the change in the elderly ratio is insignificant and their share is still less than 15 percent of the total population, with a reduction relative to the share of under 15 population, the ratio of working age population (15-64 years) will increase rapidly. In these circumstances, the total age dependency ratio reaches to less than 0.5 and potentially the condition looks very favorable for an economic development. Accordingly, the demographers know the population explosion as a God-given gift that can change it to a population bonus. If this opportunity managed properly, it can help the country develop, otherwise, will be turned over to a big obstacle for development. Navaneetham and Dharmalingam (2009: 16) believe when window of opportunity opens, population explosion can convert to a population dividend in three ways:

1) Productive employment of available labor force, which in turn will lead to increasing GDP. If the growth rate of labor force be more than the growth rate of the total population, the per capita output, even if per capita output of any worker do not increase, will increase.

2) Impelling crowded wealth and savings towards productive investments. Window of opportunity can increase savings. Increasing health, longevity and number of families with smaller family size make savings easier and more attractive.

3) The appropriate investments in shaping high-quality human capital. Fertility decline has direct and immediately impact on the school age population, and provides an opportunity to more investment in their education and health to participate in high-quality human capital in the future. Women with fewer children have less desire and more ability to participate in outdoor activities and more will be possible do spending their income for the health and education of their children.

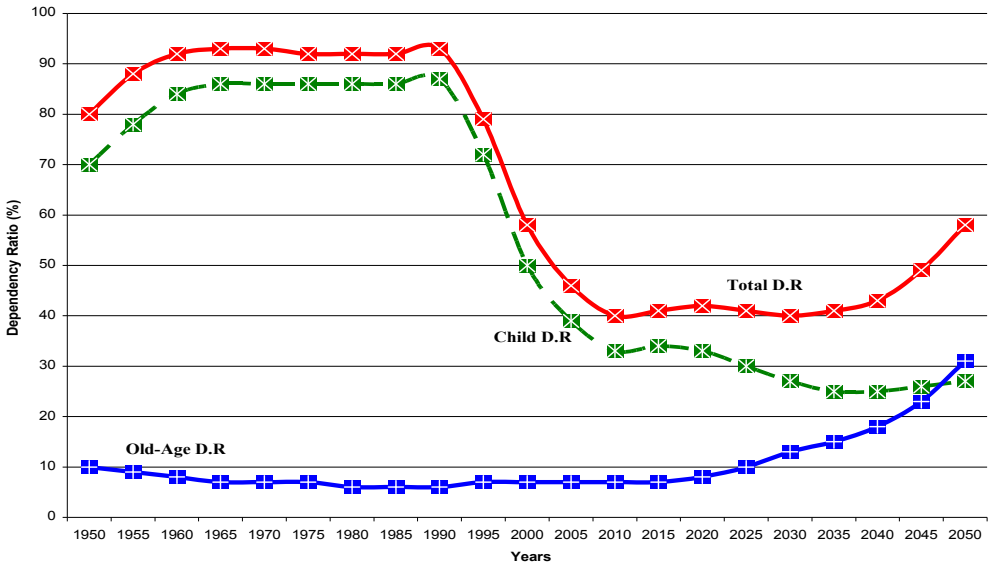
Window of opportunity is the inevitable consequence of demographic transition and has many requirements for economic and development policies (Pool 2007: 28). Fink and Finlay (2007) consider window of opportunity as an important factor in economic growth. The economic impacts of window of opportunity roots in the fact that during the period in which window of opportunity is opening, public expenditures had been made in social programs such as education and health can be directed towards investment in productive sectors and infrastructure. At the micro level, families also can redirect their current expenditures towards increased saving and improved the living standards (Pool 2007: 28). However, window of opportunity only one time to be opened on the populations and eventually will be closed. Length of the period the window of opportunity remain open depends on the speed of demographic transition. There is a large consensus that the window of opportunity do not operate automatically and population bonus is not achieved spontaneously, but depends on appropriate policies that are adopted in other areas. If during this period appropriate policies are not done,

will be many negative requirements for economy and society. Indeed, the positive effects of reducing dependency ratios are in close connection with economic policies adopted accompanied age structure transition during the demographic transition. Population bonus is achieved only when the appropriate investments should be made in health and education the ones that entering the work force and to generate jobs to respond to their demand for employment. In fact, a large number of unhealthy, unproductive, unskilled, uneducated and unemployed work force, create an obstacle on the way to development and threaten the stability of the society.

Now, the question is that when did window of opportunity open up in Iran? How long the duration will continue? What is the appropriate population policy when the window of opportunity is opened to the country? To answer this question based on the criteria have provided for the definition of window of opportunity, we will examine the window of opportunity and the potential population bonus resulted from it in Iran.

Age dependency ratio is one of the indicators used to determine the timing of the window of opportunity. Although, it is a crude indicator, but it makes it possible to determine an age structure change paralleling the demographic transition (Hakkert 2007: 292). Figure 3 shows trends in the age dependency ratios over a century from 1950 to 2050.

Fig 3. Total, Child, and Old-Age Dependency Ratio in Iran, 1950-2050

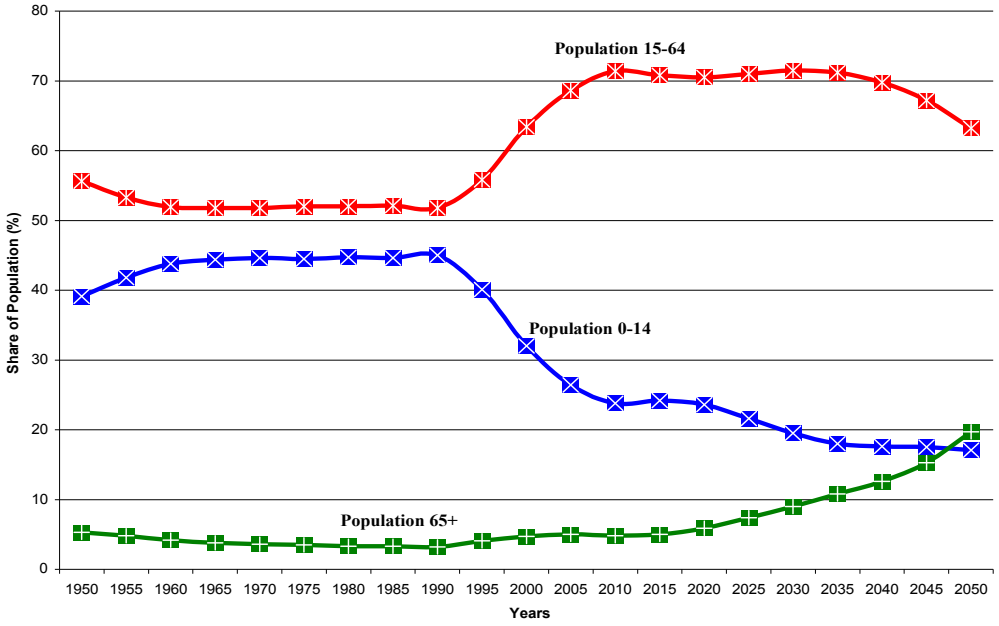


As mentioned earlier, the population of Iran during 1900-1905 began the first stage of demographic transition by reducing the level of mortality and relative stability of fertility in high-level. In the second half of the 20th century, the total age dependency ratio almost completely has been affected by the child dependency ratio. In this period due to increased share of under 15 population, age dependency ratio increased gradually to about 88 person out of work age compare to 100 working-age population in the mid

1950s (1955). Continuing high levels of fertility caused continuing dependency ratio more than 90 for almost four decades until 1990 (Fig 3).

High fertility in Iran did not continued too. The levels of fertility started to decline at the mid 1980s (1985). As a result of a sharp fertility decline, the share of under 15 population reduced (Figure 4). This ratio decreased from about 45 percent during the first stage of demographic transition to 26.4 and 25 percent in 2005 and 2006 respectively (SCI 2006). Parallel to these changes and a relative stability of the population 65 years and older, the age dependency ratio with about 50.5 percent decrease reached from 93 percent in 1990 to 46 in 2005.

Fig 4. Age Structure Transition, Iran, 1950-2050



Thus, it can be said that the Iran's window of opportunity that opened on the eve of 2006 population and housing census has provided potentially a golden economic opportunity for the Iranian economy. Because of the rapid reduction in child dependency ratio as a result of fertility decline, the total age dependency ratio reached to the lowest value (40 percent) in 2010 and since then will fluctuate around 40 for almost four decades. A continuous increase in the relative share of old age population (Figure 4) will cause the total age dependency ratio increase steadily from 2030 and reach to 58 at the mid 21 century.

Until when will the window of opportunity remain open to the population? Do this opportunity will be historic and permanent for the economy of Iran? Answers to these questions require the review of future prospects of population of Iran. According to UNPD (2009) population projection, intermediate scenario, the window of opportunity since 2005 will open for nearly four decades until 2045-2050. An increase in the relative share of 65 years and old population to about 20 percent in 2050 and a relative

stability of under 15 years population at about 17 percent at the same period, and the relative share of the working age population will decrease gradually (Figure 4), and age dependency ratio will increase again. This situation is the result of increases in the relative share of elderly in the country. These changes in population age structure during the demographic transition will impose conditions on the population that has a lot of negative consequences for development of the country.

Population Policy Making

Undoubtedly, the agreement of the ideals and goals are necessary for each type of policymaking. To reach an agreement on certain issues such as improvements in the living standards, public health, social justice and reduction in class inequalities would not be very difficult. Reaching a similar agreement in the field of population and related issues, however, would not be so easy as only one scenario out multiple scenarios must be chosen. Basically, population issues should not be limited only to high or low fertility. Population issues should be looked at as a whole package in which they interact with each other, as well as with other economic, social, political and cultural aspects of communities. In fact, population policy is not only the birth increase or decrease. Experts (Zanjani 2010: 86) believe that population policies should not only be effective on fertility and its determinants, but it should go beyond the sphere of fertility and family planning, and contain all social and human behaviors determining demographic variables.

Due to the gradual control of mortality and having uncontrolled natural fertility, Iran, from 1950s, experienced annual population growth more than 3 percent. In 1962, population issues has been set at the core of the third national development plan (1963-1967), and in 1964 a *Fatwa* was issued by Sheikh Bahaoddin Mahallati indicating that the use of contraceptives is permitted if they are temporary and do not make the woman sterile" (Abbasi-Shavazi et al 2009: 23). Finally, in 1967 the government officially accomplished the family planning program. In the early years of Islamic revolution in 1979, the pre-revolutionary family planning program was suspended until late 1978. Because of these changes, although no formal policy was adopted by the revolutionary government to encourage high fertility and population growth, but indirectly and in the framework of several socio-cultural and economic policies that were effectively pronatalist in nature. Consequently, the population size reached to about 50 million in 1986 with annual natural growth rate about 3.2 percent during 1976-1986.

After the war was over in 1988, the government was prepared for implementing the first national development plan after the revolution. In country such as Iran that experienced an 8-year-imposed war by the Saddam regime, the disproportionate and excessive population growth seemed as a serious obstacle in the way of the government development programs. Restoration and development of the economy of Iran would require inhibiting the population growth. This policy adopted in 1988, and implemented from 1989 with the aim of reducing the natural population growth rate from 3.2 percent to 2.3 percent by 2011 (Abbasi-Shavazi et al 2009: 27). As a result of implementing the

family planning program, a decreasing trend in birth rate that reached to its highest level (49.8 per thousands) in 1981, began since 1985.

Today, demographic realities of Iran indicate that the family planning targets have been achieved earlier than predicted time. In 2010, the crude birth rate and the annual natural population growth rate reached respectively at 19 per thousand and 1.3 percent (PRB 2010). Today, a below replacement level fertility or very close to replacement level has become the dominant characteristics of different areas in Iranian society (Hosseini-Chavoshi et al 2007: 12). In fact, the performance of the family planning program has exceeded the predefined goals. These demographic changes have caused different attitudes toward population. They attracted the interests and attentions of academic and scientific circles especially because of their importance for the future of the country (Zanjani 2010: 86).

According to the golden opportunity for the population of Iran at the one side, and experience of a fertility transition and below replacement level fertility on the other hand, the question is always whether the time has not come for a revision of Iran's population policy? If yes, what is the appropriate population policy for Iran at the current situation: Adopting a pronatalist policy or managing the window of opportunity? So, currently the most important problem is that where is our final point of departure by population changes. In fact, the issue should be determined is that what is the current population problem in Iran: Low Fertility and the fear of its inevitable consequences in the future or a policy for optimal use of the golden opportunities arising from demographic changes in recent decades? Answer to these questions will determine our point of departure for population policy.

Although, today low fertility has become an indisputable reality in Iranian society and different studies (Abbasi-Shavazi 2001, Abbasi-Shavazi and Hosseini 2007, Hosseini and Abbasi-Shavazi 2009) indicate a fertility convergence among and between ethnic-cultural groups in different regions of the country, recent studies (Ministry of Health and Medical Education 2002, Hosseini-Chavoshi et al 2006, 2007, Abbasi-Shavazi et al 2009) has shown that despite the success of family planning program and the increased prevalence of contraception to more than 70 percent, there are different patterns for using contraception around the country. Today, unintended pregnancies account for 34 percent of all pregnancies in the whole country, with 16 percent as unwanted and 18 percent mistimed (Erfani 2008: 1). Although no accurate statistics on abortion in the country, but undoubtedly annually a large number of unintended pregnancies lead to abortion. Estimates (Erfani 2008: 5) shows that about 20 percent of unwanted pregnancies lead to unsafe abortions. Hosseini Chavoshi and Hull (2010) believe that annually 120,000 cases of abortion occur in Iran, although the number of abortions estimated by Erfani (2008) is equal to 73,200 cases. Expansion of abortion in Iran, as an Islamic country, besides is not accordance to the religious teachings and Islamic canonical laws can have unpleasant consequences for maternal health. In such circumstances, expand the family planning program and improve the quality of the services offered can reduce largely mistimed and unwanted pregnancies and consequently abortion rate. Therefore, given the increasing population of women at

childbearing ages, increasing the use of contraception among all women in the span of reproductive age, increasing the use of Tubal Ligation and Vasectomy among both women and men, increasing the use of contraceptive traditional methods around the country especially in urban areas, reduction in the family's ideal number of children, and limitation the duration of childbearing into eight years from 25 to 32 years (Abbasi-Shavazi and Hosseini-Chavoshi 2011: 20, Hosseini-Chavoshi 2009: 2), Family planning programs need to be substantial in the sense of community. Therefore, the author believes that the continuing implementation of family planning program is one of the major priorities of population policy making in the country.

Considering changes in Iran's population age structure and the emerged economic golden opportunity, now it is the time to up-to-date population programs and policy making, along with the continuation of family planning programs. However, the quality of population and the management of the window of opportunity should get priority the population programs and policies. So, it is currently necessary to adopt a comprehensive population policy that is not limited to fertility. Zanjani (2010) believes that this issue was our problem at the past and currently thinking about fertility levels and its fluctuations, not only in the near future but also in the distant future, is not the important problem of the country's population.

A country's future is in the hands of its people. Economic growth and development will occur only if the production and creativity of the population are used. Demographic transition in Iran has lead to important changes in population age structure and caused opened the window of opportunity to the population. If the window is managed properly, it can bring a considerable population bonus for the nation. Population bonus is not fixed, because the window of opportunity do not act passively and automatically (Pool 2007: 28) and must necessarily plan for it. On the other hand, the length of the period that this window will remain open is short and limited. Thus, the management of the window and policies adopted in connection with it will have an important role in converting the opportunity to bonus and the size of population dividend from it. Accordingly, the management of the window of opportunity is the most important part of population policy making in the current situation in Iran. The experience of South East Asian countries is witness of the fact that the opportunity window management will convert a population explosion to a population bonus and to a factor for the economic growth and development.

Aside from the golden opportunity underling the economy of Iran, we should not neglect the other important demographic phenomenon that is capable of affecting an important part of government efforts in improving living standards and welfare of the people. This phenomenon is the driving force lies in the population age structure or population growth momentum. Regarding the characteristics of marriage structure and commonality marriage in Iran on the one hand, and despite the remarkable size of survivor generation of baby boom in marriage market of Iran on the other hand, it is expected in coming years the country witnessed the formation of more families among the Iranian youth. If this population experiences a below-replacement-level fertility (2 children per woman) during the reproduction ages, the size of population of Iran will

increase at least during the next three decades. In these circumstances, we should not be concern about durability and consistency of low fertility and thus to achieve low levels of population growth and negative population growth in the future at least until three decades. Saraei (2008: 133) believes that continuing low fertility is dependent upon the creation of special conditions in fertility, family and community. Changes in Iranian society are partly exogenous and affected by the changes in various aspects of life in communities outside Iran (Saraei 2006). Considering ethnic-cultural diversities in Iran, the influence of external factors is asynchronous and dissimilar. So, we cannot speak certainly about a continuing low fertility in Iran in the future.

Considering the human potentials in the country, population policies should be primarily focused on a population that is currently ready to participate in the labor market and economic activity, and to play important role in growth and development of the country. Population dividend is a good and proper possibility for economic growth and development in Iran, but as mentioned earlier, it cannot be obtained automatically. Policy makers for the full benefit of the golden opportunity of demographic transition and changes in population age structure should take note the followings:

1) Considering the positive momentum of Iran's population growth, reducing the family's ideal number of children, high rates of unwanted pregnancies and induced abortion, family planning programs should continue with the aim of reducing the unmet need for family planning and providing mothers and children health. In this respect, what is important is that these policies should be adopted and implemented regionally and proportionate to changes in fertility in different areas of the country and considering the cultural and ethnic background of Iran's population.

2) Management of the opportunities resulted from the window through investment in human capital and the effort to create new and productive jobs. Increasing ratio of working age population, if they are employed in producing jobs, has a positive impact on the economy of Iran. Therefore, investments in human capital are necessary. Certainly, improvement in the health of manpower is the key to economic success. Studies indicate that differences in the health status and life expectancy of countries, causing differences in their economic growth situation (Bloom et al 2001: 21).

3) The government should not neglect the consequences of the final stage of demographic transition. The population of Iran in the years leading to 2030 will have an old age structure (Hosseini 2010). Thus, attention to the population aging in Iran and its related complications is important. Demographic transition has a significant impact on savings and pensions. Parallel to the reduction in the number of children and a rise in people's expectation for longer live, the possibility of their saving will be more and more especially when they have greater confidence to financial institutions. However, an increased longevity will be followed by the longer retirement period. Therefore, there will be requirements for the pension system and the economy. Accordingly, policymakers should prepare to encounter this situation, and should not wait until this issue turn into a critical state.

Conclusion

Changes in fertility and mortality and consequently demographic transition experience in Iran have been such that now the country has been on the eve of entering into the third stage of demographic transition. The demographic transition and its following challenges will be influential on the entire economic and social aspects of Iranian society. Changes in family structure, status of women and children, and quality of people activities will have determinant and proximate impact on the lives of people. These changes have provided very favorable potential conditions for economic growth and development. Unprecedented fertility reduction and relative stability of mortality caused the transition in population age structure. The share of children decreased in the population and in contrast, due to the low share of the elderly of total population, the share of working-age population increased unprecedented and bring about a phenomenon in population economy of Iran that demographers refer to as window of opportunity that, if it is properly guided and managed, will have many population dividend for economic growth and development.

This study indicated that window of opportunity opened to the population in 2005. Based on the UNPD projection (intermediate scenario), the window will remain open for almost four decades, and will close at the mid 21st century. From then on, and by increasing the relative share of population 65 years and older, the population of Iran will move to an aging structure.

Considering the timing of window of opportunity and time limits in using and taking advantage of this economic golden opportunity, there is no doubt that if we do not study properly the demographic window of Iran and if we do not adopt and operate the fit and appropriate policies to take advantages of this economic potential, we will not be able to use of this human capital for economic development. Since the window of opportunity does not operate automatically, any optimum use of this possibility and economic potential opportunity requires management of the window of opportunity and transform it into a comprehensive population dividend. Indeed, population policymakers inevitably should consider the interrelationships between population structure and potential opportunities for economic growth and development.

So, in answer to this question that which population policy is appropriate for Iran at the present circumstances, it should be said that whatever should be at the priority of the government's population policy, is the management of window of opportunity and continuity of family planning programs to prevent unwanted births and induced abortion and ultimately providing health for mothers and children. Considering the positive momentum of population growth in Iran, no doubt low levels of fertility and experiencing the below replacement level fertility, although will have consequences in the long term in many areas such as populations aging, the fear of zero or negative population growth at least until a few decades would be anachronistic.

Moreover, if we classify the population according to their requirements and capabilities and also their role in growth and development, priority should be given to those who currently are in the labor market and are ready to work at least for three decades in the Iranian labor market and play their roles in economic activities and

production. Therefore, if appropriate policies in line with the needs of those populations (working age population) in areas such as employment and housing are adopted, considering the commonality of marriage in Iran, many families will be formed. If they experience a below replacement level fertility (two children per woman) during the reproductive period, population size of the country will increase.

Resources

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