Demographic Transition and it's Policy Implications In Iran[*]

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Abstract

The main objective of this paper is to study demographic transition and its policy implications in Iran. Data are mostly taken from the United Nations population projection: the 2010 revision, results of Iran's population Census, and demographic estimates by the scholars for the country as a whole. Findings show that Iran is on the eve of the third stage of demographic transition. Window of opportunity opened to the population in 2005, will remain open for almost four decades, and will close at the mid 21st century. According to the findings of this study, the management of window of opportunity should be the first priority of the government's population policy. Considering the positive momentum of population growth in Iran, although experiencing below replacement level fertility will have consequences in the long term in many areas such as populations aging, but the fear of zero or negative population growth at least until a few decades would be anachronistic.

Introduction

Although size and population growth has an important role in the economic prosperity and depression, what has rightly emphasized in the new discourse of population and development is changes in population age structure at the context of demographic transition and its economic consequences. The new discourse argues that because people show different economic behavior during the life, changes in population age structure can have a key role on the economic performance of societies. Transition from youth to middle age and aging has a determining role in the economic life cycle of societies (Malmberg and Sommestad 2000: 7).

   Iran has experienced tremendous demographic changes over the past few decades. The Iranian population increased with an annual growth rate of 3.3 percent during 1956-1986. Upward trends in population growth did not continue, and decreased from 3.9 percent in 1986 to 2.5 and 1.5 percent respectively during 1986-1991 and 1991-1996. Although the population of the country has experienced net increase of about 21.5 percent or 10.6 million people in the period 1986-1996, the annual growth rate of the population decreased to 1.96 percent. Downward trends in annual population growth rate continued and reached 1.5 and 1.3 percent respectively in 2006 and 2011. In the context of these changes that derived from the overall political, socioeconomic and cultural atmosphere of the Iranian society, population age structure was changed fundamentally. These changes have serious consequences and important policy implications for the country.

   Studies (Abbasi-Shavazi and McDonald 2005, 2006, Abbasi-Shavazi 2001, Abbasi-Shavazi and Hosseini 2008, 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. 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 scholars. Despite achieving family planning goals, 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 require national and regional development planning to adopt new population policies. Any population policy making requires a multidimensional look to the population. 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.

In this paper, firstly I study the phenomenon of demographic transition in Iran in a 175-year period. Then, 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. Moreover, I 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? This study is a secondary analysis. The data needed has been collected from the results of Iran's population Census at different time points. Moreover, data used for the study of population prospects is mostly taken from UN Population Division (World population Prospects: the 2010 Revision).

Theoretical Considerations
As a result 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 and over will increase. Undoubtedly, with a relative stability of percentage of population under age 15, 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.

Between these two conditions, there is a period in which because of relatively 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. The United Nations Population Division defined window of opportunity as a period in which the ratio of under 15 population reaches less than 30 percent of the total population and the ratio of 65 years and older 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 relative reduction share of under 15 population, the ratio of working age population (15-64 years) will increase rapidly. In this situation, the total age dependency ratio reaches 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 is managed properly, it can help the country to 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 is 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 immediate 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 activities outside the home and it will be more possible do spend 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 improve the living standards (Pool 2007: 28). However, window of opportunity can be opened to the populations and eventually will be closed. Length of the period the window of opportunity remains 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. In other words, population bonus is policy based. If appropriate policies are not adopted during

this period, there will be many negative requirements for economy and society. Indeed, the positive effects of reducing dependency ratios are in close connection with 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. Generally, opportunity window by affecting on economic elements (Fig.1) leads to acceleration of economic growth and development.

Fig 1. Mechanism of the effect of opportunity window on economic growth and development
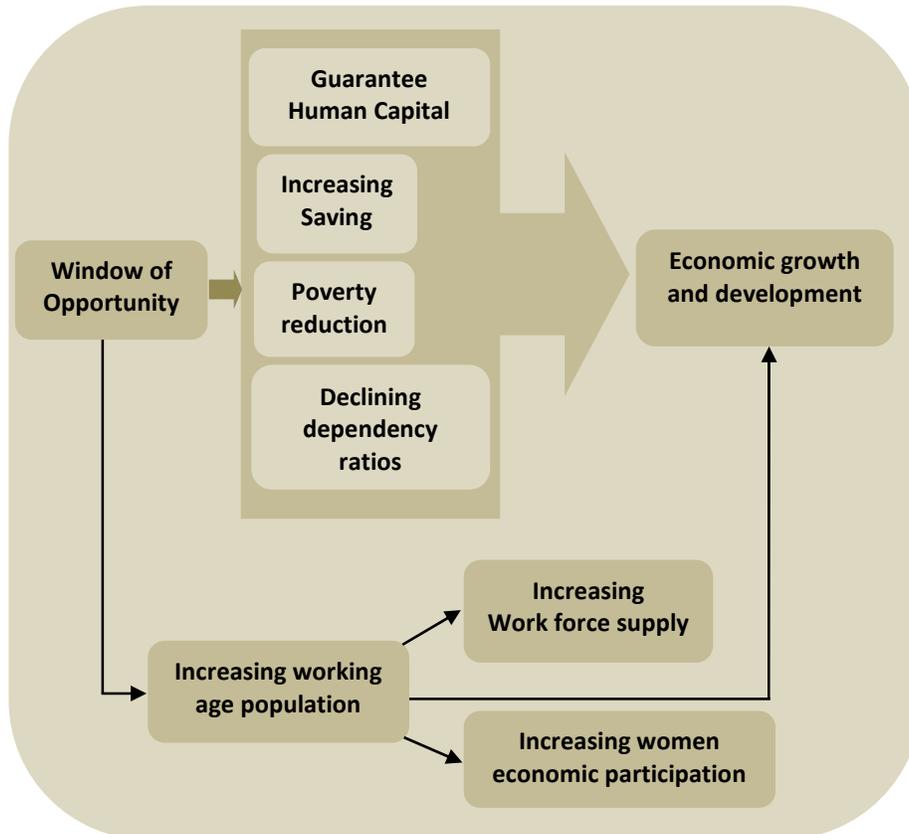
Source: Hosseini (2011: 217).

As illustrated in fig 1, opportunity window by guaranteeing human capital, increasing saving, declining dependency ratios, poverty reduction, and increasing working age population leads to population bonus that appear in the

form of improvement in indices of economic growth and development (Hosseini 2011: 217). During the periods when opportunity window is open, the total age dependency ratio reaches to less than 0.5. In fact, increasing in the ratio of working age population to the child and elderly population provides favorable conditions for rapid economic growth. With increasing relative share of potentially active population on the one hand, supplying labor force to the work market will increase. On the other hand, fertility decline and reduction the duration of reproductive period open a new window for women to enter into the labor market. Consequently, women's social status and their personal and financial independence improve, and the context is provided to increase women and the total population productivity. Reduction in dependency ratios also provides a context for saving increase. Deaton and Paxon (1997) believe that people willingness and ability to save is more likely to be between 45-60 years than other ages. By increasing savings, the context is provided for industrial and productive investments and therefore economic growth.

Moreover, opening window of opportunity has an important role in providing human capital. Human capital is the main sources of sustainable economic growth. Life expectancy increase during the transition period caused individuals think differently about education, families, retirement, position, and role of women. During the period that the window of opportunity opens, cultural changes and attention to the quality of offspring caused more investments in education, health, and consequently human capital accumulation (Sadeghi and Farjadi 2006: 331). Human capital increase has an important role in economic growth. According to estimates by Wang and Yao (2003), about 11 percent of China's economic growth during 1978-1999 was allocated to human capital. Finally, window of opportunity creates appropriate conditions to reduce poverty. When the number of producers in a population increases more rapidly than that of consumers, population bonus will increase substantially. Estimates by Mason and Lee (2004) suggest that in developing countries during 1960-2000, the population bonus caused 14 percent reduction in poverty. At the same time, population changes in less developed countries have had an adverse effect on poverty. However, it is estimated that during 2000-2015, poverty rates decline 14 and 12 percent respectively in these two groups of countries.
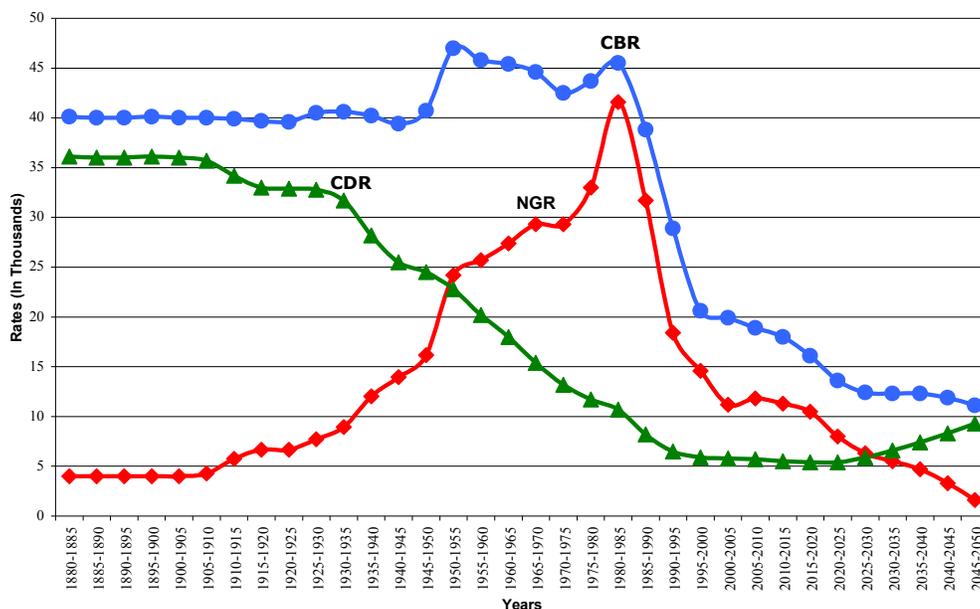
From Demographic Transition to Population Bonus
Change is an inherent characteristic of any population. The Process of population dynamics takes place over time and is affected by fertility, mortality and migration. Saraei (1997) argued that the first decade of the 20th century is the threshold of entering the first stage of demographic transition in Iran. Before the transition, based on the theory of demographic transition, there are equilibrium between birth and death rates. Consequently, the rate of population growth is low. This situation is also illustrated in Figure 2.

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In the next stage, mortality level gradually decreased but births remained constant at the high level. This accelerated population growth. The second stage of Iran's demographic transition specifies 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. Based on the United Nations Population Division (2010) 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.

**Fig 2. Demographic Transition in Iran, 1880-2050**

Source: Hosseini (2012).

These trends along with the continuation of birth reduction will cause a Zero Population Growth (ZPG). Then it can be said that Iran is on the eve of the third stage of demographic transition. Although the size and population growth are important during the transition, at the end of the second stage and on the eve of the third stage of transition, the age composition of population will be more important. Issues arising from the Iran's population transition in the current situation have determined a situation that in each country occur only once. This

phenomenon is termed as window of opportunity in Demography and as population bonus or population dividend in Economics. Age dependency ratio is one of the indicators used to determine the timing of the window of opportunity. Figure 3 shows trends in the age dependency ratios over a century from 1950 to 2050. 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 population 0-14 years, age dependency ratio increased gradually to about 88 persons in non-working ages per 100 working-age population in the mid 1950s. Continuing high levels of fertility caused continuing dependency ratio more than 90 for almost four decades until 1990 (Fig 3).

**Fig 3. Total, Child, and Old-Age Dependency Ratio in Iran, 1950-2050**
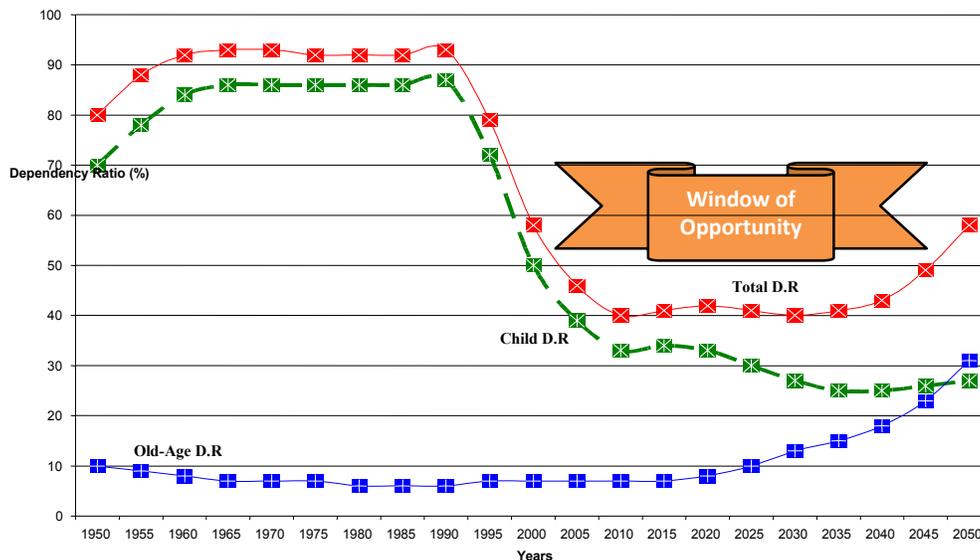
Source: Hosseini (2012).

High fertility in Iran did not continue too. The levels of fertility started to decline at the mid 1980s (1985). As a result of a sharp fertility decline, the share of population 0-14 years old 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 2007). In accordance with these changes and a relative stability of the population 65 years and older, the age dependency ratio with about 50.5 percent decrease decreased from 93 percent in 1990 to 46 in 2005. 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 the lowest level (40 percent) in

2010 and since then will fluctuates 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 to increase steadily from 2030 and reach 58 at the mid 21 century.

Fig 4. Age Structure Transition, Iran, 1950-2050
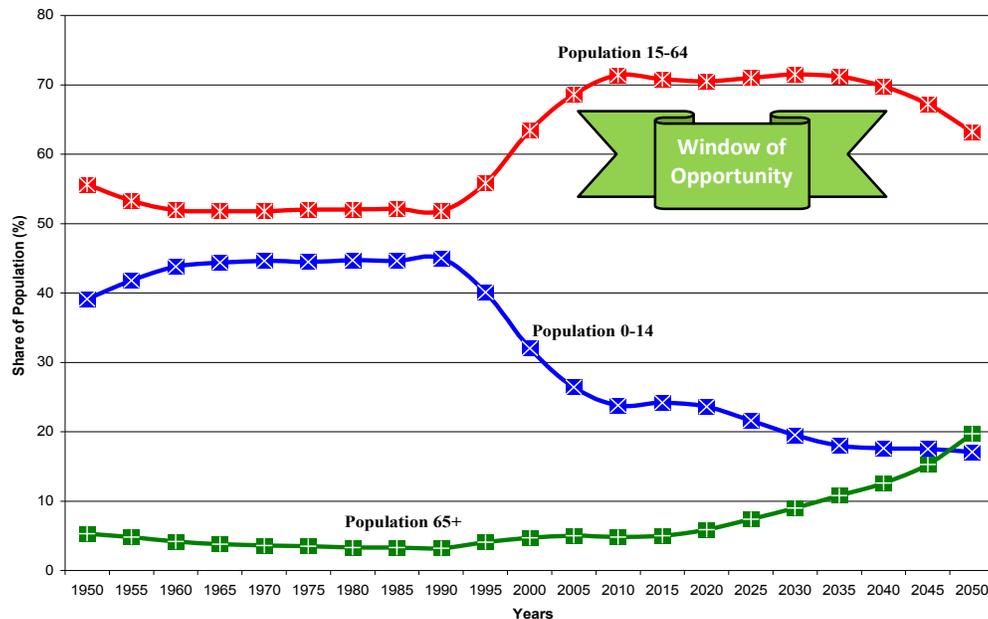
Source: Hosseini (2012).

Until when will the window of opportunity remain open to the population? Will this opportunity 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 (2010) population projection, intermediate scenario, the window of opportunity since 2005 will remain open for nearly four decades (that is, until 2045-2050). As demonstrated in Figure 4, the country will also witness the following demographic changes: an increase in the relative share of 65 years and old population to about 20 percent in 2050, a relative stability of under 15 years population at about 17 percent at the same period, and a gradual decrease in the relative share of the working age population. Further, 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 serious obstacles on the country's development goals.

Policy Implications of Transition in Population Age Structure
Undoubtedly, the agreement of the ideals and goals are necessary for each type of policymaking. However, reaching agreement in the field of population and

its related issues would not be so easy, because only one scenario must be chosen among different scenarios. Indeed, population policy is not only the birth increase or decrease, but it should go beyond the sphere of fertility and family planning, and contain all aspects of social and human behaviors determining demographic variables.

Today, demographic realities of Iran indicate that the family planning targets have been achieved earlier than predicted time. In 2011, the crude birth rate and the annual natural population growth rate reached 19 per thousand and 1.3 percent respectively (PRB 2011). As mentioned earlier, below replacement level fertility or very close to replacement level has become the dominant characteristics of different areas in Iran (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).

Considering the golden opportunity for the population of Iran on the one side, and experience of fertility transition and below replacement fertility level 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. Indeed, 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 2009, 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. Studies by the Ministry of Health and Medical Education have shown that nearly 30.6 percent of pregnancies were unplanned with 18.6 percent as unwanted at the national level in 2005. Erfani (2008) argues that unintended pregnancies account for 34 percent of all pregnancies in the whole country, with 16 percent as unwanted and 18 percent mistimed. Although there is no accurate statistics on abortion in the country, it

is evident that 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 is not in accordance with the religious teachings and Islamic canonical laws and can have unpleasant consequences for maternal health. In such circumstances, expanding the family planning program and improving 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. Consequently, now it is the time that in population policy making, along with continuing family planning programs, 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.

Demographic transition in Iran has lead to important changes in population age structure and 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 does not act passively and automatically (Pool 2007: 28). Instead, it requires planning. 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.

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 that the country will witness more incidences of marriage 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 (2009: 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.

Opportunity window 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 job opportunities. Increasing ratio of working age population, especially when they are employed in productive 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 be prepared to encounter this situation, and should not wait until this issue turn into a critical state.

Conclusion

Experience of demographic transition in Iran has been such that now the country is 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. These changes have provided good opportunities for economic growth and development. 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. If this situation is properly managed, it will have many population dividends for economic growth and development.

This study indicated that window of opportunity opened to the population in 2005, will remain open for almost four decades, and will be closed at the mid 21st century. From then onward, and by increasing the relative share of population 65 years and older, the population of Iran will have 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 appropriate policies to take advantages of this economic potential, we will not be able to use this human capital for economic development. 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 transforming it into a comprehensive population dividend. Indeed, population policymakers must consider the interrelationships between population structure and potential opportunities for economic growth and development.

So, the response to this question that "which population policy is appropriate for Iran at the present circumstances" is associated with the management of window of opportunity and continuity of family planning programs to prevent unwanted births, induced abortion, and ultimately providing health for mothers and children. Considering the positive momentum of population growth in Iran, there is no doubt that low levels of fertility and experiencing the below replacement level fertility 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, the country will witness many incidences of marriage If they experience a below replacement level fertility (two children per woman) during the reproductive period, population size of the country will increase.

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