Implications of an Aging Population in India: Challenges and Opportunities

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Abstract

Population aging is a worldwide phenomenon, and India is no exception to the rule. Census reports indicate that the Indian population has approximately tripled during the last 50 years, but the number of elderly Indians has increased more than fourfold. When considering the continuation of the trend, the United Nations predicts that the Indian population will again grow by 50 percent in the next 50 years, whereas the elderly population is expected to grow another fourfold.

This paper proposes to study the probable impact of the aging population in India, the challenges to be met and the opportunities to be exploited. Indian societies are rapidly changing due to the process of urbanization, higher aspirations among the youth and the increasing participation of women in the workforce. However, the English speaking and skilled professionals from India may be expected to emigrate to meet the manpower requirements of more developed regions. All these factors have led to the erosion of the joint family system and the emergence of nuclear families. Hence, the elderly people are gradually marginalized in their respective families. Moreover, due to some habits and unhealthy lifestyles, the elderly Indians are suffering from tuberculosis, asthma, cancer, cardiovascular problems, etc., apart from the other gerontological problems. But the healthcare facilities for the aged Indians are not at all satisfactory.

An aged person also has the right to choose his personal needs and aspirations, depending upon capacity. The Planning Commission of India assessed that about 92 percent of working Indians do not enjoy any formal old-age income. Consequently, the Project Old Age Social and Income Security (OASIS) Committee projected that these people might sink below the poverty line as a result of the non-availability of adequate post-retirement income. On the other hand, framing suitable policies regarding the availability of the pension plans, allowing the participation of the private players in the pension sector, ensuring the availability of need-based pension products, and increasing the level of consumer awareness about old-age income requirements will help to mobilize a large amount (about Rs.4,065 billion) of very long-term funds by the year 2025 (IRDA 2001). Effective investment of these funds in several fund-starved areas such as infrastructure, capital markets and human resources will make the Indian economy one of the strongest in the world.

1. Introduction

Since the last century, human civilization has witnessed a silent revolution, unseen and unheard by many. Although its impact is subtle, it is of utmost significant to everyone. The biggest achievement of the last century was greater longevity that has resulted in an increasing aging population worldwide. A man ages continuously through an irreversible biological process, socially as perceived by the members of the society, economically by retiring from the workforce and chronologically with the passage of time. The survival of an increasing number of people beyond their traditional adult roles causes population aging.

The incredible increase in life expectancy may be termed one of the greatest triumphs of human civilization. But it has posed one of the toughest challenges to be met by modern society. The term "old" is always related to physical incapacity, biological deterioration and disabilities and psychological failures. A healthy lifestyle is also required during old age. But in the Indian context, there exist three different trends that are seriously threatening the chances of meeting such needs. These are a rapidly growing elderly population, the gradual erosion of the traditional joint family system and the inability of the government to sustain the incremental burden of pension expenses for its own employees. Hence, the possibility of government support for any other section of the elderly population in the society may be ruled out (Vaidyanathan 2003). However, an aged person has the right to decide about personal needs and aspirations, depending upon capacity. Only a sound social security system can protect such rights by assuring regular income during the post-retirement years. But developing such a system for the Indian populace is a Herculean task, as a majority of them do not currently enjoy any type of old-age income security. Neither the government nor the public sector alone can formulate it; the private sector cannot develop it in isolation either. Joint approaches and strategies will be required to design and build up a robust old-age income security system (WHO 2002).

The prerequisites for building such a system are the effective economic environment, availability of financial instruments and a satisfactory regulatory model. These factors will help win the confidence of investors that is required for the smooth transition to very long-term instruments.

2. Indian Demography

2.1. Past Trends

The Indian population has increased from 361 million in 1951 to 1.027 billion in 2001. Simultaneously, the number of older people has increased from 19 million (4 percent of total population) to 77 million (7.5 percent of the total) during the same time span (Registrar General of India). In order to study the implications of an aging population in India, the changing Indian demographic configuration needs to be highlighted first. That will help us assess the challenges to be met in the future. The salient features, representing the past trends of the Indian population, are given in the following table:

TABLE 1
Changing Profile of the Indian Population Pyramid

Year	2001	1991	1981
Population Size (in millions)	1,027	846.30	683.33
Decadal Growth Rate (percent)	21.35	23.67	24.66
Older Population (in millions)	77	57	43
Percentage of Older Persons	7.5	6.7	6.5
Life Expectancy at Birth (years)	65.34 (2001–06)	59.40	55.5
Infant Mortality Rate per 1000	63 (2002)	80	110
Crude Birth Rate per 1000	25.0 (2002)	29.5	-
Crude Death Rate per 1000	8.1 (2002)	9.8	-
Literacy Rate (percentage)	64.84	52.20	43.57
Percentage of children of age 0–6 years in the total population	15.37	17.94	-
Density (population per sq. km.)	324	267	216

Sources: Indian Economic Survey, 2004–05, Page Nos. S109, S112, S113; Census of India, 2001, 1991 and 1981.

From the above table, it may be noted that the size of the population is increasing, although the decadal growth rate is decreasing. Simultaneously, the number of senior citizens, as well as their proportion, is gradually increasing. The average life expectancy at birth has become reasonably longer, while infant mortality rate and crude death rate as well as crude birth rate have reduced remarkably. The higher literacy rate represents an incremental spread of education, leading to a better level of awareness. The reduced infant mortality rate signifies the improvement in mother-child care as

well as the healthcare facilities during the above period. It also motivates couples to choose to have fewer children due to a higher certainty of their survival, and hence the increased likeliness that they will be a source of support to the parents during old age. A reduction in crude birth rate reduces the supply of younger people, while a decreasing death rate signifies the increasing number of older people with a longer life expectancy. However, the presence of 15.37 percent children, although reduced from 17.94 percent in 1991, has made India the youngest nation in the world.

2.2 Future Projections

The size and structure of the Indian population, as projected by the Population Division, Department of Economic and Social Affairs, United Nations Secretariat, is given in the following table:

TABLE 2
Projected Changes in Indian Demography (in millions)

Age Group	2000	2015	2025	2030	2035	2040	2050
0–14 years	347 (34.14)	345 (27.68)	337 (24.63)	327 (23.08)	313 (21.53)	300 (20.20)	285 (18.60)
15–59 years	593 (58.31)	782 (62.76)	865 (63.15)	895 (63.16)	919 (63.17)	937 (63.10)	938 (61.26)
≥ 60 years	77 (7.55)	119 (9.56)	167 (12.22)	195 (13.76)	223 (15.30)	248 (16.70)	308 (20.14)
Total	1,017	1,246	1,369	1,417	1,455	1,485	1,531

Source: Population Division, Department of Economic and Social Affairs, United Nations Secretariat, *World Population Prospects: The 2002 Revision* and *World Urbanization Prospects: The 2001 Revision*, http://esa.un.org/unpp. (Figures in parentheses show the percentage of total population.)

From the above projections, we observe that during the next five decades the size of the population will grow by about 50 percent, but the number of older people will increase fourfold. The proportion of older people in the population will grow at a higher pace than the other groups. The Indian policymakers must take a critical note regarding the cresting wave that may be observed through a receding trend of the younger people, in addition to the incoming age wave. Such developments will not only adversely affect the supply of youths in the job market, but also cause strain on the resources due to more inactive people. The data in the above table is analyzed and the key parameters related to the aging population are presented in the following table:

TABLE 3
Projected Key Parameters: Aging Population of India

Year	2000	2015	2025	2030	2035	2040	2050
Median Age (years)	23.4	27.2	30.3	31.4	33.5	35.0	37.9
Dependency Ratio–Total	71.5	59.3	58.3	58.3	58.3	58.5	63.2
Dependency Ratio–Young	58.5	44.1	39.0	36.5	34.1	32.0	30.4
Dependency Ratio–Old	13.0	15.2	19.3	21.8	24.2	26.5	32.8
Index of Aging (percent)	22.2	34.5	49.6	65.0	71.2	82.7	108.1

Source: Computed from Table 2.

Table 3 emphasizes how the Indian demography will be gradually swinging to a grayer one by the next few decades. It predicts that the median age of the population will increase gradually from 23.4 years in 2000 to 30.3 years in 2025 and, finally, to 37.9 years in 2050. Similarly, the old age dependency ratio will go up from 13.0 percent in 2000 to 32.8 percent in 2050, while the young dependency ratio is expected to come down from 58.5 percent to 30.4 percent by that time. Consequently, the index of aging (aged–child ratio) will increase from 22.1 percent to 108.1 percent. Therefore, every three working Indians may have to take care of one elderly person by 2050 as compared to about eight working Indians at present. Advancement of medical science, better nutrition, increased order of awareness among the general masses, successful implementation of the public health policies vis-à-vis social and economic developments may be considered the main reasons behind such an achievement (WHO 1999). It has been estimated that an Indian of age 60 years today is expected to survive another 15 years. Hence, adequate savings are required to sustain an individual for a longer post-retirement period to have a decent lifestyle.

2.3. Impact on the Job Market

Since independence, successive governments have favored the growth of manufacturing and agricultural sectors, neglecting the service sector. But with the economic liberalization, a reverse trend has started. The service sector is growing by leaps and bounds due to abundant opportunities, while competitive forces affect the growth of other sectors. Young talent is drawn to these areas in search of tougher challenges and better career prospects. Consequently, Indian labor markets suffer due to the lopsided effect evident in the exodus of young people from manufacturing and agricultural areas to the service sector. Therefore, the government should frame suitable policy measures to remove this disparity, thereby leading to an equitable growth of all sectors simultaneously.

TABLE 4
Aging Profile: India vs. Others

Year	2000	2015	2025	2030	2035	2040	2050
Median Age–India	23.4	27.2	30.3	31.4	33.5	35.0	37.9
Median Age–World	26.4	29.5	31.9	33.0	34.0	34.9	36.8
Median Age–More Developed Regions	37.3	41.2	43.3	44.2	45.0	45.4	45.2
Median Age–Less Developed Regions	24.1	27.5	30.0	31.2	32.4	33.5	35.7
Median Age–Least Developed Regions	18.1	19.6	21.2	22.2	23.3	24.5	27.1

Source: See Table 2.

The Indian population is aging in line with the world population and the population of the less developed regions. But the age distribution structure of the Indian populace is slowly moving from a pyramid-shaped structure to a hexagonal one, while the same is gradually transforming to an inverted pyramid or trapezoidal shape in more developed countries. Consequent to such developments, the more developed regions may face shortages of young and dynamic working people to sustain their economic growth as well as to work caring for older people. This fact may help India export suitable personnel to those countries in order to meet their labor deficiencies. The developed countries will be forced to outsource more work from India to reduce the social cost. As a result of the available pool of talented professionals and large number of English-speaking persons, the net migration from India (to the more developed regions) will continue, about 0.22 million in every block of five years (UN 2002), for the next few decades. However, another notable trend is that more older Indians are remaining in the workforce after their official retirement due to their physical strength. The private sector companies are increasingly dominating businesses in India. So, the present anomalies in the labor market may be corrected in the long run, whereas the increasing supply of older and experienced people in the labor force may reduce the wages.

Longer life expectancy and incremental dependency ratio will possibly strain the family and the state support system for the older people. As the median age of the populace increases, the service sectors may expect to get more skilled and experienced people. Hence, India may be expected to strengthen her position further in the service sector in the coming decades. On the other hand, as the average age increases, reduced physical strength and working potential may adversely affect the labor-intensive manufacturing and agricultural sector, while the demand for the products related to old-age income security, medical and personal care during the old age will increase rapidly.

3. Social Trends

Since the beginning of human civilization, the institution of family provided the necessary social and financial support during the various stages of life. The Indian civilization evolved as an agro-economy due to the abundance of fertile land, adequate water resources and the inherent skill of the people. Such an economic environment led to the formation of the joint family system in Indian societies, as the mobility of the people was negligible. It not only provided a suitable umbrella to manage personal risks, such as risks of premature death and excessive longevity, but also laid down the norms of intergenerational relationships as well as the role of each member. The elderly play a significant role in decision making regarding household matters, while the younger people are entrusted with the responsibility of ensuring their well-being.

3.1. Rapid Urbanization

With the growth of rural population, the area of arable land is decreasing to meet the increased demand for housing, leading to incremental and disguised unemployment. As a result, the rural masses are forced to migrate to the urban areas in search of a livelihood. According to the framework of economic development developed by Arthur Lewis (1954), the movement of labor from the "traditional sector" (comprising agriculture and allied areas that produce traditional outputs for all societies) to the "modern sector" (industrial area, which produces manufactured items) is placed on the center stage. The traditional sector may be assumed to supply unlimited number of laborers, but the absorption of the same critically depends on the supply of capital to the modern sector. The level of savings and investments are the determinants of the growth of the modern sector and, hence, the generation of employment as well as the process of urbanization. In the Indian context, this process during the previous few decades is described in the following table:

TABLE 5
Urbanization in India

Year	1951	1961	1971	1981	1991	2001
Urban Population (in millions)[1]	62.4	78.9	109.1	159.5	217.6	284.5
Percent Urban[1]	17.3	18.0	19.9	23.3	25.7	27.8
Decadal Growth[1]	41.4	26.4	38.2	46.1	36.4	31.2
Rate of Urbanization[1]	2.54	0.40	1.06	1.72	1.02	0.82
Number of Towns[1]	-	2700[3]	3126[3]	4029[3]	4689[3]	5161[3]
Rural Migration[2] (in millions)	-	-	6.3	9.8	16.6	-

Sources:
1. Registrar General of India.
2. Visaria, P. (1997). "Urbanization in India: An Overview," published in *Urbanization in Large Developing Countries: China, Indonesia, Brazil and India*, Edited by Gavin Jones and Pravin Visaria, pp. 273.
3. Cities and towns included in urban agglomerates are treated as separate units.

Table 5 shows how the size of urban India has grown from 62.4 million in 1951 to 284.5 million in 2001, constituting 17.3 percent and 27.8 percent of the total population in those respective years. During the last 40 years, the number of towns has approximately doubled, whereas the areas of the cities are increasing by leaps and bounds. The size of the urban population has registered a very high level of decadal growth (20.9 percent, or 6.3 million, during 1961–71; 19.6 percent, or 9.8 million, during 1971–81; and 28.8 percent, or 16.6 million, during 1981–91) due to migration from the rural areas (Visaria 1997). Accordingly, the Technical Group on Population Projections, as appointed by the Planning Commission of India, projected that the share of the urban population as a percentage of total population will go up to 32.0 percent by 2011, 33.7 percent (425 million) by the year 2016 and 41 percent (550 million) by the year 2021. Although various programs created by the government such as Integrated Rural Development Program (IRDP), Training of Rural Youth for Self Employment (TRYSEM), and Prime Minister's Rojgar Yojana (PMRY) have affected the gradual process of urbanization, it is still substantially high.

These migrants, mostly the youth, primarily relocate for better earning opportunities, leaving their elderly parents in the villages. Moreover, the higher cost of living in urban areas and the lack of space for all members of a family to reside at the same place are causing the disintegration of the joint family system. At the same time, the insurance motive of the joint family system has declined gradually while the cost of child rearing has been internalized to a higher degree, leading to a lower rate of fertility. Therefore, the growth of the industries catalyzes the process of urbanization, but makes the invaluable family support system unavailable to senior citizens.

3.2. Youthful Aspirations

The process of economic liberalization led to the emergence of capitalism, division of labor and availability of lucrative opportunities. The market relationships are emphasized with greater importance than emotional ones. Presently, everyone aspires to a rewarding career so they can have a better lifestyle, leaving the earlier caste-based familial professions as evidenced by the rapid growth of the professionals in the

Indian job market. The number of cost and works accountants increased from 2,272 in 1970 to 23,061 in 2004 (ICWAI), the number of chartered accountants increased from 11,227 in 1971 to 101,730 in 2002 (ICAI), the number of doctors has gone up from 61,800 in 1951 to 625,131 in 2004 (MCI), and so on. Simultaneously, the mobility of the people has increased to meet the growing areas of production and services sectors. Therefore, the traditional joint family system is fragmenting, resulting in the formation of the nuclear families. On the other hand, double-income-no-kid (DINK) couples are increasingly observed in Indian societies.

3.3. Evolving Women Power

Indian women play a very important role as traditional caregivers, especially to the aged and children. Today's women are more educated and are proving their competence in almost every sphere of the job market. Thus, many women are joining the workforce not only to enhance the family income, but also to show their abilities and compete against the males. The following table shows the participation of women in the organized sectors in India:

TABLE 6
Incremental Women Employees

Year	1990	1994	1998	2002	2003
Total Employment (in millions)	26.35	27.38	28.17	27.21	27.00
Female Employees (in millions)	3.64	4.15	4.77	4.94	4.97
Percentage of Female Employees	13.81	15.16	16.93	18.16	18.40

Source: Economic Survey of India 2004–05, (Table S-50), Ministry of Finance, Government of India.

The above table shows that the employment opportunities went up from 26.35 million in 1990 to 28.17 million in 1998, and thereafter gradually declined to 27.00 million in 2003. Contrary to that trend, the number of female employees has registered a consistently rising trend from 3.64 million in 1990 to 4.97 million in 2003. The higher degree of employment of more and more women is believed to affect their care-giving role as the opportunity cost of their time goes up. In Indian societies, neither the formal home care facilities exist nor can working women avoid their duties to ensure adequate care for the elder members of their families. Hence, they may experience a higher degree of physical and mental strain in the future. Old people certainly deserve more care and emotional support at the concluding chapters of their life. But such expectations can only be met with heavy implications for individuals as well as for

society. Hence, it may be a challenge for the society to work out a viable solution to be sustained for a long term.

Consequent to the above developments, the older people are experiencing remarkable changes in their physical and socioeconomic circumstances. In smaller families, they are gradually marginalized in the decision-making process. Hence, the family that traditionally took care of the elderly or sick, widows and orphans is beginning to rely on society as a whole. As the number of old persons is rising and the social environment is changing, the proportion of the destitute among them may also be increasing (National Human Development Report 2001). These factors are also leading to the need for a large number of old-age homes where the old people may enjoy the end part of their lives in a group of their own. The impact of the above factors may be observed in the living arrangements of elderly Indians as shown by the National Family Health Survey 1 and National Family Health Survey 2, as given in Appendix 1, conducted by the International Institute of Population Studies under the Ministry of Health, Government of India, during the years 1992–93 and 1998–99.

4. Health Profile of the Elderly Indians

Declining health status is a major symptom of an individual's aging process. Such deterioration broadly depends on heredity, nature of lifestyle and the nutritional quality of food consumed. A gradually weaker physical capacity and psychological strength are observed during this time of life. When it is observed among an increasing number of citizens in a country, it becomes a problem to the country itself.

4.1. Habits and Lifestyle of the Elderly People

Prior to discussing the prevalent diseases among older people, their habits are highlighted as follows:

TABLE 7
Habits of the Elderly Persons (in percentages)

Background Characteristic	Chewing Tobacco	Drinking Alcohol	Currently Smoking	Ever Smoked
Male	37.6	18.6	38.2	46.6
Female	25.0	3.1	5.3	6.0

Source: National Family Health Survey 2, Ministry of Health and Family Welfare, Government of India (1998–99).

According to the above survey, tobacco chewing, alcohol consumption or smoking is observed among 50 percent more people in the rural areas than the urban ones. However, the incidence of chewing tobacco is double and that of consuming alcohol is treble for an illiterate person compared to a literate one. It has been observed that the higher the standard of living, the lower the chance of having these habits. The living arrangements of elderly persons is another critical factor for the adoption and continuation of such habits. Those living alone or in a two-person (both aged) family have a higher smoking habit than those in a joint family with two or more generations. The consumption of tobacco or alcohol is generally harmful, and may not only cause health problems but also aggravate smaller problems and lead to a serious one (Usha Ram 2002). Epidemiological studies have observed that 80 to 90 percent cases of human cancers are caused by environmental and lifestyle factors like tobacco, alcohol and dietary habits. Out of these cases, tobacco-related cancers are observed among 50 percent of male and 25 percent of female cancer patients (Murthy 2004).

4.2. Communicable Diseases

A careful analysis of the Global Burden of Diseases (GBD) of the age-specific morbidity during the year 2000 shows that about 60 percent are due to infections and common tropical diseases, 25 percent are due to lifestyle disorders, while the rest are due to potentially prenatal conditions (Srinivasan R. 2000). Poor level of nutrition and substantial consumption of immunosuppressive drugs are causing a higher incidence of infections among elderly Indians. Two mostly communicable diseases among them are tuberculosis and asthma, which are responsible for a higher rate of mortality.

4.2.1. Tuberculosis

Tuberculosis is an infectious disease that affects lungs and other tissues in the human body. The most widely observed is tuberculosis of the lungs, with symptoms of coughing up mucus, fever, weight loss and chest pain. The prevalence of this deadly disease is much higher among the rural elderly than their urban counterparts, as well as higher among elderly males than females, mainly due to their smoking habits. According to the NFHS 2, the number of cases is the highest among the senior citizens (about 137.4 per 10,000, out of which 114 are urbanites while 145 from the rural areas) as compared to the young and working-age group. But this figure may be underestimated, as the cases are recorded from the hospital-visiting patients; hospital accessibility is beyond the reach of many. In addition, the chances of wrong diagnosis by insufficiently trained doctors cannot be ruled out. However, the government launched the Revised National TB Control Program in 1997, which led to the accessibility of the DOTS services to 870 million people. The government has committed to arresting the growth

of the absolute number of cases by 2010, keeping it below 1.5 million and making it disappear as a communicable disease by 2020 (Srinivasan 2000).

4.2.2. Asthma

Asthma is accompanied with respiratory problems along with sudden attacks of labored breathing, chest constriction and coughing. The number of asthma cases is rapidly increasing in many parts of the world. In India, it occurs mostly among the aged and the rural populace as well as the people with poor standards of health. The habits of smoking and chewing tobacco as well as the most distressed conditions of living worsen the status of the patient. According to NFHS 2, the number of cases is the highest among the senior citizens (about 1037.5 per 10,000, out of which 830 per 10,000 are urbanites while 1104 per 10,000 are from the rural areas) as compared to the young and working-age group.

Other communicable diseases like malaria and AIDS are also observed among the elderly, but the mortality rate is negligibly small and hence the details are not discussed.

4.3. Non-Communicable Diseases

There is a wide range of heterogeneous ailments that affect the different organs. The rates of prevalence vary among different age and socioeconomic groups. The major diseases that have shown worrisome trends in the recent past are cancer, diabetes and cardiovascular disease (CVD). Despite the catastrophic level of expenses for radiation and chemotherapies, the cure for cancer is still elusive. The number of elderly persons registered with cancer was about 0.35 million (ICMR 1996). According to the WHO projections, India will need to develop facilities for the diagnosis and treatment for another 1.5 million cancer patients, while the cancer burden is estimated to go up by 1.4 million cases by the year 2026. On the other hand, CVD and diabetic cases are increasing at a rate of 8 to 11 percent per annum. The estimated number of cases in the year 1996 was about 9 million; elderly urbanites reported three times more cases than the rural elderly. Out of an estimated 5 million elderly diabetics, the prevailing rates were about 177 and 35 per 1000 for urban and rural elderly people, respectively. As the number of the aged increases, the above-mentioned diseases will need better attention and increased resources. Due to the changing lifestyle and market conditions, the absolute number of cases is estimated to go up. Other common ailments are blindness (11 million as of 1996, out of which 80 percent was due to cataracts) and hearing impairments (among 60 percent of the aged). These factors lead to communication problems, severely affecting their socioeconomic well-being.

Geriatrics is a familiar branch of medicine in developed countries with geriatricians in great demand as established professionals. Since the beginning of the twentieth century, the U.S. and Britain have shown concern about the health problems of their elderly populace, evidenced by a separate department for the treatment of old people at the West Middlesex County Hospital dating back to the year 1935. But the sick elderly Indians are still treated in the general medicine department, despite the observations of the spectrum of illnesses among them. A well-equipped, separate division in Indian hospitals is direly required for the comprehensive care of elderly Indians. Such a facility will not only cure the old physically, but will also ensure their mental well-being. It will simultaneously arrange medical treatment as well as improve their quality of life. The government as well as the private healthcare providers have to build up the necessary infrastructure to meet the healthcare requirements of the increasingly aging population. At the same time, the medical practitioners in India may start gerontological research to ensure a healthy life for aged people.

5. Profile of the Indian Working Class and Their Retirement Benefits

It has been estimated that 72.2 percent of the total population and about 77 percent of the working people live in the rural areas (Census 2001). According to the Planning Commission of India, the strength of the labor force in India was 363.34 million in 1999–2000, while that of the workforce was 336.73 million. It represents the level of unemployment at 7.32 percent (26.61 million) of the labor force. The estimation of the 55th round (July 1999–June 2000) of the Survey on Employment conducted by National Sample Survey Organization (NSSO) determined that 53 percent (178.47 million) of the total of working people are self-employed, 14 percent (47.14 million) are regular salaried employees, and the remaining 33 percent (111.12 million) are casual laborers.

5.1. Organized Sectors

Of the salaried class, the central and state government departments, including railways, armed forces, post and telegraph, employ 10.73 million (22.77 percent of the salaried class). They are entitled to receive defined benefit pensions indexed to inflation from the government, without making any contribution. The pension expenses of the central government have gone up from Rs.21.38 billion (0.38 percent of GDP) in the year 1990–91 to Rs.153.67 billion (0.56 percent of GDP) in the year 2003–04 (Revised Estimates) (Economic Survey 2004–05, pp. 41). These expenses have reached almost 50 percent of the expenditures against pay and allowances. Therefore, owing to the exorbitantly increasing pressure on the government coffer, this facility has been

withdrawn from January 1, 2004, except for defense personnel. The union government has yet to design a supplementary pension scheme for its employees.

Apart from the above, 17.23 million (36.54 percent of the salaried class) are working in the quasi-government sector, both local bodies and the private organized sectors. These people are covered through the mandatory Employees' Provident Fund Act (1952) and Employees' Pension Scheme (1995). Even such facilities cannot ensure the accumulation of an adequate amount to meet the old-age income requirements. In this context, the Project OASIS committee observed that "even for these individuals, incomes generally fall below poverty line during old age despite the high levels of contribution (over 20%—among the highest in the world) prevailing in India. This is primarily due to low real returns and generous withdrawals. For instance, in 1996–97, Rs.2047 crore (term for measuring number. It means ten million). was prematurely withdrawn by 1.20 million provident fund members to fund marriages, illness, housing and purchase of insurance policies. In the same period, a total of Rs.3306.15 crore was paid out to 1.32 million outgoing provident fund members on account of retirement, death or leaving service—indicating an average lump-sum accumulation of Rs.25,000 per member."

Similarly, a recent segmentwise analysis of the savings, made by the members of the Employees' Provident Fund Organization (EPFO), revealed the same fact. Out of 39.5 million members (as of March 31, 2003), 84.58 percent of members have balances below Rs.20,000, with an average balance of Rs.3,133, while 8.3 percent of members have balances below Rs.50,000, with an average balance of Rs.40,468 per member in that group. Therefore, 92.88 percent of the EPFO members have the balances less than Rs.50,000, with an average balance of just Rs.6,469 per member. This is due to the premature withdrawal and usage of the funds during working life, not saving for retirement (EPFO 2004). Moreover, 90 percent of the final settlements are due to resignations, not against the cases of superannuation. Thus, barely 27.96 million (about 8.30 percent) of the working population from the organized sector, both public and private, is allowed to participate in the formal old-age income security plans.

5.2. Unorganized Sectors

On the other hand, about 40.69 percent (19.18 million) of salaried employees and 289.59 million are engaged in the unorganized sector (including self-employed professionals, farmers, shopkeepers, taxi drivers, casual laborers, etc.) are deprived of being covered by any compulsory retirement benefit plans. In other words, about 92 percent of working Indians are not covered under any old-age income security plan. Despite the absence of any regular income, a significant proportion of these people stay well above the poverty line during their working life. But they are likely to sink below

the poverty line in their old age, simply because they could not accumulate adequate amounts of savings while they were in the workforce. The reason behind this trend is because of the non-availability of any suitable framework for savings and investments. It may be further aggravated due to the exponentially increasing healthcare expenses, though neglecting those expenses may worsen their quality of life. The importance of this sector in the Indian economy cannot be neglected. This informal sector of the Indian economy offers employment opportunities to about 92 percent of the working populace and contributes 59 percent of the GDP, including reasonable export earnings (Planning Commission of India).

Considering the existence of this void, Project OASIS Report warned, "Demographic transition coupled with poor coverage by existing provisions suggests that we are inexorably moving towards an India with a gigantic number of destitute elderly. Faced with such huge numbers, a social safety net for the retired workers or a poverty alleviation program, which aims to pay even a modest subsidy, would require a staggering expenditure—much beyond the capacity of the government." Moreover, the Indian constitution has entrusted some responsibility to the state in relation to the social security of the people. But the obligation of the state regarding old-age income security of the people is primarily limited to the organized workforce. However, due to irregular incomes, retirement is considered a luxury for people of the unorganized sector. This may be observed from the high level of their participation in the workforce, even beyond the generally accepted age of retirement.

In order to provide old-age income security to the people engaged in the informal sectors, the Government of India started the Public Provident Fund scheme in 1968–69. It is an individual accounting system that defined benefits against the defined contributions made by the subscriber. The government administers the applicable rate of interest. The amount of subscription is eligible for tax rebate under Section 88 of the Income Tax Act, 1961, while interest earnings and withdrawals do not attract any penalty. Hence, most of the account holders, mainly engaged in the organized sectors, use this scheme as a lucrative instrument for planning investment and tax instead of reaping retirement benefits. The Project OASIS Committee observed that only a negligible fraction of the workforce, about 2.76 million as of March 1998, subscribed to the scheme. For that reason, it is high time for the government to scrap this scheme and to start new pension schemes as recommended by the above committee.

6. Indian Pension Market

The Indian pension fund industry is presently at a nascent stage. The government has yet to formulate suitable policy measures to open it up to private players for the growth and development of the industry, which in turn will serve the diversified needs of consumers. Presently, the Indian pension market is fragmented in nature, backed by poor level of penetration to few selected groups of people. It is still guided by the old philosophy of government control and the lack of trust on the private players and hence the due attention from the government. The existing pension schemes in India include the following:

- Central Government Schemes for its employees and employees of the Indian Railways, etc., who joined the services prior to January 2004.
- Nationalized Banks' Schemes for its employees as per IBA guidelines.
- Schemes for the Public Sector Insurance Companies, which are similar to the Central Government Schemes.
- Employees' Provident Funds Scheme 1952, and Employees' Pension Scheme 1995, are mandatory for employees of the organized sector.
- Public Provident Funds Scheme 1968, designed to arrange old-age income security for the workers of the unorganized sector.
- Employer-sponsored superannuation funds for employees of private companies.
- Money purchase schemes of the insurance companies and mutual funds.

6.1. Deficiencies

Apart from poor penetration and lack of public awareness, the other deficiencies are as follows:

- The stipulated contribution level is one of the highest in the world, which results in the availability of a negligibly small amount of savings to meet personal contingencies.

- For making investments in the provident and pension funds, one gets tax incentives u/s 88 and 80CCC, respectively, while pension receipts are taxable income. But premature withdrawals are not penalized and interest earnings are not taxed. It motivates the savers for premature withdrawals, rather than accumulating for old-age income.

- Statutory norms specify a set of strict investment guidelines along with passive portfolio management strategy, thereby disallowing fund managers to have the risk-return trade-off.

- Inefficient asset-liability management, due to non-availability of suitable assets to meet the long-term to very long-term liabilities.

- Government pension schemes follow a pay-as-you-go method, where the liabilities are neither valued regularly nor backed by an adequate amount of assets. Therefore, incremental benefits and longer life expectancy may make these schemes a financial time bomb as warned by the Reserve Bank of India (RBI).

- Despite one of the highest levels of fund management expenses, the quality of governance and administration of the funds is very poor.

- The level of benefits cannot meet the post-retirement income requirements.

6.2 Reasons for Underdevelopment

Prior to the process of economic liberalization, all the economic activities, even the market interest rates, were under the purview of government control. Due to the increasing level of inflation, interest rates in the market were also increasing. This motivated savers to short-term investments in financial institutions, post-offices, banks, etc. The common people expected the trend to continue. But with the process of economic liberalization, Indian financial markets are getting more and more integrated with the global markets. Consequently, an opposite trend started, reversing the expectation of the common masses. Hence, many old persons could not save an adequate amount to meet their present income requirements. The other factors for the slow growth of the Indian pension market are as follows:

- Lack of suitable long-term financial instruments that offer reasonable risk-adjusted return. Fund managers were not allowed to invest in the equities, while the debt markets have yet to develop. The Reserve Bank of India (RBI)

issued 30 years of Government of India (GOI) papers for the first time in August 2002.

- Inadequate level of awareness among the common people.
- Employers were not encouraged to offer pension benefits to their employees.
- Competition in the market and the entry of private employees were not prevailing.

6.3. Market Size

The following factors are expected to influence the size of the Indian pension market by a significant extent:

- Longer life expectancy.
- Incremental healthcare expenses, as well as the availability of better healthcare facilities.
- Gradually diminishing joint family system.
- Incremental aspirations for better lifestyles during the post-retirement period.
- Easier availability of white goods in comparison to few decades back.
- Improvement in transport facilities that makes traveling more comfortable.

All the above factors may be considered catalysts for the growth of the Indian pension market. On one hand, children were considered a good investment, i.e., a source of support to the parents. But future geographical separation from working children is becoming a stern reality for an increasing number and, hence, they wish to be financially independent. On the other hand, they also aspire to a better lifestyle and wish to meet the expectations that remained unfulfilled during their working life. For example, many couples who could not have done so earlier visit tourist spots or pilgrimage centers after their retirement. With the rapid growth of consumerism, manufacturers are ensuring the availability of consumer durables such as TVs, refrigerators, etc., on demand. Today's elderly Indians could not enjoy such opportunities during their working life due to the shortage and rationing of these items. Therefore, the extent of income required during post-retirement days may not be valid

on the basis of the standard of living as worked out through traditional assumptions (Vaidyanathan 2003). Considering all these points, the Insurance and Regulatory Development Authority (IRDA) has assessed that the Indian pension market will grow by leaps and bounds as follows:

TABLE 8
Pension Market: A Sizeable Growth

Year	2005	2010	2015	2020	2025
Market Size (in Rs. billion)	1166	1569	2154	2986	4065

Source: Business Line (December 19, 2001).

But other organizations like the Center for Monitoring Indian Economy (CMIE) and the National Council for Applied Economic Research (NCAER) projected the above market to be only Rs.1808 billion by the year 2025. Such a wide gap is due to the differences in assumptions made in areas such as demographic trends and savings rate.

7. Regulatory Framework

The common people in India expect a strong and robust regulatory framework that would effectively supervise the activities of several entities in this sector. They are the worst sufferers of the securities scam (1992), the CRB fiasco and the serial defaults of several non-banking finance companies (1997), the failure of the plantation companies (1998) and the collapse of the cooperative banks (2001). Therefore, the primary focus of the regulatory authority should be the avoidance of such scams that ultimately ruin the investors, as well as the following:

- Extension of coverage to every section of the working class.
- Elimination of the possibility of unfunded liabilities.
- Protection of the interest of the subscriber through adequate return.
- Reduced role of the government as a pension provider but more proactive role as an effective regulator.
- Availability of need-based products to meet the changing needs of the savers.

7.1 Current Regulatory Framework

The present regulatory frameworks for the several pension schemes in India are as follows:

- Central and state government pension schemes are paid from the government exchequer on a pay-as-you-go method. They are solely managed by the respective governments and, hence, are not supervised by any regulator.

- In the Public Provident Fund (PPF), the government manages the mobilized fund by offering an administered rate of interest. The major part (75 percent) of the net accretion is loaned to the state government, while the balance is transferred to the public account to finance the government expenditures. Hence, this scheme is also not supervised.

- EPF is both administered and regulated by the EPFO, which cannot be termed a satisfactory practice, as the dual roles contradict each other.

- EPS '95 is also administered and regulated by the EPFO. Separation of these two conflicting roles is required for the greater interest of the subscribers.

- Occupational pension schemes are approved by the Commissioners of Income Tax (CITs) under the Income Tax Act, 1961. However, the regulation is limited to compliance of the stipulated investment norms, and there is no minimum funding requirement. Other things are at the discretion of the auditors and the actuaries.

- Similar norms are also applicable to the Gratuity funds.

- Individual pension schemes and group superannuation schemes as offered by the insurance companies are supervised and regulated by IRDA.

- Pension schemes of the nationalized banks also follow pay-as-you-go methods and also are not supervised and regulated.

- The Security and Exchange Board of India (SEBI) regulates pension policies offered by the mutual funds.

It may be observed that, similar to the Indian pension market, the regulation and supervision of the pension schemes are also very complex and fragmented in nature. To

achieve the earlier-stated objectives, it is necessary to develop a strong regulatory authority on the foundation of a clear regulatory and supervisory framework. Indian policy makers should review the economic impacts of pension sector reforms for the countries such as Chile that have carried out reforms during the recent past.

7.2 Pension Regulatory Body for India

The government of India has already formed the Pension Funds Regulatory and Development Authority (PFRDA) in 2003. The PFRDA is not only entrusted with the responsibility of regulating and supervising the players in the pension industry, but also with playing a pivotal role in the development of the Indian pension funds industry. It will motivate the general public at large to understand the necessity of making adequate savings to self-finance the old-age income security. The proposed regulations should be formulated in such a way that all the existing schemes will come under the purview of the PFRDA.

In order to fulfill such requirements, it should frame the required guidelines in relation to the entry norms of the various players in different roles, their respective activities and the limits for expenses. Consequently, the government should also set the requisite mandate for the developmental aspects. It is of utmost importance to make working Indians at large understand the necessity of regular income during retirement.

7.3 Objectives of the Regulatory and Development Authority

The primary objective of any regulatory body is to protect the interest of the subscribers. Apart from ensuring the financial viability of the system, it must achieve the following points:

- Extension of the level of coverage to every section of the working class.
- Elimination of the possibility of unfunded liability.
- Reducing the role of the government as a pension provider, but ensuring a more proactive role as an effective regulator.
- Motivating the players in the industry to design need-based products in order to meet the changing needs of the savers.
- Controlling the expenses of the entities operating in the system by framing their roles and ensuring healthy competition among them.

- Framing the regulations for suitable pension arrangement for the subscribers, a satisfactory grievance redresal mechanism and an expeditious claims settlement system.

- Undertaking proactive measures against the risks of failure, which can result from improper pricing of the products, faulty investments, inadequate control on expenses, fraudulent actions, mismanagement of funds or adoption of wrong risk management strategies.

- Removing the tax anomalies in relation to making contributions, appreciation of funds and premature withdrawals, as well as pension payments. The PFRDA may enact a provision similar to section 401(k) of the U.S. income tax rules. It will motivate individuals to make more contributions and fewer withdrawals, thereby leading to a higher amount of pension benefits for the subscribers. On the other hand, the economy will get a large sum for making long-term investment.

However, it must be noted that no regulatory system can assure against the possibility of failure. Hence, the PFRDA must formulate an integrated package of legislation—principal and subordinate. Thereafter, as the industry matures, the various participants in the industry such as auditors, actuaries, fund managers, etc. should institute self-regulation for the benefit of the pensioners as well as for the growth of the industry.

8. Investment Avenues

For any pension system, the pension fund managers play the most important role. They require the build-up of a substantially large corpus to meet the post-retirement income needs of the subscribers. It motivates the participants to save more, while the fund managers achieve better economies of scale. The policy makers may meet the demand for the fund-starved areas comfortably by channeling the savings.

8.1. Investment Problems

Some of the problems related to the investment of pension funds are discussed below:

A fund manager is required to choose the assets, not only to provide risk-adjusted returns, but also to meet liabilities satisfactorily. However, asset-liability mismatch is quite common in the Indian pension funds industry. The following factors may be considered as the reasons behind the disparities:

- The durations of the assets are generally in the range of 20 to 30 years, whereas the minimum duration of the liabilities is more than that of the assets. Hence, the possibility of duration mismatch is inevitable.

- The fund managers do not have any knowledge regarding employee demographics and, hence, they cannot assess the duration of the liabilities.

- In India, the professional accountants looking after the management of the pension funds often lack the knowledge and skills for investment management. Therefore, their ability to practice asset-liability management (ALM) is limited.

- Moreover, an efficient fund manager is expected to implement an ALM system and take suitable risk management strategies to protect the investor's funds. In this regard, the PFRDA should frame comprehensive guidelines in relation to ALM practices as well as risk management strategies in line with the RBI, the sole regulator of the Indian banking industry.

8.2. Investment Instruments

In order to manage the funds efficiently with the help of modern portfolio management strategies, the following instruments may be considered:

(a) Money Market Instruments. A pension fund manager may not get a suitable long-term instrument immediately on receipt of subscription. A high level of due diligence must be applied in order to find opportunities and analyze their feasibility. Money market instruments are best suited to keep the funds invested and earn a nominal return, as they are highly liquid in nature. Entry of pension funds as investors in the money market will reduce the volatility of the money markets.

(b) **Long Dated Government Securities.** As the liabilities are long term, the assets should be chosen correspondingly to avoid tenure risk. On the other hand, a long-term risk-free rate of return is required. It not only helps to examine the performance of the pension fund managers (PFMs), but also to set the expected return from the infrastructure projects with a long gestation period. In order to meet the above needs, RBI should issue 40-year and 50-year GOI papers to develop the required Rupee yield curve.

(c) **Indexed Bonds.** The values of these bonds are dependent on the movement of specific price indices like the Wholesale Price Index (WPI), the Consumer Price Index (CPI) or the GDP Deflator that is related to the change in the purchasing power. These bonds perform the best if the economy experiences inflation. Hence, these may be the best choice in protecting the purchasing power of the retirees. But in India, capital indexed bonds are currently available. Therefore, RBI should issue more of such instruments that will not only be useful in hedging inflation risk, but will also help the PFMs in better asset-liability management.

Following the successful passage of the Securitization Bill (2002), the proceeds of the pension schemes may be invested in the debt market. It will ultimately help develop a stronger bond market. As a result, avoiding maturity and foreign exchange mismatches may avert the possibility of an economic crisis, while an effective yield curve on the Rupee will emerge with the introduction of the longer term securities.

(a) **Equity Investments.** For the pension funds, equity investments may be one of the best choices. A comparative study on the amount of capital appreciation on the basis of the returns from different instruments was carried out in the U.S. Accordingly, in the year 1990, the maturity values of US$1.00 as invested in the year 1926 would have been $10.50 in Bills, $18.00 in government bonds, $27.00 in corporate bonds and $515.50 in the S&P 500 Index (Baman Mehta 2000).

Many other countries have experienced the same. In Chile, the aggregate value of pension funds managed by PFMs experienced a real annual average growth rate of 29 percent from 1981 to 2000. The value has gone up from US$300 million (0.9 percent of GDP) in December 1981 to US$37,752 million (54.6 percent of GDP) in December 2000. Hence, equity investments not only help manage the inflation and tenure risks, but also lead to a better ALM as well as higher price appreciation.

However, in India, pension funds are not allowed to be invested in the equity markets. The Project OASIS report observed, "Over the last decade, provident funds in India have earned a return of little over 2.5% over inflation for their members (as against 11% in Chile). On the other hand, the long-run average rate of return on the equity index in India is 18.5%, which has the potential to revolutionize the wealth accumulation over a worker's lifetime. The average wealth that is obtained by investing Rs.5 per working day into the equity index, from age 25 to age 60, works out to Rs.3,600,865. Over such a long term horizon, there is a 99% chance that equities outperform bonds." Hopefully, PFRDA will consider the issue and correspondingly allow the subscribers to make a choice in its favor. The PFMs may play a very important role in effecting the following developments:

- Enforcement of high level of corporate governance in Indian companies. Even if 50 percent of about Rs.1400 billion, it is a sizeable amount for investment in the Indian stock market and provides reasonable bargaining power for the PFMs.

- Achieving a higher level of professionalism in the functioning of the capital markets.

- Reducing the volatility of the capital markets for a large proportion of stable funds.

However, the recent notification (dated January 28, 2005) of the Ministry of Finance has allowed private provident funds, superannuation funds and gratuity funds to invest in equity markets as follows.

- Up to 5 percent of the fresh inflows in equities.

- Another 10 percent in equity linked mutual funds as of April 1, 2005.

The above regulatory measure will lead to a flow of more than Rs.200 billion immediately into the Indian capital markets, and the members of the funds will enjoy higher returns.

(a) Infrastructure Development. Inadequate infrastructure facilities in India seem to be obstructing the growth and development of the Indian economy. In the past, the government made budgetary allocations for the development of roads, ports, telecom facilities, power, etc. But at present, the sphere of the infrastructure facilities also includes the social infrastructures such as

education, housing and healthcare. Any improvement in the above facilities leads to better labor productivity, which in turn is reflected through a better standard of living as well as a higher national income. The World Bank has observed that any growth in infrastructure facilities leads to an equivalent rise in national income.

However, a huge amount of funds with a long gestation period is required to be committed for the development of the infrastructure facilities. These are perfectly synchronized with the maturity profiles of the pension plans. Here, the government may act as a facilitator, but cannot commit such a large amount due to the fiscal constraints. Hence, private participation is direly required in many areas such as power, telecommunications and transportation, while the government may play a significant role in developing the social infrastructures such as rural infrastructure, urban infrastructure, health and education. The fund requirements for the improvements of the major infrastructures in India are given in the following table:

TABLE 9
Infrastructure Sector: Who will finance their upgradation?

Subsector	Investment Requirement
Power	Additional generating capacity needs about US$83 billion, while the reduction of transmission and distribution losses from 40 percent to 15 percent requires about US$60 billion. Major amount is expected from the private sector.
Roads	Development costs are estimated at US$33.7 billion. The private sector is expected to invest US$8.3 billion to meet the increasing traffic.
Ports	Additional capacity needed will require investment of US$7.3 billion, of which 50 percent is expected to be invested by the private sector.
Civil Aviation	Modernization and expansion of the airspace needs about US$1.1 billion to meet the increasing passenger traffic and carriage of goods.
Telecommunications	Additional amount of US$53 billion is required to meet the increasing demand raised by the growth of the information technology sector.

Source: Satyanarayana et al., "Indian Infrastructure: An Overview," Economic Survey 2000-01, *Investment Opportunities*, 2001.

The investments made in the above areas generate periodic regular cash flows that may match the cash flow requirements of any pension fund. It helps to hedge the inflation risks and tenure risk, thereby leading to better asset-liability management. However, the political risk must be assessed carefully, as the possibility of sudden change in government policies cannot be ruled out. It affects the returns on investment and causes frustration among the fund managers as well as the investors. The Enron

case may be considered to be an example in this context that will ultimately result in a significant deviation from the intended objective of old-age income security.

9. Conclusion

It is high time that the Indian policy makers assess the impact of the forthcoming age wave. The process of pension sector reforms should be accelerated, suitable steps should be undertaken to build the required healthcare facilities and a suitable social security system should also be designed. If change is not effected, the family support system as well as the state-sponsored facilities may crash in the near future, thereby jeopardizing the well-being of elderly Indians. It may cause the emergence of a gigantic number of destitute sick and elderly people in the streets and public places (Project OASIS Report).

The success of a social security system depends on two critical factors. First is the ability and willingness of the working class to make adequate savings in order to maintain the same standard of living during their old age. Second is the availability of the economic, financial and regulatory frameworks that meet the expectations of the savers by offering risk-adjusted returns. Hence, financial experts must design suitable retirement schemes for the major percentage of Indian workers that is no less attractive than any other saving instrument, either financial or physical such as gold (Appendix 2). The pension funds may be used judiciously to build up infrastructure facilities, developing debt and capital markets, arranging education, etc. The availability of better infrastructure facilities imparts a higher level of efficiency to the business entities. The inflow of large sums for a long duration would reduce the volatility of the stock markets, which are presently dominated by the foreign institutional investors (FIIs) and the speculators. The PFMs may be expected to impose better corporate governance in the Indian corporate world, leading to higher risk-adjusted returns to the stakeholders. Considering the availability of skilled people and talented professionals, as well as greater involvement of the private sector, the resources will have better utilization, thereby achieving higher economic efficiency and better fiscal balance. It will ultimately drive the Indian economy from its present poverty-stricken state to its rightful place of an industrially developed one (USAID 1999) by achieving a balanced growth. It will ultimately sharpen the competitive strength of India Inc. in the global marketplaces, therefore including the Indian economy among the strongest ones.

References

"Active Aging: A Policy Framework," World Health Organization on Aging, Madrid, Spain, 2002.

Ahluwalia, Montek Singh, Member, Planning Commission of India. Report of the Task Force on Employment Opportunities, July 1, 2001.

Bhattacharya, Prakash. "Old Age Income Security: Indian Perspective," *Insurance Chronicle*, July 2002.

Bhattacharya, Prakash. "Pension Sector Reforms in India," 5th Global Conference of Actuaries, New Delhi, February 19-20, 2003.

Bhattacharya, Prakash. "Reforms in the Indian Pension Sector and Its Implications," *Insurance Chronicle*, March 2002.

Census Reports, 1981, 1991 and 2001.

Center for Monitor Indian Economy, Public Finance, March 2002 and 1999.

Chanana, H.B. and Talwar, P.P. "Aging in India: Its Socio-economic and Health Implications," *Asia-Pacific Population Journal*, Vol. 2, No. 3, September 1987.

Fox, James W. "Developing Capital Markets in India," US Agency for International Development, April 1999.

Jay Prakash, Dr. Indira. "Aging in India," WHO 1999 Ref: (WHO/HSC/AHE/99.21). Source: http://www.who.int/hpr/ageing/ageinginindia.pdf

Joshi, P.C. and Sengupta, S.N. "Aging: A symposium on the graying of our society," *Health issues* #488, April 2000.

Madhok, Sunil. "Why Indians Love Gold," www.gold-eagle.com, October 14, 1998.

Mehta, Baman. "Pension Reform: The role of the private sector," www.iinvestor.com, December 2000.

The Ministry of Finance, Government of India: Indian Economic Survey 2003-04.

Mitra, Sumit. "Retiring Risks," *India Today*, June 2, 2003.

Murthy, N.S. and Mathew, Aleyamma. "Cancer epidemiology, prevention and control," *Current Science*, Vol. 86, No. 4, February 25, 2004.

National Human Development Report 2001.

Ray, Debraj (1999). *Development Economics*. Delhi: Oxford University Press, pp. 308-370.

Rodrigo, Acuna R. and Augosto, Iglesias P. *Chile's Pension Reform After 20 Years*, December 2001.

"Should the PPF in its current form be retained or scrapped (A Debate)," *Business World*, October 20, 2003.

Sridhar, V. "Labor Issues: An Unkind Cut," *Frontline*, September 10, 2004.

Sriniavsan, R. *Health Care in India—Vision 2020*, published by the Planning Commission of India.

"Srinivasan" in text. Which is it?

Subhedar, S.P. "Pension Regulatory Issues: A Framework for India," 6th Global Conference of Actuaries, New Delhi, February 18-19, 2004.

Usha Ram. "Changing Age Composition of the Population of India, Indonesia and Thailand: Health Issues of the Elderly," IUSSP Regional Population Conference, Bangkok, June 10-13, 2002.

Vaidyanathan, R. "Demography and P & P Sector—Age bomb, a trigger for outsourcing," *Business Line*, October 7, 2004.

Vaidyanathan, R. "Pension Products for the Self Employed in India," Asia Pacific Risk and Insurance Association, 7th Annual Conference, Bangkok, July 20-23, 2003.

Vaidyanathan, R. "Voluntary Pension Market in India," *Insurance Chronicle*, Special Issue, January 2004.

Visaria, P. (1997). "Urbanization in India: An Overview," published in *Urbanization in Large Developing Countries: China, Indonesia, Brazil and India*, Edited by Gavin Jones and Pravin Visaria, pp. 273.

WHO (Department of Health Promotion). "Health and Aging: A Discussion Paper," Second United Nations Assembly on Aging, Madrid, Spain, April 2002.

WHO. "Toward the Policy for Healthy and Aging."

World Health Organization. "Active Aging: A Policy Framework," Second United Nations World Assembly on Aging, Madrid, Spain, April 2002.

www.icai.org

www.icwai.org

www.mciindia.org

www.un.org

Yesudian, C.A.K. "Socioeconomic Implications of Aging," WHO Symposium Aging and Health: A Global Challenge for the 21st Century, Kobe, Japan, November 10-13, 1998.

Appendix 1
Living Arrangement for Aged Indians

(Percentage of total number of old-aged Indians)

	Observations in NFHS 1 (1992–93)				Observations in NFHS 2 (1998–99)			
Characteristics	**Alone**	**Two members HH (both aged)**	**2 or more generation**	**Others**	**Alone**	**Two members HH (both aged)**	**2 or more generation**	**Others**
Male:								
Age:								
60–64	1.09	5.19	90.6	3.16	1.6	7.0	88.4	3.2
65–69	1.30	6.22	88.6	3.87	1.4	9.8	85.4	3.3
70–74	1.87	7.55	85.7	4.88	1.8	10.6	84.2	3.4
75–79	1.79	7.90	85.6	4.74	2.3	11.6	83.0	3.1
80 +	2.14	6.58	88.1	3.19	1.6	7.2	87.3	3.8
Residence:								
Rural	1.42	6.37	88.4	3.80	1.60	9.0	86.10	3.30
Urban	1.50	6.09	88.6	3.80	1.80	8.3	80.60	3.20
Literacy:								
Illiterate	1.64	6.46	90.6	3.61	1.50	9.40	85.50	3.40
Literate	1.23	6.11	86.3	4.05	1.80	8.30	86.80	3.10
Total	**1.44**	**6.31**	**88.4**	**3.80**	**1.60**	**8.90**	**86.20**	**3.30**
Female:								
Age:								
60–64	2.41	4.07	90.3	3.19	3.90	6.70	86.0	3.50
65–69	3.03	4.99	88.3	3.72	4.20	6.70	85.0	4.10
70–74	4.47	3.43	88.8	3.31	5.40	3.70	86.8	4.10
75–79	3.16	3.39	90.7	2.79	5.10	3.10	89.1	2.80
80+	3.55	0.74	93.0	2.69	4.20	1.40	91.7	2.70
Residence:								
Rural	2.76	3.06	91.4	2.78	4.60	5.70	86.10	3.60
Urban	2.59	2.91	91.2	3.26	3.50	4.50	88.50	3.50
Literacy:								
Illiterate	4.64	5.12	85.7	4.55	4.70	5.30	86.60	3.40
Literate	2.04	2.37	92.1	3.50	2.70	5.10	78.80	4.00
Total	**3.43**	**3.82**	**89.1**	**3.67**	**4.40**	**5.40**	**86.70**	**3.60**

Source: International Institute of Population Studies, Ministry of Finance, Government of India.

Appendix 2
Gold as a Savings Instrument in India

Since ancient times, gold has been treated as a metal of immense value in India. It not only represents the ornamental value of the jewelry worn at the community festivals and social functions, but is also an excellent investment opportunity. It is considered a savings and investment instrument as well as an insurance and pension product. Most Indians save their hard-earned money in the form of gold ornaments to hedge the inflation risk as well as for the liquidity, portability and ease of transfer of ownership. Gold jewelry is generally gifted to the near and dear ones during the good days. Moreover, for wealthy Indians, gold is considered one of the safest modes of parking unaccounted income. It must be noted that according to Indian customs and practices, gold is accounted properly and preserved carefully by the housewives of the families. These ornaments can be disposed of only with the consent of the lady of the family, which is generally granted only against the dire need of funds. In this way, gold is considered to be an insurance or pension product that offers significant security to the families, especially to the middle and poorer sections.

Gold demand in key markets worldwide (1996–2002) (in tons)

Country	1996	1997	1998	1999	2000	2001	2002
India	**507.8**	**688.0**	**774.4**	**730.7**	**723.0**	**726.7**	**575.7**
Pakistan	53.7	78.1	54.8	67.0	58.1	49.0	50.5
Greater China	374.4	529.6	367.3	308.7	292.6	269.7	237.8
Japan	152.2	109.0	109.6	160.5	105.1	113.0	141.5
S Korea		82.2	5.5	66.1	69.7	67.8	64.1
SE Asia	329.6	219.3	63.3	244.0	251.6	264.4	256.5
Saudi Arabia	184.9	249.6	194.8	173.2	173.8	165.8	143.0
Gulf States	118.0	118.7	135.9	149.3	154.2	157.4	145.7
Egypt	75.7	138.4	135.8	138.9	129.9	117.4	82.0
Turkey	153.0	169.9	160.4	113.9	177.4	119.1	128.4
Americas	431.7	461.8	528.3	554.4	473.1	510.8	496.0
Europe	273.0	273.3	263.4	208.9	142.2	275.4	239.3
Total	**2779.5**	**3770.1**	**3451.1**	**3510.7**	**3343.1**	**3413.2**	**3067.4**
Source: World Gold Council							

The above facts and figures imply that India is the largest buyer of gold in the global markets. The World Gold Council (WGC), bullion markets participants, mining companies and economists have acknowledged it. According to the WGC estimates, Indians hold 13,000 tons of gold as jewelry and bars, about 7 percent of world gold stocks, worth Rs.7,000 billion. The amount of domestic production is negligibly small. The gems and jewelry manufacturers consume more than 90 percent, whereas less than 10 percent is for industrial uses. It may be observed that during the year 2002, the

amount of gold consumption in India was 575.7 tons at a time when the average price was about Rs.4000 per ten grams. It implies that the amount of transactions was Rs.230 billion. A significant part constitutes a substitute for savings and investment products made in the form of gold ornaments and considered as "consumption" for the estimation of national income, while in many business transactions gold is used as a collateral. Therefore, it may be considered to be a tough challenge to the private pension funds to make a paradigm shift in the Indian psyche from gold to any other annuity products. They may have to design some innovative products based on gold as an asset.

Appendix 3
Patterns of Contribution for the EPF and EPS Schemes for 175 Industries

Contributor	EPF – 1952	EPS – 1995	Total
Employer	3.67%	8.33%	12.50%
Employee	12.00%	Nil	12.00%
Government	Nil	1.16%	1.16%
Total Funding	15.67%	9.49%	25.66%
Administrative charges by employer: unexempted [% on wages]	1.10%	Paid out of the EPS fund	
Inspection Charges by employer: exempted [% on wages]	0.18%	Not Applicable	

Patterns of Contribution for the EPF and EPS Schemes for Five Industries

Contributor	EPF – 1952	EPS – 1995	Total
Employer	1.67%	8.33%	10.50%
Employee	10.00%	Nil	10.00%
Government	Nil	1.16%	1.16%
Total Funding	11.67%	9.49%	21.66

Note: These five classes of industries include Jute, Beedi, Brick, Coir (other than spinning sector), and Guar gum, while other industries are covered under the head of 175 industries.

Source: 50th Annual Report of the Employees Provident Fund Organization, Ministry of Labor, Government of India, New Delhi, 2002-2003.

Appendix 4
Employees' Provident Fund Investment as on March 31, 2004 in Rs. billion

Schemes of Investment	EPF	Pension Fund	EDLIS*	Total
Special Deposit Scheme	519.55	13.39	2.50	532.97
Central Government Securities	66.13	96.41	2.89	165.43
Public Account	–	228.83	30.62	259.45
Government Guaranteed Securities	5.34	4.96	0.15	10.45
State Government Securities	54.20	44.27	1.34	99.81
PSUs/Financial Institutions	73.17	135.08	4.02	212.27
Total	718.39	522.93	39.04	1280.37

Members' Balance in the EPF as on March 31, 2003

Amount (Rs.)	Number of Members	Percentage of Total Members	Percentage of Total Accumulation	Average Balance (in Rs.)
Up to Rs.20,000	29.34 million	84.58	16.98	3,133
20,000 – 49,999	2.877 million	8.30	21.52	40,468
50,000 – 99,000	1.277 million	3.68	16.67	70,663
100,000 – 199,000	0.791 million	2.28	20.25	138,414
200,000 – 299,000	0.233 million	0.67	10.37	240,616
300,000 – 399,000	82,829	0.24	5.23	341,959
400,000 – 499,000	34,593	0.10	2.83	442,575
500,000 – 999,000	36,297	0.10	4.29	640,229
1,000,000 – 2,499,000	5,973	0.02	1.45	1,316,782
2,500,000 – 5,000,000	5,973	0.0001	0.31	2,506,620
More than 5,000,000	86	0.00001	0.90	5,448,660

Source: Employees' Provident Fund Organization.

Appendix 5
Salient Features of the Major Retirement Benefit Schemes in India

Items	EPF [1952]	EPS [1995]	GEPS
Nature	Defined contribution and fully funded by the employer and employee.	Defined benefit but funded by the employer and the government.	Defined benefit but funded by the government by following PAYG method.
Coverage	Workers in the organized sector, both public and private.	EPF members earning Rs.5,000 per month or less.	All government employees.
Benefits	Total amount of contribution plus accumulated interest at the administered rate upon retirement, resignation, death is paid in lump sum. Premature withdrawals are allowed in order to meet specific expenses such as house construction, higher education, marriage, illness, etc.	Monthly benefits following superannuation /retirement, disability, whichever is earlier. It is also given to the survivors such as widow (er), minor children. Amount of pension is calculated on the basis of the average salary drawn during the preceding twelve months of service from the date of retirement and number of years worked.	Monthly benefits following superannuation /retirement, disability, whichever is earlier. It is also given to the survivors such as widow (er), minor children. Amount of pension is calculated on the basis of the average salary drawn during the preceding twelve months of service from the date of retirement and number of years worked.
Pension Formula	Nothing	Pension = Average Wage (as mentioned above) × $\frac{t}{70}$ where t is the service period. (A credit of 2 years is given, if t $\geq$ 20 years)	Pension = 0.5 × Average salary × $\frac{Max.(t,333)}{33}$ where t is the service period.
Vesting Period	Nil	10 years	10 years
Minimum and Maximum Benefits	It does not have any upper or lower limit for the amount of maturity.	The minimum amount of pension is Rs.250, while the maximum amount is limited to Rs.5,000.	The minimum monthly pension for the GEPS is Rs.1,250, while there is no upper limit.
Indexation	Not applicable	Indexation benefit is not guaranteed.	GEPS is indexed to CPI and is done twice in every year. The lower the income, the higher the indexation benefit.
Commutation	Not applicable	Up to one-third of the amount of the pension permissible.	Up to 40 percent of the amount of the pension permissible.
Risk Coverage	Neither longevity risk nor inflation risk is covered, But protects against premature death or disability.	It covers against the consequences of premature death or disability. Partially covers longevity risk but not the inflation risk.	It offers protection against inflation risk, longevity and the risks of premature death as well as disability.

Note: EPF: Employees' Provident Fund, **EPS**: Employees' Pension Scheme, **GEPS**: Government Employees' Pension Scheme.

Source: Employees' Provident Fund Organization.

Appendix 6
Coverage of Establishments and Enrolment of Members as on March 31, 2003

	Exempted	Unexempted	Total
Establishments	**2564 (2590)**	**341944 (355157)**	**344508 (357747)**
Members – EPF (in 000s)	3751 (3896)	35747 (23522)	39498 (27418)
Members – Pension Funds (in 000s)			27487 (25572)

Note: Figures in the brackets indicate the position during the previous year
Source: **www.epfindia.com**

Appendix 7
Investment Pattern mandated for the EPF

Category	% of amount to be invested
(i) Central Government Securities as defined in Section 2 of the Public Debt Act, 1944 (18 of 1944).	25%
(ii) (a) Government Securities as defined in Section 2 of the Public Debt Act, 1944 (18 of 1944) created and issued by the state Government; and/or (b) Any other negotiable securities the principal whereof and interest whereon is fully and unconditionally guaranteed by the central government or any state government except those covered under (iii) (a) below.	15%
(iii) (a) Bonds/Securities of "Public Financial Institutions" as specified under section 4(a) of the companies Act, "public Sector Companies" as defined in Section 2(36-A) of the Income Tax Act, 1961, including public sector banks and the Infrastructure Development Finance Company Limited [IDFC] and/or (b) certificates of deposits issued by a public sector bank.	40%
(iv) To be invested in any of the above three categories as decided by the Board of Trustees.	20%
(v) The Board of Trustees, subject to their assessment of the risk-return prospects, may invest up to 10% out of (iv) above in private sector bonds/securities, which have an investment grade rating from at least two credit rating agencies.	

Source: 50th Annual Report of the Employees' Provident Fund Organization for the Year 2002–2003, Ministry of Labor, Government of India New Delhi, p. 31.

Appendix 8
Performance of Employees' Provident Fund Organization 2002–2003 (in Rs. Billion)

Contributions:			
Employees' Provident Fund	**Exempted**	**Unexempted**	**Total**
During the Year	38.59 [42.78]	75.29 [69.10]	113.88 [111.88]
Cumulative	498.83 [460.32]	586.28 [510.99]	1085.10 [971.22]
Employees' Pension Fund	**Employee's & Employer's Share**	**Government's Share**	**Total**
During the Year	43.88 [39.64]	4.00 [4.85]	47.88 [44.49]
Cumulative	280.70 [236.82]	51.43 [47.43]	332.13 [284.25]
Investments:			
Employees' Provident Fund	**Exempted**	**Unexempted**	**Total**
During the Year	5.29 [25.47]	54.25 [55.84]	59.54 [81.31]
Cumulative	373.34 [368.05]	654.14 [599.88]	1027.48 [967.93]
Employees' Pension Fund			
During the Year			59.95 [58.33]
Cumulative			450.45 [390.50]

Note: Figures in brackets indicate the corresponding position during the previous year.
Source: www.epfindia.com