AGING SOCIETY IN SOUTH KOREA:

AN ASSESSMENT OF IMPACT ON THE WORKFORCE, 2000-2013

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DECLARATION

I declare that the dissertation entitled "Aging Society in South Korea: An Assessment of Impact on the Workforce, 2000-2013" submitted by me for the award of the degree of **Master of Philosophy** of Jawaharlal Nehru University is my own work. The thesis has not been submitted for any other degree of this University or any other university.

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List of Abbreviations

AFC	Asian Financial Crisis
EPR	Employment – Population Ratio
FYP	Five Year Plan
NBLSA	National Basic Livelihood Security Act
NFPP	National Family Planning Programme
NIC	Newly Industrialised Countries
NPS	National Pension System
OECD	Organisation for Economic-Coperation and Development
PPFK	Planned Parenthood Federation of Korea
TFR	Total Fertility Rate

Chapter 1

Introduction

1.0 Background:

Throughout history, no country has witnessed more than 2-3 percent of the elderly population in any country of the world. But in the contemporary world, most of the developed countries have experienced a marked increase in the number of the elderly population. South Korea (* *Hereafter South Korea is referred as Korea)* is not an exception. Korean society has gone through rapid changes since 1960. The then government had focused on the economic development of the country only, accompanied by family planning. From 1960 to the early 1990, the government had made any changes in the existing welfare system. However, just after the Asian Financial Crisis (1997), the changes were made in welfare system starting with 1998. Till then it has become too late and a new era has already arrived in Korean society. This new era has come in line with the significant advancement in new technology, medicine, nutrition and feminisation of work. The features of this new era are rising life expectancy, delaying motherhood or not giving birth to a new baby, increasing number of the elderly in the society, waning of the traditional family system due to rapid increase in nuclear families due to rapid increase in nuclear families, changes of value on filial piety and care duty.

One of the most important problems is a problem concerning with the aged people. The number of the aged people in Korea has already crossed 7 percent and became an aging society in 2000. The speed is so much and so high that Korea is about to become an aged society in 2018 and super aged society in 2026. With the growing number of elderly population, the term 'population aging' has become a household word in Korean society. Population aging is considered in Korea as the main reason for labour scarcity, sluggish economic growth and higher tax burden on the workforce needed to support welfare services for the elderly. Without any doubt, contemporary Korea is facing demographic and social issues in recent years. This chapter attempts to describe the concept of aging, cause of aging, literature review, definition, rational and scope of study and research problems and will provide the short descriptions in the upcoming chapters.

1.1 Concept of Aging:

Aging can be defined as the process of growing old. It is a biological act which is experienced by the human being since ages. The study of population aging is comparatively new occurrence, which came to light because of the marked increase in the number of the elderly population in the society. However, the aging of society depicts the success of civilization over illness, poverty, and misery and the decline in fertility. Acknowledging this demographic fact, the World Assembly organised in Vienna in 1982 has paid attention to the fact that these problems must be observed in Global context and called for research to investigate the impact of population aging on development and that of development on aging, and the condition of life of aged under different social and economic conditions. The year 1982 was observed as the International Year for the aged to emphasize the problems of aging in accordance with the United Nations decisions.

The study of aging is referred as Gerontology. The term 'Gerontology' has been derived from the Greek word *Geron* meaning old man. Literally, gerontology refers to the study of human aging. The study of aging became prominent in the second quarter of the twentieth century. Population aging can be measured by various means, but the most popular way of measuring aging is through the proportion of aged population i.e. the elderly population aged 65 and over. As per United Nations' a country entered into 'aging society' when the number of people aged 65 and over reaches 7 percent of the total population, 'aged society' when the elderly population reaches 14 percent or more and a 'super aged society' when the elderly population accounts for 20 percent.

In Korea, the concept of aging has become evident in 2000s. Korea became an aging society in the beginning of 2000 wherein people with age over 65 accounted for 7.2 percent of the total population. Korea will become an 'aged society' comprising 14.3 percent of the elderly people in 2018 and a 'super aged society' by 2026 comprising 20.8 percent of the elderly. By 2050, Korea will become one of the most aged nations with 37.4 percent of the elderly population. The United Nations has yet to discover name for the elderly person surpassing the category of 'super aged society'.

It is evident from above that Korea will surpass the 'aging society' to 'aged society' in 18 years and 'aged to super aged in 8 years'. That suggests that the speed with which Korea is moving is much faster than that of any developed countries as of yet. It is expected that Korea will reach that milestone soon in coming years.

1.2 Cause of Aging:

The cause of aging is measured by two major factors: (I) primarily by fertility rate and (II) secondary by mortality rate. The another factor which contributes in the aging process is the lengthening of life expectancy. In Korea, the two most important reasons for demographic transition is declining fertility rate and rising life expectancy. The fertility transition occurred in the post- Korean War (1950-53) years because of the Baby boom. However, demographic changes started taking place in the early 1960s. The Five Year Plan (1962-67) was introduced to fuel economic growth. Soon it was realised that increasing population is undermining economic growth rate and therefore, the National Family Planning Programme was introduced in 1962. Before 1962, Korea was almost a 'natural fertility' society, but after introducing National Family Planning Programme, fertility rate started falling with the rapid pace. As recent as 2013, the total fertility rate is 1.19 which is below replacement level. The successful implementation of the Five Year Plan raised the standard of living of the people and made great progress in the field of health care and medical field which further help improved the health of the masses. As a result, life expectancy of the people increased significantly. As recent as 2013, the average life expectancy of Korean is 81.9 years. The total mortality rate in 2007 was 512.2 per 100,000. Furthermore, extensive industrialisation and urbanisation brought out by the Five Year Plan led to the breakdown of traditional family system and support mechanism for the elderly people. Massive migration took place from rural areas to urban areas in search of better education and employment opportunities which further gave rise to nuclearisation of families and brought a change of value on piety and care duty. With growing employment opportunities, Korean women started working which further led to decline in the fertility rate in Korea.

1.3 Literature Review:

The literature on the proposed research has been categorised into four broad themes. The first theme, "Demographic Transition" includes set of literature dealing with the declining 'fertility rate' and its implication in the Korean Society. The second theme "Socio-economic Environment deals with the set of literature that explains young age dependency and old age dependency in different time period and their impacts on the working class. The third theme, "Decline in the Workforce" deals with the set of literature that describes structural age composition and its impact on the Korean Society as a whole. The fourth theme "Gaps in Literature" deals with the set of literature that describes the gaps in the welfare system and the National Pension System. It also includes literatures which have made attempts to understand the implications of aging in South Korean society.

1.3.1 Demographic Transitions

Howe, Neil. et.al. (2007) write in the report: The Aging of Korea Demographics and Retirement Policy in the land of the Morning Calm: The demographic transition in age structure began in South Korea early in the 1960s with the introduction of Nationwide Family Planning Programme and its effective implementation during the last three decades. The motive of effective implementation of the family program was to slow population growth and raise per capita living standard. The government advocated a three child policy in 1968, a two child policy in 1971, and a one or two child policy in 1980s. This family policy further reduced to the one child policy expressing concern that the Land of Morning Calm will overflow with the people.

Sung-Jae Choi and Hye-Kyung Suh (1995) write in the book 'Aging in Korea: Today and Tomorrow'. The development of public health and medical science also contributed in the life expectancy of the masses. The inevitable change in age structure helped transform the composition of the population from 'pyramidal shape into a ball shape'. The main reason for Korea's rapidly aging society is the decline in fertility rate and mortality rate. This demographic transition gives the idea of changes in age structure in the following way:

1) The size of youth population will decline 2) the number of the working population will downsize; and 3) the number of the elderly population will continue to increase steadily.

Kim, Mee Hye (2005) writes in the book: *Coming the aged Society in Korea: Challenges and Responses*: The total fertility rate in Korea rapidly declined from 6.0 in 1960 to 2.83 in 1980. Since then, the total fertility rate has been fluctuating in between 1.6 and 1.8. In 2002, the total fertility rate has further gone down to 1.17. Recently, the total fertility rate indicates little improvement and reaches to a new level of 1.19 in 2003. The total mortality rate declined from 574.4 in 1983 to 512.2 in 2002 per 100,000. The infant mortality rate decreased from 83 persons to 5.07 persons during 1960 to 2002. The child mortality rate decreased 4.7 to 1.3 for males and from 4.5 to 1.2 for females during 1970 to 2002. In addition to that the maternal mortality rate declined from 64 to 15 during 1991 to 2002. The average life expectancy increased markedly from 52.4 to 79.6 during 1960 to 2007. The other factor that contributed to the decline in fertility rates in Korea is markedly due to delaying motherhood. The average age of having a first child increased from 26.5 to 29.1 during 1995 to 2005. Postponing first childbirth in general leads to fewer child birth due to biological complications. In addition to that the ratio of single women aged 25-29 increased from 39.5 percent to 59.1 percent during 2000 to 2005. The median age of Koreans increased from 19 to 35.1 years during 1960 to 2005.

1.3.2 Socio-Economic Environment

Wayne Arnold (2014) writes in the article, "Why Asia's Greying Matters". The East Asian Economic Model was pioneered by Japan and successively emulated by the Newly Industrialised Countries (NICs). This economic model was adopted in South Korea in the early 1960s and brought economic development in the southern part of the Korean peninsula. And this economic miracle is termed as the '*Miracle on the Han River'*. With the economic development, Korean Society experienced urbanisation, modernisation and nuclearisation. In the process, the new generation of the post Korean War moved on to get higher education in order to fit into the labor market which transformed them into career oriented workforce. As a result, late marriage culture was developed not only from the male side, but also from the female side. Effective family planning program also

fueled their motives. Further, its consequences were realized in terms of declining workforce and falling fertility rate per women.

Mee Hye Kim (2005) writes in the book, '*Coming the aged Society in Korea: Challenges and Responses*'. The three age group: youth age group (aged 14 and under); working population (aged 15 to 64) and; the aged population (aged 65 and over), started experiencing change in the age structure. The youth age group is experiencing negative growth rate; working population is declining with each passing year and the aged population is increasing steadily. Change in the age group brings shifts in the dependency ratio from youth age group to the aged group. This shift doubled the burden of the working age group in terms of care and support. It is becoming hard for couples to rear child and care for the elderly at the same time. This is because of the high educational fee, living cost and medical cost. In addition to that the life expectancy rate is going high steadily in Korea, which demands the prolonged care and support for the elderly. Caring and supporting elderly does not include only financial help but also support at the family level to help in their daily activities.

Sung-Jae Choi and Hye-Kyung Suh (1995) write in the book 'Aging in Korea: Today and Tomorrow', 'with advancing age, aged people suffer from 1) economic difficulties 2) ennui 3) health problems and 4) alienation from society. Economic difficulties arise in the late phase of retirement because of the rise in living costs and medical cost. Ennui arises because of the use of cutting edge technology and changing work culture in the job market. These changes in the job market make them vulnerable at the working place and thus met with job dissatisfaction. The most common health related problems are 1) arthritis 2) cardiovascular diseases and 3) the disease related to the digestive system. Furthermore, the nuclear family is increasing at a faster rate, which alienate the aged/ elderly people from a family system at first and then at the social level at large. In addition, the numbers of elderly people are increasing steadily so the government support mechanisms are also not at par with numbers. The situation has thus transformed and created havoc on the working people at large.

1.3.3 Decline in the Workforce

Lee Kwack et al. (2005) write in the book '*Labor Cost, Productivity and Growth Implications of Population Agin'.* South Korea is undergoing through rapid increase in the old age population and a sharp decline in the young age population. This undergoing change is not only impacting the total annual population growth, but also working population shares in the labour market. The impact is so much and so high that the working population is shrinking year by year, followed by the dependency ratios of the duos the elderly population and young age population. The aged dependency ratio is defined as the number of the elderly person aged 65 and over divided by the working age population and then multiplied by 100 whereas the child dependency ratio, i.e. the number of the person 0 to 14 years divided by the working age population and then multiplied by 100. In other words, a total dependency ratio is the sum of two dependent population groups aged 0-14 (youth) and aged 65 and over (the elderly) divided by the working population and then multiplied by 100. In either of the two cases, the working age population is facing social and economic difficulties backed by the two dependent classes. The working age populations are those who are engaged in the labour market under ordinary circumstances. The aged dependency means how many old age populations have to be supported by 100 working people or economically active people. The aged dependency ratio is can be translated into demographic burden in the sense that the existing economically active population has to support social security and medical expenses of the old age people. The share of elderly aged 65 and over increased rapidly from 3.4 percent in the 1960s to 8 percent in the year 2003. Furthermore, the elderly population above 80 increased from 0.3 percent to 1.2 percent in 2002. However, the young age decreased from about 80 percent in 1960 to 28 percent in 2003. In addition, aged dependency in Korea has increased rapidly from 6 percent to 12.1 percent during period from 1980 to 2004. This suggests that about 16 workers needed to support 1 elder in 1960 which reached a new low of 8 workers to support 1 elder in 2004.

Florence Low-Lee (2009) writes in the article 'Is Korea Ready for the Demographic Revolution?'. South Korea's population grew during the period 1949 to 1955 with an average age of 1.1 percent, followed by a sharp increase in annual average during the

period of 1955 to 1966 leading to 2.8 percent. Thereafter, the population growth declined, leading to 1.7 percent between 1966 and 1985. Korea's population reached a new height of 47.0 million in 2000. It is projected that the population will reach its peak point in 2018 at 49.4 million. Thereafter, the population will show negative growth rate leading 48.6 million in 2030, 42.3 million in 2050 and 16.2 million in 2100. If this trend will go on then the country will lose one half of the total population. This loss in the total population will translate into the loss of the working age population. The working age population will reach its peak point in 2016 at 36.2 million. Then, the number of working age population will steadily decrease, leading to 34.1 million in 2016 and 24.42 million in 2050. If this trend will go on then by 2050, South Korea will lose one third of its working age population. Furthermore, the elderly population will keep rising and by 2019, the elderly population will surpass the young age population aged 15 and younger age group. By 2026, the elderly people will comprise one out of five Koreans.

Mee Hye Kim (2005) writes in the book '*Coming the aged Society in Korea: Challenges and Responses'.* Transitions in various age groups are the outcome of social, cultural and economical changes in the country. The direct causes of aging are declining fertility rate, mortality rate and rise in life expectancy. These changes occurred due to modernisation, followed by higher education, industrialisation, urbanisation and family nuclearisation. These changes will not only impact the dependent groups, but also economically active groups which in turn will hamper the economic growth of the country.

1.3.4 Gaps in Literature

Social welfare programmes were introduced in the early 1960. Under the governance of Park, Chung- hee, the programme was based on the Residual Concept of Welfare. The residual concept of welfare indicates minimum involvement of government in providing social welfare services. This welfare continued till 1997 when the Asian Financial Crisis took place. This crisis brought Korea on the brink of bankruptcy and forced Korea to restructure its economy. In doing so, the unemployment rate grew manifold and threw employed worker involved in organised sector or in the unorganised sector into poverty. At the end of 1990s, a shift in welfare programme took place under the leadership of Kim, Dae-Jung taking account of financial crisis. In 1998, Kim Dae-Jung advocated the idea of

'Productive Welfare Programme'. The objective of the productive welfare programme was to help boost economic development of the country and also to reduce the burden of vulnerable groups hit by the crisis. The successor of Kim Dae-jung, Roh Moo-hyun in 2004 went one step further and launched 'Participatory Welfare Programme. This programme was nothing but an extended version of the 'Productive Welfare Programme' which enables the interested participants to take part in the implementation and decision making on welfare policies and services. In 2008, Lee Myung-Bak came into power and introduced "Active Welfare Programme which calls for "welfare through work". The objective of this welfare programme was to shift welfare beneficiaries to the labour market.

On the other hand, Starting with 1960s Korea had introduced Special Pension Schemes for both public sector and private sector employees but it was limited in its scope and dimension and brought three categories under the schemes namely government employee, the armed forces and private sector employee. The government employees and the armed forces employees became part and parcel of the program since the 1960s while private school teachers in 1970s. Later in 1988, the government launched National Pension System (NPS) and made it available for the wide range of workers but in a phased manner. Initially, it was meant for the firms having 10 or more employees or 25 percent of the workforce. Starting with 1990s, NPS was further extended and facilitated smaller firms, farmers and the self- employed persons. The objective of the extended NPS system was to help maintain the same standard of living of the workforce as enjoyed previously. In the beginning, the aim of the NPS has been to provide 70 percent of their average lifetime income by just contributing 6 percent at the most. Later in 1998, this plan was revised and called for 60 percent of replacement by contributing 9 percent of their income. However, the number of the contributors, economically active people are shrinking in one hand and the number of recipients, aged people is increasing with rapid pace on the other hand. This gap will make NPS under funded and over extended. This can be translated into the increase in the contribution rate of the contributor, the working force in near future. In addition to that the existing payment system does not cover the benefit for all the retirees. So it has become urgent to reformulate the current welfare policy and pension system to meet the social efficiency and equality in the Korean society.

1.4 Definitions, Rationale and Scope of the study:

The Study is an assessment of the Aging Society in South Korea. The aging of a country raises microeconomic issues which are linked with health care, and other services for the welfare of the elderly. The study also deals with various government initiatives that brought demographic transition in South Korean society. The time period begins from 2000 as this was the period when Korea became an "aging society". The study covers up to 2013 as the fertility rate reached a new low of 1.19 children per woman in 2013. If nothing is done to stop falling fertility rate, South Korea will be 'extinct' by 2750. The last Korean will be born in 2413, and the most vulnerable city is Pusan. In addition to that the Korean National Assembly has revised retirement age extending it 60 years, both in public and private sectors which will come into effect starting 2016.

The study utilises arguments promulgated by 'Role Theory'. As it is evident from the review of the literature that today South Korea is facing numerous issues at social and national levels due to aging of South Korean society. The working people of the country are shrinking at an enormous rate and affecting labour market in the long run.

The study has its limitation in that it is not an in depth study of saving and government finance but rather it is a study of South Korea's Population Policy, Welfare Policy, Social Security System, Impact of Aging in the Workforce and Impact Assessment of the Workforce in the Manufacturing Industries with description. The various aspects of macroeconomic issues will not be touched upon by the researcher in this study. It rather explores microeconomic issues at the social level.

1.5 Research Problems:

1.5.1 Research Questions

What are the implications of aging?

The major implications and consequences of aging in Korea are declining fertility rate, rising life expectancy, declining population growth, shrinking working age people, increasing elderly people, increasing dependency ratios, increasing burden on the pension and health care system, changing family structure and living arrangements.

Is it possible to reverse Korean National Family Planning Programme?

In order to understand Korean National Family Planning Programme, it is essential to understand what led to the implementation of the National Family Planning Programme. In the post-war (1950-1953) era, baby boom took place. The policy makers of that time acknowledged that increasing population is undermining economic growth and hence introduced the National Family Program in line with the Five Year Plan. The objective was to slow down population growth rate, i.e. to bring down fertility rate. The motive was realised in 1983 when the fertility rate dropped from a TFR of 6 in early 1960 to replacement level of 2.1. In order to limit births, the government promulgated various slogans. For example, "Untapped Parenthood traps you in poverty", followed by "Son or daughters, stop at two and raise them well'' in 1970s. In 1973, the government made abortion legal and by 1983, medical insurance and maternity care for women with three or more children were suspended. Public and private agencies joined hand in hand in fostering and stimulating married couple to have fewer children in the late 1980s. These effective policies led to rapid decline in fertility rate. The 1997 Asian Financial Crisis hit the labour market and hence the unemployment rate went down from 8.7 percent in 1997 to 19.4 percent in 1998. In 2008, the Global economic crisis took place which further hit Korea. Other factors like housing and education is too expensive in Korea and exerts a tremendous impact on young people. This is why young people tend to remain either single or do not prefer to have children. In the late 1990s, various policies were implemented, but none of these brought desire result. As of now, no policies or public opinion has become successful in reversing National Family Planning Programme.

To what extent Welfare System of South Korea is successful.

Social welfare programme was launched early in the 1960 under the governance of Park, Chung-hee which was based on the residual concept of welfare, and that involves minimum support of government in facilitating social services. Later in 1998, productive welfare system was introduced under the leadership of Kim, Dae-Jung which has been just after the Asian Financial Crisis (AFC), 1997. The objective of this welfare was to maintain economic development and to minimise the difficulties of the poor, low income class and even the middle class who went through disintegration of their families. In 2004,

Noh, Moo Hyun government came into power and introduced participatory welfare, which was nothing but the extension of the productive welfare system which focused on the participation of interested person like beneficiaries, professional, and experts in decision making on welfare policies and services. In addition to that Noh, Moo Hyun government also took notice of low fertility (1.17) and aging. For this, the government established the president Advisory Committee of Aging and Future Society that formulate the report on national strategies to implement countermeasures against low fertility and aging society. But as recent as of 2013, the fertility rate is 1.19 and the number of the elderly person has increased manifold in recent years and is moving on to fall in the bracket of "aged society" in 2018. That indicates that little improvement is seen in terms of fertility rate, but does not strive to achieve the replacement level yet. In 2008, Lee Myung-Bak introduced 'Active Welfare' which was meant to shift beneficiaries to the labour market. But the number of beneficiaries is continuously increasing due to population aging, which is placing a heavy burden on National Pension, healthcare system and other welfare programme of the nation.

To what extent National Pension System is successful.

The National Pension System (NPS) has been established in 1988. The objective of the NPS was to facilitate high income replacement to those with low income level, and low income replacement to those with a high income level to ensure income of those with low income. The sole purpose was to provide all retirees guaranteed income upon retirement to maintain a standard of living irrespective of their previous income level.

However, the number of elderly people is growing with a rapid pace on one hand and the number of working age people is shrinking on the other hand because of aging. That indicates that there are few people to contribute and more people to receive benefits. This phenomenal change will make the NPS under funded and over extended.

Can development in the field of biomedicine bridge demographic transition?

Development in the field of biomedicine brings change in mortality rate. That implies that with the declining mortality rate, the life expectancy increases. Korean society has experienced both decline in mortality rate and increase in life expectancy since the late

1960s. For instance, life expectancy in 1965 was 61.8 and in 1971 it was 71.6 years, which is mostly because of marked decline in the children and young age group. The decrease in the mortality rate of extremely aged people was also seen since the late 1960s. As recent as 2013, the life expectancy of the people is 81.9 years.

On the other hand, Korean society is moving with rapid pace and is expected to become aged society in 2018. This is in line with the marked decrease in the Total Fertility Rate (TFR) and rapid increase in the life expectancy which led to increase in the number of the elderly people. This suggests that the number of young age people is decreasing and the number of the elderly people is increasing, creating a drift in the demographic structure of Korean society. Therefore, the development in the field of biomedicine can only enlarge the gap in demographic structure in Korea instead of bridging the demographic transition.

What is the impact of aging on labour productivity and workforce performance?

The impact of aging is that the cognitive abilities of the elderly people decline in older age. Cognitive ability is the ability of intellectual functioning which comprises of numerical capabilities and mental reasoning. This decline in cognitive abilities can be counterbalanced, slightly by experience and more on job training and learning. The elderly people with accuracy and experience perform their jobs slowly, although their performance is balanced by a better quality of their products. On the one hand, the productivity of younger workers could be higher because of their schooling and experience, depending on the circumstances of workplace in society to which they belong.

On the other hand, elderly people may come across hurdles in acquiring new skills and performing new tasks at hand. In addition to that they take more time for learning and accommodating. Thus, productivity of the elderly workers declines with growing age. However, there are some instances that suggest that the elderly people are as productive as younger workers. Nevertheless, in overall performance, the younger workers are more productive than the elderly workers.

However, the participation rate of elderly in labour market is increasing continuously in recent years while the labour force participation of the working age population is decreasing gradually so the overall productivity of the workforce will decline.

How old aged people are affecting the lives of economically active people?

Korea has become an aging society in 2000 and is on the verge of becoming an aged society in 2018. The cohort effect of aging is that the number of the elderly people is increasing; working age population is shrinking and youth age group is experiencing negative growth rate. This structural change in age brings shifts in the dependency ratio from young age dependency ratio to old age dependency ratio, which indicates that working age people have to support both young age people and old age people. However, the financial conditions of the working age people do not allow them to do so because of high education fee, living costs and medical costs. In addition to that with growing age, elderly people need more care and support in activities of daily living which makes the elderly dependent on the working age people. Thus, the elderly people are affecting the lives of economically active people in multiple ways.

What are the measures that the government has taken to support old age people?

In light of a growing number of the elderly people, the government has taken numerous measures to support old age people, which includes social insurance, public assistance, social welfare service which includes welfare for the elderly, Governmental Master Plan for the elderly welfare of the 21st century in 2002, the President Advisory Committee of Aging and Future Society in 2004, First Basic Plan for Low Fertility and Aged Society in 2006.

1.5.2 Hypotheses

- *Quality, quantity and performance of the workforce are affected by aging society.*
- *Aging affects Korea's manufacturing based economy, which relies heavily on the supply of labour.*

1.5.3 Research Methods

The methodology in this study uses deduction method. The study analyses the causes which set off the phenomenon of aging as the cohort effect. This examines the development of a bygone period through qualitative analysis. The core area for the research is South Korean society. The Independent variable will be "Aging", the dependent variables will be the "Workforce" and the intervening variable will be the performance. The study will be descriptive and analytical of primary and secondary data. The study analyses the primary and secondary sources comparatively within the existing situations. The primary sources include government documents-Statistics Korea, reports from the Korea National Statistical Office, Korea Institute for Health and Social Affairs, National Health Insurance Service, Committee on Health and Welfare for the elderly (2002), archival materials and the other secondary sources will include books, journals, articles, online articles, online newspapers, articles and magazines.

1.6 Chapterisation:

Chapter 1

Introduction:

This chapter examines the factors which brought demographic transitions in Korea since 1960s. For example, the successful implementation of the National Family Planning Program in 1962 led to decline in the total fertility rate. The total fertility rate was 6.0 in 1960 which declined to below replacement level of 2.1 in the early 1980s. As of 2013, the total fertility rate is 1.19. In addition to that the successful implementation of the Five Year Plan brought significant changes in the standard of living and in the public health and medical field which increases the life expectancy of Korens thereby increasing the number of the elderly in the society. As of 2013, the average life expectancy is 81.9 years. This chapter also examines the subject of research, concept of aging, cause of aging, literature review, definition, rational and scope of study and research problems.

Chapter 2

Policy Response to Aging in Korea:

This chapter examines the development of Population Policy, Welfare Policies and Social Security system of Korea. Population policy of Korea could be categorised in three groups: (I) National Family Planning Programme or Anti-natal Policy which aimed at slow down the fertility rate (II) Population Quality and Welfare Improvement Policy which aimed at to maintain fertility rate for socio-economic development and (III) Pro-natal policy which aimed at to encourage fertility rate. But none of the pro-natal policies have been successful till date.

Welfare programme in Korea was introduced in the 1960s based on the residual concept of welfare. The paradigm shift in welfare in the late 1990s helped reduced inequality to some extent from the late 1990s onwards. Social Security System of Korea was transformed in the early 2000s, which brought changes in the Korean Society. This chapter examines population policy, welfare policies and social security system of Korea with description.

Chapter 3

Impact of Aging in the Korean Workforce:

This chapter examines the rapidity of population aging, impact of population aging and related indices of population aging like proportion of the aged population, various dependency ratios, aging index, median age, labour force participation rate, sex ratio of the elderly, proportion of the working age population, living arrangement of the elderly, impact of aging workforce, legislative change in the retirement system, quality, quantity and performance of the workforce and heavy burden on the National Pension and Health Care System.

Chapter 4

Impact Assessment of the Workforce in the Manufacturing Industries:

This Chapter examines the change in the workforce brought out by aging in Korean

society and how this change is posing an impact on the industrial sectors particularly manufacturing industry. This chapter also includes the influence of age on the productivity of the workforce and how the increase in the number of elderly is placing heavy burden on the economic output as well as on the social well-being of the nation.

Chapter 5

Conclusion:

This chapter summarises the overall findings of the study including cause of aging, policy response to aging, impact of aging, impact of aging in the workforce, impact of aging in the manufacturing industries and will suggest some policy measures for Aging Korean Society.

Chapter 2

Policy Response to Aging in Korea

2.0 Introduction:

Korea introduced the National Family Planning Program in 1962 to control population growth. The objective of this program was to lower down the annual population growth rate and the total fertility rate. To achieve this target, this program was effectively implemented through the successive Five Year Plans. In order to achieve Family Planning goals, this program was connected with other field such as the mass media and private clinics and hospitals. As a result of extremely effective government led policies, Korea's fertility rate declined in 1980s. The National Family Planning Program succeeded in its objective to bring down the fertility rate to below replacement level in the early 1980s. Sooner consequences of fertility decline were experienced in terms of an increase in the elderly population and decrease in the working age population.

This chapter examines the development of Population Policies, Welfare Policies and Social Security Systems of Korea that has taken place which had been introduced by the government to decrease the fertility rate and then to maintain fertility rate and welfare and social security schemes to support low income class and the elderly. For example, the government has established a committee on aging, that prepared the Master Plan of Health and Welfare for the Elderly in the 21st century in 2002. In 2004, the Roh Moo-Hyun government has established the President Advisory Committee of Aging and Future Society and focused on low fertility and aging issues. This committee made reports on national strategies to enforce countermeasures against Low Fertility and Aging Society. In 2006, the First Basic Plan for Low Fertility and Aged Society (2006-2010) was established. The objective was to develop environments in support of child rearing, to improve quality of life for the elderly in an aged society and to maintain continuous economic development in low fertility and aging society. The Second Plan (2011-2015) will be in line with the First Plan with the objective of gradual improvement in fertility rate and integration of the social mechanism for an aged society and then will be followed by the Third Plan (2016-2020) with the objective of bringing fertility rate at par

with the average level of OECD[1] countries. In 2010, the government also launched Saeromaji Plan 2010 to solve the problem of low fertility and increasing number of the elderly population. The government also launched Vision 2020 Plan to shift some of the burden of child-rearing and care of the elderly- from the family to the general society. The development in welfare policies took place to address low income class and vulnerable people. The Social Security System was established for all the masses, especially for the elderly people.

2.1 Development of Population Policy in Korea:

Korea's Population Policy that had been in practice since 1962 could be grouped into three broad categories: (I) National Family Planning Program or Anti-Natal Policy (1962-1996) (II) Population Quality and Welfare Improvement Policy (1996-2004) and (III) Fertility Encouragement Policy or Pro-natal Policy (2006 ~)

2.1.1 National Family Planning Programme or Anti-Natal Policy (1962-1996)

In 1962, the government implemented National Family Planning Programme in order to maintain continuous economic growth. The government assumed that the population growth was undermining economic growth. For this government used National Family Planning Programme as a tool to curb the fertility rate. In order to control population growth, Korea's family programme was linked to the National Health Network, private clinics and mass media. In the early stage, the main focus was to provide contraceptive and information services through family planning workers at the health center and designated private physicians. The most important reason to adopt such plan was to focus on rural areas because the fertility rate was very high in comparison to urban areas and contraceptive use was uncommon in rural areas. Also, rural areas population constitutes 70 percent of the total population in 1960.

Further, the Planned Parenthood Federation of Korea (PPFK) established PF-Mother's Club to improve overall family planning programme in 1968. The objectives were as

[1] Organisation for Economic Co-operation and Development (OECD), Paris

follows: 1) create a local voluntary movement of mothers to encourage contraceptive practice 2) to aid family planning workers in finding new contraceptive users 3) to serve as a channel for family planning information and contraceptive supplies 4) to encourage participation in community development activities.

2.1.2 Population Quality and Welfare Improvement Policy (1996-2004)

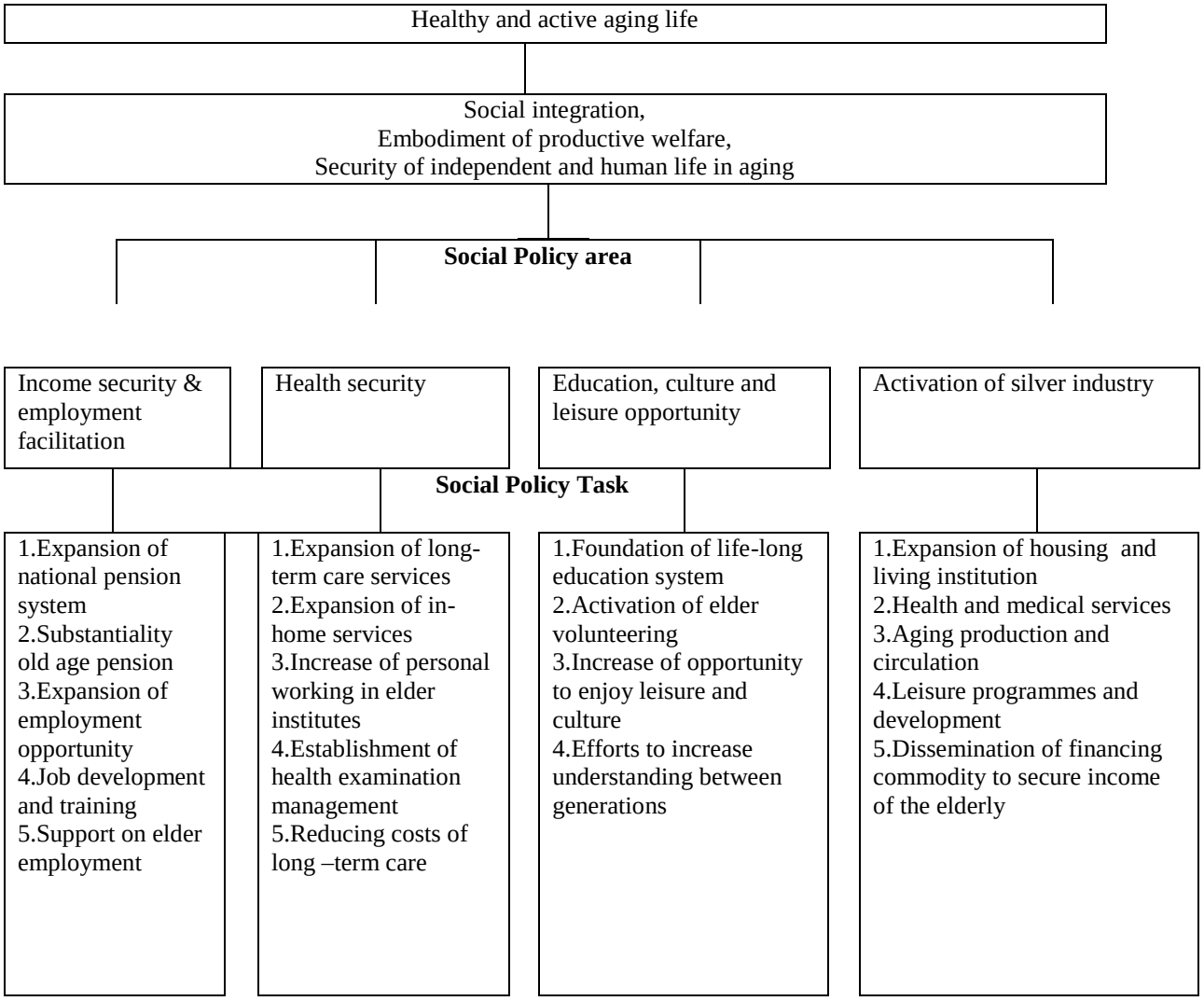
In 1995, the government organized a Population Policy Deliberation Committee to examine population policy emphasizing on past achievements and future possibilities. Consequently, in 1996, the government adopted Quality and Welfare Improvement Policy while abolishing fertility control policies. This policy aimed at: (I) to keep the rates of fertility and mortality at levels required for socio-economic development (II) to promote family health and welfare (III) to balance the sex ratio at birth (IV) to promote women's labour force participation and welfare (V) to promote the health and welfare of the elderly population (VI) to achieve a balanced distribution of the population across the country. However, the total fertility reached to 1.56 in 1997 in spite of the establishment of population quality and welfare improvement policy. The fertility rate has further declined to 1.08 in 2005 leading to structural change in the age group especially in the elderly age group.

On the recommendation of the Academic Society of Aging, the government established a committee on aging, which prepared the Master Plan of Health and Welfare for the elderly of the 21st century in 2002. This plan has the ability to bring a healthy and active aging life, which ushers social integration, embodiment of productive welfare and security of independent and human life in aging.

Under this plan, social policy has been recommended in four areas and each social policy consists of policy tasks. Four areas of social policies include: (I) income security and employment facilitations (II) health security (III) education, culture and leisure opportunity and (IV) activation of the silver industry.

The tasks of income security and employment facilitation includes expansion of the National Pension System, sustainability of old age pension, expansions of employment opportunity, job development and training, and support with elder employment.

Figure 2.1 The Master Plan of Health and Welfare for the elderly of the 21st century in 2002



Source: Committee on Health and Welfare for the Elderly (2002), Report on Comprehensive on Health

The tasks of health security consist of expansion of long-term care services and in –home services, increase of trained care workers in elder institutes, establishment of health examination management and reducing costs of long-term care.

The tasks of education, culture, and leisure opportunity consist of the establishment of a lifelong education system, activation of elder volunteering, increase of understanding between generations.

The tasks of activating silver industry consist of the expansion of housing and living institutions, health and medical services, aging products and circulation, leisure programmes and developments and dissemination of financing commodities to secure income of the elderly. This plan was at par with international recommendations.

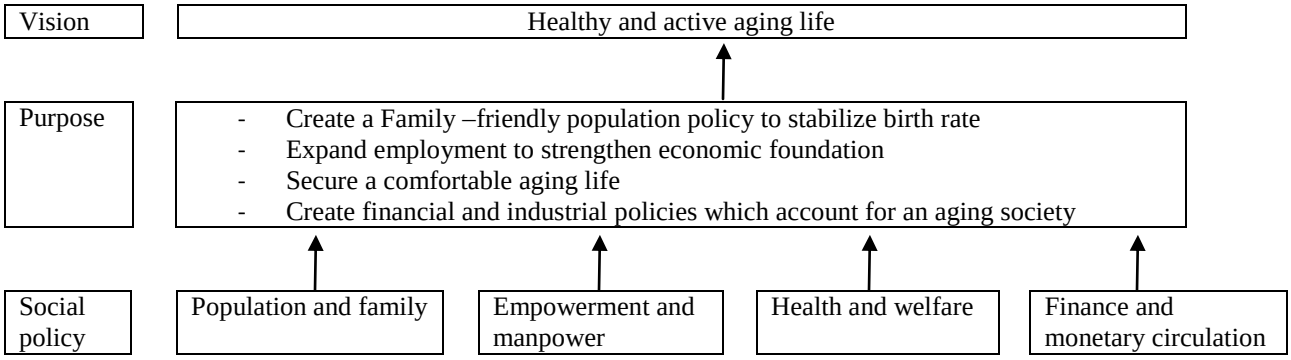
Furthermore, to deal with the low fertility and aging society, Roh Moo-hyun government established the President Advisory Committee of Aging and Future Society in 2004. This committee developed report on national strategies to enforce countermeasure against low fertility and aging society. This report was, to a great extent, similar to the Master Plan of Health and Welfare for the elderly of the 21st century, which was established in 2002 consisting of four purposes, including a focus on population: (I) create a family-friendly population policy to stabilize birthrate; (II) expand employment to strengthen the economic foundation; (III) develop a secure and comfortable aging life; and (IV) create financial and industrial policies which account for an aging society.

This report also focuses on the social policies that are grouped into four areas: (I) population and family; (II) employment and manpower; (III) health and welfare and; (IV) finance and monetary circulation.

The population and manpower consists of three policy measure that includes: (I) stability of birthrate through reestablishing values and strengthening support to childbirth and nursing (II) reconcilement of job and housework through sharing the burden of birth and nursing with the society and expansion of child care services (III) upgrade the quality of population through health management system throughout the life cycle and balance of gender birthrate.

Employment and Manpower consist of two policy measures that includes: (I) improvement of traditional practice and institution of employment through reforming a wage system and changing retirement age (II) expansion of employment opportunity and improving capability through job training and health promotion among the middle and aging persons, easing regulations concerning employment.

Figure 2.2 National Strategies to Implement Countermeasures against Low Fertility and Aging Society 2004



Policy measures and tasks	Stability of Birthrate	Improvement of traditional practice and institution of employment	Security of income in later life	Financial balance between income and expenditure and restructure of business
	- Reestablishing value - Strengthening support to children and nursing	- Reforming a wage system - Changing retirement age	-Introducing multiple pension system -Reducing blind spot on income security	Raising financial efficiency Securing national annual revenue
	Reconcilement of job and housework	Expansion of employment opportunity and improving capability	Security of healthy later life	Efficiency on monetary and capital market
	-Sharing burden of birth and nursing with society - expansion of childcare services	-Job training and health promotion for middle and aging persons - easing regulation concerning employment	-Introducing public long-term care insurance -Activation physical exercises in everyday life	Establishing infra of bond and stock market Stabilizing pension and various fund market
	Upgrading the quality of population		Improvement of culture, leisure and education	
	Health management system throughout life cycle Balance of gender birth rate		Activating participation in social life Housing environment	

Source: Byean Jae Gwan (2004), National Strategies against Low fertility and Aging Society – a Korea 2008 Action Plan, Report of population and Aging team in Blue House

Health and welfare consist of three policy measures that includes: (I) security of income in the later life through introducing multiple pension system and reducing blind spots on income security (II) security of healthy later life through introducing public long-term care insurance and activating physical exercise in everyday life (III) improvement of culture, leisure and education through encouraging participation in social life and housing environment.

Financial and monetary circulation consist of two policy measures that include: (I) financial balance between income and expenditure and restructure of business through raising financial efficiency and securing national annual revenue (II) efficiency on monetary and capital market through establishing infra of bond and stock market, and stabilizing pension and various fund market. In fact, this second report covers a complete picture of national planning measure to ensure one's survival in the 21st century of an aged society.

2.1.3 Fertility Encouragement Policy or Pro-natal Policy (2006 ~)

As of now, existing fertility encouragement or prenatal policy includes the First Basic Plan for Low Fertility and Aging Society (2006-2010) Saeromaji Plan 2010 and Vision 2020 Plan.

The First Basic Plan for Low Fertility and Aging Society:

In 2006, the First Basic Plan for Low Fertility and Aged Society (2006-2010) was established. The objective of this plan was to strengthen environments in favour of child-rearing, to set up the base for improving quality of life in an aged society and to maintain economic growth in low fertility and aged society. The First Plan will be accompanied by the Second Plan (2011-2015) with the objective of the gradual recovery of fertility rate and integration of social mechanism for an aged society, and eventually by the Third Plan (2016-2020) with the objective of increase of fertility rate to the average level of OECD countries and effective adjustment for an aged society.

Table 2.1 Policy Measures for Fostering Environments favorable of Childbirth and Childcare in Response to Low Fertility: strengthening responsibility of society for child-birth and child-bearing

1.1 attenuating socio-economic burden of childcare for family with children	1) Extending supports for costs of child care and pre-school education	• Support for day care and pre-school education for 0-4 years old children(subsidy) • Support for free day care and pre-school education for 4 years old children (free of charge) • Support for day care and education for the family with two children or more
	2) Expanding the after-school education to attenuate the economic burden of households	• Improvement of after –school education system and support for the low income class • Provision of voucher for low income class • Expansion of primary day care • Integration of after-school day care and education • Improvement of cyber home education
	3) Expansion of tax and social insurance benefit for the family with many children	• Revision of taxation system in favour of the family with many children • Revision of assessment system for health insurance fee • Introduction of credit system in national pension
	4) Providing various incentives for families with children	• Support for stability of housing for families with children • Providing priority to use of day care facilities for families with children
	5) Reinforcing supports for the adoption family	• Improvement for perception on adoption • Strengthening support for adopting families • Support for fess of adoption • Support for free day care and pre-school education • Introduction of adoption allowance • Increase in subsidy and medical cost for the adopters of disabled children

1-2. expanding childcare infra, with diversity and good quality	1) Expanding public and workplace childcare facilities	• Expansion of public childcare facilities • Establishment of and support for integrated day care facilities • Expansion of workplace childcare facilities
	2) Improving quality of service in the private child-care facilities	• Support for improvements of private child-care facilities service • Enforcements of evaluation certification for childcare facilities
	3) Extending child-care service to meet diversified demands	• Expansion of prolonged day care service • Expansion of all- day care nursery school • Support of helpers for part time day care facilities • Establishment of and support for day care facilities within cultural facilities
1-3. expansion of support for pregnancy and childbirth	1) Establishing the health and nutrition system for maternity and children	• Establishment of professional centres for health of maternity and infant • Establishment of basis for systematic health management of new born babies • Provision of credible information and counselling services for childbirth and childcare • Support for reproductive health program • Expansion national prerequisite vaccination • Expansion of support for health diagnosis and nutritional management for maternity and infants • Nutrition- supplementary management for maternity and infants • Expansion of support for breast-feeding • Protection of maternity from inadequate induced abortion
	2) Providing economical support for couples suffering from infertility	• Support for costs of test-tube baby
	3) Aids for postpartum care and new-born infants of the poor class	• Provision of helper service for maternity protection

Source: Korean Government, The First Basic Planning for Low Fertility and Aged Society (2006-2010), 2006

Table 2.2 Policy Measures for Fostering Environments favorable of Childbirth and Childcare in Response to Low Fertility: fostering of the family- friendly and gender-equal socio-culture

2.1. increasing compatibility between works and home	1) expanding government's supports for maternity leave grant	• Support for small-medium establishments in paying grants • Providing grants for abortion and stillbirth leave • Introducing partner's childbirth nursery leave
	2) diversification of childcare leave and flexibility of labour conditions	• Activation of childcare leave • Introduction of curtailed labour hours during child-care periods • Increasing flexibility of working pattern
	3)Support the women's return to the labour market after their childcare	• Expansion of support for subsidy for women's return to work after childbirth • Support for subsidy for continuing employment of the temporary workers after their childbirth • Operating programmes of housewives' return to labour market • Operating manpower bank of women with career stopped
2.2. formulating gender-equal family and social culture	1) strengthening school and society educations and intensified publicity in lifetime	• School and society educations and intensified publicity in lifetime
	2) strengthening the ties between the family members	• Provision of educational programme and family counselling for family life • Supports for family leisure and culture • Accommodating family-friendly community environment

Source: Korean Government, The First Basic Planning for Low Fertility and Aged Society (2006-2010), 2006

In an attempt to strengthen, an environment suitable for child-rearing, the plan is designed to foster the accountability of society for childbirth and child rearing, promoting a family-friendly and unbiased gender culture, and raising future generation in a proper way. Firstly, responsibility of society for child birth and child-rearing will be fostered through the following measures : (I) existing supports for costs of child care and education, and expanding the after school education to reduce the economic burden of households (II) providing various incentive for families with children, strengthening supports for the adoption family; expanding public and workplace childcare facilities, improving quality of service in the private child care facilities ; and expanding child care service to meet diversified demands (III) establishing the health and nutrition system for maternity and children, providing economical support for couples suffering from infertility and supports for postpartum care and new-born infants of the poor class. Secondly, promotion of the family-friendly and unbiased gender culture is to be accomplished through the following measures : (I) increasing compatibility between works and home through expanding governments supports for maternity leave grant, support for the women's return to the labour market after their childcare, diversification of childcare leave, flexibility of labour conditions, and aids for the family-friendly establishments (II) formulating gender equal family and social culture by educational programme at both school and society; and intensified publicity; and strengthening the ties between the family leisure and culture and provision of education programme for family life. Thirdly, raising future generations healthy is to be attained through providing safe environments for children and youths and observing children's rights.

Saeromaji Plan 2010

The term 'Saeromaji' has been derived from the Korean word *Saero* meaning New and *Maji* means Rendezvous. The Saeromaji Plan 2010 is a pro-natalist policy launched by the former president Roh Moo-hyun in 2006. The government introduced its Five-Year Basic Plan in the large scale project termed as "Saeromaji 2010". The objective of this plan was to deal with both low fertility and the increasing elderly people. This plan entails: (I) stable income of the elderly through an improved public pension system and guaranteed retirement income (II) healthy life for the elderly through long-term care and

senior health management (III) a safe and active life by providing public housing at a low cost and senior friendly public transportation (IV) active participation in society through an expansion of job –creation projects and meaningful voluntary projects. The plan also includes provisions for subsidies for day care, tax and housing incentives for large families, expanded maternity and childcare leave.

Vision 2020 Plan

The government also launched the vision 2020 plan. The plan is constituted to shift some of the burden of child-rearing and care of the elderly from the family to the general society. This is to be achieved through increased child care and after school programs, subsidies for day care and lower taxes for household with young children. Lee(2010)[2] argued that this plan is very clear in expressing that society is accountable as a whole for promoting the next generation and is good for the public.

Korean government spent 10.7 trillion won in 2008 on programmes to increase the birth rate and to deal with the aging populations. Of the total funds, approximately 40 reserved to increase the birth rate and child–rearing drive. However, these policies have not been successful till date because of the country's work culture and gender based society. Korea needs a shift from society to make any pro-natal plan successful.

2.2 Development of Welfare Policy in Korea:

Social welfare programmes in Korea instituted in the early 1960s, but its nature and scope varied with the change in political regimes. In the early 1960s, Park Chung-hee government came into power and focused on export oriented industrialization. The government supported the idea of "liberation from poverty" and put aside distribution and welfare issues, although much social welfare related laws were enacted. The Korean authoritarian dictatorship regimes; Park Chung-hee (1963-1979) and Chun Doo-hwan (1980-88) focused on economic growth and industrialization following state-led growth strategies. Korea's economic growth grew with the rapid pace during this period of 'Growth First & Distribution Later'. The striking characteristics of the growth strategy

[2] Lee, Sam-Sik "Low Fertility and Policy Measures in Korea"

involved strong regulatory system and limited redistribution. The welfare programme often termed as Developmental Welfare State or the Minimalist Welfare State throughout this time. In other words, the welfare programme was based on the residual concept of welfare, which indicates minimum involvement of government in providing social welfare services.

In the meantime, Korea became a democratic country in the late 1980s. Worker's strike became a normal phenomenon across the nation during the transition period from authoritarianism to democracy. The long term objective of the workers' strike was the increment in the wage and also right to form unions. The then government, Roh Tae-woo responded under the rising social pressure and made a minimum wage law and enforced a national pension Programme for private sector workers.

In 1993, Kim Young–sam government came into power and launched, unemployment social insurance scheme and broadened national pension programs to farmers and fisherman. It can be concluded that the government started focusing on income distribution and poverty issues during the transition period (1988-1997).

In late 1997, Korea faced an economic crisis due to the Asian Financial Crisis. The Financial crisis brought corporate restructuring in order to survive, which led to an unprecedented increase in the rate of unemployment. The existing welfare system was not in a position to deal with the social crisis. In 1998, Kim Dae-jung came into power and advocated "Productive Welfare" to deal with the social crisis during and after the crisis. As per World Bank (2004), productive welfare was an ideology that ascertains minimum standard of living for all low- income class workers by providing human resource development programmes to aid self-reliance of the poor and by broadening the coverage of social insurance to all masses. Presidential Committee on Social Inclusion included six specific strategies of productive welfare that consists of: (I) National Basic Livelihood Security Act and four major social insurance progrrammes (II) job security through job creation and human capital development (III) self-reliance programmes (IV) community based public- private co-operation (V) realization of industrial democracy and (VI) expansion of the welfare budget.

Roh Moo- hyun government came into power in 2003 and proposed a different welfare programme in 2004 termed as "Participatory Welfare which was in line with Productive Welfare of the Kim Dae- jung administration. The difference between the two is that Productive Welfare emphasized on minimizing absolute poverty and unemployment in the wake of the Asian Financial Crisis whereas Participatory Welfare emphasized on relative poverty and social polarisation. The objective of Participatory Welfare was to (I) develop a full-fledged national health care system (II) promote the national welfare with focus on guaranteeing minimum livelihood, childcare and support for senior citizens and the handicapped and (III) create a prosperous and stable society. It also sought to (IV) foster a society of balanced development between economic growth and distribution, different regions, different classes, labour and management and (V) promote sustainable development and gender equality. In other words, participatory welfare was the successor of productive welfare with inclusion of new measures to promote equality, inclusion and gender protection, especially for groups such as women, elderly, children and irregular workers who were out of focus earlier.

In the meantime, Korea was turning into an aging society with a rapid increase in the elderly population. To solve the problems of rapid population aging, Roh Moo-hyun government adopted measures to balance child birth rate, family –work balance policies and work for the aged. The Roh Moo-hyun government also fostered gender equality by setting up fair and transparent institutions such as the Gender Discrimination Improvement Commission. The government supported elderly employment by broadening the list of professions in the Aged Employment Promotion Act, especially allowed to the elderly from 70 categories to 160 categories in 2003. In 2005, foreign workers permit system was adopted to safeguard the right of foreign workers and to facilitate small and medium-sized enterprises' (SMEs') recruitment of workers.

In 2008, Lee Myung-Bak came into power and put an emphasis on business friendly policies and tax reduction. That implies that the welfare programme during Lee Myung-bak regime was in line with market based policies. Lee government proposed many terms such as 'Shared Groth, Fair Society' and 'Symbiosis Society' to define its welfare policies. However, all these terms can be concluded into 'Active Welfare'.

Table 2.3 Development of Welfare Policies in Korea

Period	Regime	Welfare Policies
Authoritarian Dictatorship	Park Chung-hee (1963-1979), Chun Doo -Hwan (1980-1988)	- Growth First, Distribution Later - (Developmental Welfare State or Minimalist Welfare State)
Democratization	Roh Tae – woo (1988-1993), Kim Young –sam (1993-1998)	- Transition Period
Democratic Government	Kim Dae –jung (1998-2003), Roh Moo –hyun (2003-2008), Lee Myung –bak (2008-2012)	- Productive Welfare - Participatory Welfare - Active Welfare

Source: constructed by Lee, Hyun hee et al., ERIA, 2012

Lee government proposed "Active Welfare" which calls for "welfare through work". That suggests that this welfare is a market friendly welfare programme that attempts to shift welfare beneficiaries or pre-beneficiaries to the labour market. According to Kim (2011), Active Welfare is a kind of welfare that enhances social productivity as compared to a passive consumption- centered welfare programme. For instance, the Sunshine Loan Programme and Smile Microcredit programme attempt to enhance the self-reliance of the poor through loans. The Boegumjari Housing prograame supports house purchasing through long terms saving not through rental public housing.

Park Geun-hye came into power in 2013 and announced 'Campaign Pledge Funding Plan' to carry out her administration's agenda. Park government made it clear that welfare programmes of the beneficiaries will not be reduced as the government will adopt rules that allow the welfare programmes to continue for a certain period of time. After the expiry of these programmes, the government will introduce temporary emergency welfare programmes. In recent years, Park government also asserted that the government is committed to expand welfare programmes but without raising taxes.

2.3 Social Security System of Korea:

Social security system of Korea consists of three components that include: (I) Social insurance, (II) public assistance and (III) Social Welfare Service.

2.3.1 Social Insurance

Social insurance is of four types: (I) Health Insurance including Long Term Care Insurance (II) National Pension (III) Industrial Accident Compensation Insurance and (IV) Unemployment Insurance.

Health Insurance and Long Term Care Insurance: Meaning of health insurance is to improve public health and promote social security by paying insurance benefit to prevent, diagnose, treat, and rehabilitate people's disease or injury and prevent death or for health promotion. Service benefit includes health care benefit, health checkup. Cash benefit includes care expenses, funeral expenses (cancelled), co-payment ceiling system, compensation for excessive co-payment, appliance expense for the disabled, pregnancy and childbirth examination expense.

In recent years, life expectancy in Korea has increased which is also the major cause of aging. It has become difficult to take care of the elderly people. Therefore, in order to cope with this issue, the government enacted a Long-Term Care Insurance Programme in 2008. The programme qualifies the elderly people with difficulties in Activities of Daily Living (ADL). For instance, the elderly with age 65 or more or less than 65 years, but suffer from serious disabling condition such as Alzheimer's disease, Parkinson's disease or paralysis due to stroke is also eligible for this programme. If the elderly people get qualified as a beneficiary, they receive medical services such as bath, laundry and nursing care. The programme is also meant for the elderly Korean who is having difficulty in their daily activities due to geriatric disease. The programme is financed by LTC insurance contributions paid by the insured, government subsidies and co-payments by beneficiaries. This programme aimed at to ease the financial burden on a family caregiver with no income.

Table 2.4 Type of Social Insurance:

Type	Meaning and benefit
Health Insurance	**Improve public health and promote social security by paying Insurance Benefit to prevent, diagnose, treat, and rehabilitate people's disease or injury and prevent death or for health promotion.** **Service Benefits: Health care benefit, health checkup** Cash Benefits: Care expenses, Funeral expenses (deletion), Co-payment Ceiling System, Compensation for excessive co-payment, Appliance expenses for the disabled, Pregnancy and childbirth examination expense
National Pension	**Contribute to people's life stabilization and welfare promotion by implementing the public pension benefit for geriatric disease or death** Pension Benefit: Old-age pension, Disability pension, Survivor pension Lump sum allowance: Pension Refund, Death Benefit
Industrial Accident Compensation Insurance	**Compensate for a worker's industrial disaster rapidly and fairly.** **Install and operate the insurance facilities required for promoting the worker's rehabilitation and return to society.** **Help protect workers by operating businesses for disaster prevention and workers' welfare promotion.** Care Benefit, Temporary Incapacity Benefit, Disability Benefit, Nursing Benefit, Survivor Benefit, Funeral Expenses, Injury & Disease Compensation Pension.
Unemployment Insurance	**Prevent unemployment and promote employment.** **Increase the worker's vocational competency development.** **Strengthen occupational guidance and introduction.** **Promote the life stabilization of the worker and his/her activity of searching for a job by implementing the benefits required for unemployed worker's livelihood.** Stable employment Business Vocational Competency Development Business Unemployment Benefit

Source: National Health Insurance Service (NHIS), Korea

National Pension: The National Pension Programme came into force in 1988 based on the National Pension Act of 1986 which was a successor of the National Welfare Pension Act of 1973. National Pension contributes to people's life stabilization and welfare promotion by implementing the public pension benefit for geriatric disease or death.

Pension benefit of National Pension includes old age pension, disability pension, and survivor's pension. Lump sum allowance includes pension refund and death benefit.

Industrial Accident Compensation Insurance: Industrial Accident Compensation Insurance compensate for worker's industrial disaster rapidly and fairly. It installs and operates the insurance facilities required for promoting the worker's rehabilitation and return to society. It helps protect workers by operating business for disaster prevention and worker's welfare promotion. Its benefit includes care benefit, temporary incapacity benefit, disability benefit, nursing benefit, survivor benefit, funeral expenses, injury and disease compensation pension.

Unemployment Insurance: Unemployment Insurance prevents unemployment and promotes employment. It increases the worker's vocational competency development. It strengthens occupational guidance and introduction. It promotes the life stabilization of the worker and his/her activity of searching for a job by implementing the benefit required for unemployed worker's livelihood. It stables employment business, vocational competency development business and unemployment benefit.

2.3.2 Public Assistance

Public assistance is of two types: National Basic Livelihood Security Act and Medical Aid Programme.

National Basic Livelihood Security Act:

National Basic Livelihood Security Act (NBLSA) was established in 1999 and implemented in October 2000. NBLSA is a replacement of the Livelihood Protection Act started in 1961. The objective of NBLSA is to secure the life of the poor and the low income class who is below the official poverty line. Therefore, the low income class also becomes eligible for a monthly benefit. As per the NBLSA, the low income classes who are earning less than the minimum cost of living are given living expenses irrespective of their age and ability to work. However, this programme is judged by a means test. Furthermore, some of the changes that have been made in NBLSA are full coverage of the social safety net to secure the basic livelihood security for the low income class, a

comprehensive poverty countermeasure to enhance recipients' ability to self-support, and strengthening of the rights of the recipients' and social responsibility regarding poverty.

Medical Aid Programme

The Medical Aid Programme was introduced in 1989 after the enactment of the Medical Aid Act in 1977. The government pays for the all those patients who are unable to pay for health care under the programme. The programme has been expanded after 2004 to cover patients with rare, untraceable and chronic diseases as well as children below 18 years. The programme is jointly financed by the central and local government. This programme aimed to secure the minimum livelihood of low income households and to assist with self –help by providing medical services.

2.3.3 Social Welfare Service

The Social Welfare Service includes welfare for the elderly, the disabled, children, women and medical or psychosocial business. The main beneficiaries of these services include the poorest elderly people who receive instutionalised residential care, the disabled and isolated children who get financial support. In a nutshell, social welfare service was established on the concept of selectivism. That suggests that welfare services are made available only to particular groups who are not in a position to survive in the market economy in the absence of family members.

2.4 Conclusion:

Korea's fertility rate was in much better positions in the early 1960s. But with the introduction of the National Family Planning Programme or Anti-Natal Policy (1962-1996), the total fertility rate went down below replacement level in the early 1980s. Since then, the total fertility rate has continued to exist below replacement level. The government launched a new population policy called Quality and Welfare Policy in 1996. The objective of this policy was to maintain the below replacement level of fertility and the living standards. But that accelerated population aging. In order to cope with population aging, the government launched fertility encouragement policy called Pro-Natal policy in 2006 which includes the First Basic Plan for Low Fertility and Aging

Society, Saeromaji Plan 2010 and Vision 2020 plan. Till date, the policies have not been successful because of the country's work culture and gendered society. The country will need a societal shift in order to make Pro-Natal policy successful. Welfare policy in Korea was minimal till the late 1990s. But the paradigm shift in welfare policy helped reduced inequality to some extent in Korean society since the late 1990s onwards. Social Security System of Korea was transformed in the early 2000s, which brought significant changes in Korean society especially for the low income class and the elderly.

Chapter 3

Impact of Aging in the Korean Workforce

3.0 Introduction:

Korea's demographic transition has started in the early 1960 because of the successful implementation of National Family Planning Programme and Five Year Plan. The two most important reasons for rapidity of Population aging in Korea was declining fertility rate and rising life expectancy. The total fertility rate was 6.0 in the 1960. It reached below replacement level in the early 1980s. Since then it has continued to exist below replacement level. As of 2013, total fertility rate is 1.19 and the life expectancy is 81.9 years. Decrease in fertility rate accelerated population aging in Korea. The proportion of the elderly is also increasing rapidly. In 1970, the proportion of the elderly was 3.1 percent of the total population, which increased to 7.2 percent in 2000. As of 2013, the proportion of the elderly rose to 12.2 percent of the total population. The labour force participation rate of the working age population was 61.2 percent in 2000 which declined to 60.8 percent in 2009 while the labour force participation rate of the elderly was 29.6 percent, rose to 30.1 percent in 2009 and 31.4 percent in 2013. Demographic transition brought out by the decline in fertility rate and population aging has affected not only the age structure in Korean society, but also the proportion of the workforce in the labour market at large.

In this chapter, I shall examine the rapidity of population aging, impact of population aging and related indices of population aging like proportion of the aged population, various dependency ratios, aging index, median age, labour force participation rate, sex ratio of the elderly, proportion of the working age population, living arrangement of the elderly, impact of aging workforce, legislative change in the retirement system, quality, quantity and performance of the workforce and heavy burden on the National Pension and Health Care System.

3.1 Rapidity of Population Aging:

Korea's population aging is not just because of the size of the population, but the pace at which demographic transition is taking place. The UN defines population aging in three categories: (I) Aging Society when the elderly population attains 7.0 percent of the population (II) Aged Society when the elderly population attains 14.0 percent or more; and (III) Super Aged Society when the elderly population accounts for 20.0 percent of the population. Korea crossed the first categories in 2000 and is about to cross the second categories in 2018 i.e. just in 18 years. That indicates that Korea will become an aged society in 2018 when the elderly population will account for 14.3 percent. The size is not much in comparison to other developed countries, but the rapidity is faster in Korea.

Table 3.1 Rapidity of Population Aging

(Unit: Years)

Country	Year			Years Taken	
	Aging	**Aged**	**Super-Aged**	Aging to Aged	Aged to Super-Aged
Korea	2000	2018	2026	18	8
Japan	1970	1994	2006	24	12
France	1864	1979	2018	115	39
Germany	1932	1972	2009	40	37
Italy	1927	1988	2006	61	18
US	1942	2015	2036	73	21

Source: Korean National Statistical Office (KNSO)

France became an aged society in 1979 starting in 1864. The US will become an aged society in 2015 starting in 1942. Japan became an aged society in 1994 starting in 1970. Korea will become an aged society in 2018. This indicates that Korea will become an aged society in a very short span of time, surpassing Japan's legendary for the rapidity of aging, i.e. Japan became an aged society in 24 years while Korea will become an aged society in just 18 years. This unprecedented change in demographic transition is

attributed to the change in the fertility rate and life expectancy. Rapidity of aging brings about social and economical impacts where the change takes place rather speedily.

3.1.1 Transition in Fertility Rate

Table 3.2 Trends in Total Fertility Rate (TFR), 1960-2040

(Unit: in birth per woman)

Year	TFR
1960	6.0
1970	4.53
1980	2.83
1990	1.57
1995	1.65
2000	1.47
2001	1.30
2002	1.17
2003	1.19
2006	1.1
2010	1.23
2013	1.19
2020	1.35
2030	1.41
2040	1.42

Source: (1) Korea National Statistical Office, *Annual Report on the Live Births and Death Statistics (Based on Vital Registration)*, (2) Each Year, Korean Institute for Health and Social Affairs, *National Fertility and Family Health Survey*, Each Year (3) Statistics Korea, [Population], (2003)(4) KNS0, [Population Trends of Korea], (2005)(5) Statistics Korea, [Population Projection for Provinces], (2010-2040)(6) Statistics Korea, [Korea's Population, Low Fertility] (2011)

The fertility rate is defined as the average number of children that would be born to a woman over her lifetime. The fertility rate is also known as Total Fertility Rate (TFR). Korea's fertility rate has started falling since the introduction of the Five Year Plan (FYP) in 1962. The FYP was aimed at to bring economic development. Soon it was predicted that Korea's population growth rate was undermining the economic development of the country and hence launched the National Family Planning Programme (NFPP) in the same year 1962. It was seen that Korean women gave birth to 6.0 children on an average in the early 1960s. But with the introduction of NFPP, total fertility rate of Korea has started falling since the late 1960s. By 1980, Korea fertility rate reached to 2.83 in 1983, the fertility rate reached below Replacement Rate of 2.1 the replacement rate is the rate required to maintain optimum level of population from shrinking from one generation to the next. Thereafter, the fertility rate stabilized at between 1.5 and 1.7 from the mid 1980s to mid 1990s. In 2000, the fertility rate declined to 1.47 and reached to 1.1 in 2006 which was the lowest level in any country in the world. In the early 1960s, it was predicted that Korea will be overpopulated if the fertility rate will continue at the rate of 6.0. In order to maintain the economic development of the country, Park Chung-hee opted to lower the birth rate as part of an overall strategy to slow population growth and raise per capita living standards during 1960 and 1970s. In the 1968, the government advocated three-child policy and a one or two child policy in the early 1980s. The government also involved public and private agencies to lower down the fertility rate. As a result, the fertility rate reached below replacement rate of 2.1 in 1983 within a generation. The fertility rate reached 1.47 in 2000, 1.30 in 2001, 1.17 in 2002, and 1.1 in 2006. As of 2013, the fertility rate reached 1.19. Such falling fertility rate will place a heavy dependence burden of the elderly in the fields of public pension, medical services, nursing and care of the elderly.

3.1.2 Transition in Life Expectancy

Life expectancy is the number of years a person can suppose to live during the lifetime. This is determined by average life span. In Korea life expectancy and average lifespan have increased very rapidly. The reason for the increase is contributed to improvement in

medicine, nutrition, sanitation, the discovery of antibiotics, medical care and economic advances.

Table 3.3 Trends in Age Life Expectancy, 1960-2030

(Unit: years)

Year	Average Life Expectancy
1960	52.4
1971	62.3
1977	64.5
1981	66.2
1985	68.4
1991	71.7
2001	76.5
2002	77.0
2003	77.5
2005	77.9
2007	79.6
2008	80.1
2010	80.8
2011	81.2
2012	81.4
2013	81.9
2020	81.0
2030	81.9

Source: (1) Korea National Statistical Office, [Future Population Projection; 1960-2020 Life Tables for Korea], 1996 (2) Korea National Statistical Office, [Population and Housing and Census; Life Tables for Korea], 2003, 2005, 2008, 2009, 2011, 2012, 2013, (3) Statistics Korea, [Population], (2004) (4) KOSTAT, [Life Tables, Population Projections (2010-2060)], 2011

This is the reason why Korean people are enjoying longer and healthier life. It is predicted that the life expectancy of Koreans will continue to rise because of better living conditions. The increase of life expectancy at birth has led population aging and increasing the number of the elderly aged 65 and over. The average life expectancy at birth was 52.4 years in 1960 which increased dramatically and reached 76.5 years in 2001. It is found that the average life expectancy has been continuously increasing and gained momentum in between 1960 and 2001. As of 2013, the average life expectancy reached 81.9 years. It is predicted that there will be a minor decline in 2020 leading to 81.0 years, but it will gain momentum and will reach 81.9 years in 2030 again which is what it was in 2013.

3.2 Impact of Population Aging:

The impact of population aging is so much and so high that it affected various indices of population aging like proportion of the aged population, various dependency ratios (aged dependency ratio, child dependency ratio), aging index, median age, labour force participation rate, sex ratio of the elderly etc. It also affected the size and proportion of the working age population, living arrangement of the elderly and educational attainment of the elderly.

3.2.1 Proportion of the Aged Person

Korea has been experiencing structural changes in the age structure. This structural change in the age structure is the byproduct of NFPP and FYP which led to the increase in the life expectancy by the improvement in the public health and medical science. The structural change in the age group occurred not only in a single age group, but in all the three age groups: young age group (0~14), working (middle) age group (15~64) and old age group (65 and over). The change is in the progress and will continue to progress which will lead to : (I) young age population will keep declining (II) working age population will increase substantially until the year 2014 and then will decline thereafter

Table 3.4 Trends of Population by Age Group

(Unit: %)

Year	Age Groups		
	0~14	15~64	65 and over
1970	42.5	54.4	3.1
1980	34.0	62.2	3.8
1990	25.6	69.3	5.1
1995	23.4	70.7	5.9
1996	22.9	71.0	6.1
2000	21.1	71.7	7.2
2005	19.1	71.8	9.1
2006	18.6	71.9	9.5
2010	16.1	72.8	11.0
2012	15.1	73.1	11.8
2013	14.7	73.1	12.2
2014	14.3	73.1	12.7
2017	13.4	72.6	14.0
2018	12.7	72.9	14.3
2020	13.2	71.1	15.7
2026	12.9	66.3	20.8
2030	12.6	63.1	24.3
2040	11.2	56.5	32.3
2050	9.9	52.7	37.4
2060	10.2	49.7	40.1

Source: Statistics Korea, [Population Projection], 2006, 2011

and (III) old age population will show upward trend and will cross young age population in 2017. The young age population was as high as 42.5 percent in 1970 but experienced drastic decline within two decades leading to 34.0 percent in 1980 and 25.6 percent in 1990. The young age population reached 21.1 percent in 2000 which is almost half of its population registered in 1970. In 2017, young age population will be 13.4 percent. It is predicted that Korea will become an aged society in 2018 with 14.3 percent of the elderly population surpassing young age population.

The working age population was 54.4 percent in 1970 but showed upward trend within a decade and reached 62.2 percent in 1980. Thereafter, the size of the working age population kept increasing until 2012 leading to 73.1 percent. The working age population remained same in the year 2013 and 2014. Thereafter, it started declining and will reach 72.9 percent in 2018 and 66.3 percent in 2026. It is predicted that it will go as low as 49.7 percent in 2060 which is merely 4.7 percent less than what it was in 1970.

The elderly population was merely 3.1 percent in 1970 but showed upward trend and reached 7.2 percent in 2000. This was the year when Korea became an "aging society". It is expected that the elderly population will reach 14.3 percent in 2018. This will be the year when Korea will become an "aged society" with 14.3 percent of the elderly population. It is also estimated that Korea will become a "super aged society" in 2026 with 20.8 percent of the elderly population. By 2060, the proportion of the elderly will reach 40.1 percent, which will be merely 9.8 percent less than the working age population. This increase in the proportion of the aged person has affected the aged dependency ratio, child dependency ratio and aging index.

3.2.2 Aged Dependency Ratio

The aged dependency ratio is the number of the elderly person aged 65 and over divided by the working age population, and then multiplied by 100. The working age population signifies the population aged 15 to 64 years who have the likelihood of being in the labour force under ordinary circumstances.

Table 3.5 Trends in the Aged Dependency Ratio, 1970-2050

(Unit: per 100 Population, person)

Year	Aged Dependency Ratio
1970	5.7
1980	6.1
1990	7.4
1997	8.9
1998	9.3
2000	10.1
2004	12.1
2005	12.64
2006	13.2
2007	13.8
2010	15.0
2013	16.7
2018	20.0
2020	21.7
2026	30.9
2030	38.6
2040	57.2
2050	71.0

Notes: Aged dependency ratio = population aged 65 or more /population aged 15 to 64 x 100.
Source: Korea National Statistics Office (KNSO), [Population Projection], 2006, Statistics Korea 2011

The aged dependency ratio is closely linked to the demographic weight of the burden that the current working age population has to bear in order to support social security and medical expenses for the elderly. The labour force is the one who supports social and medical cost for the elderly. The aged dependency ratio indicates that how many older persons have to be supported by 100 persons in the working age.

Until 1980, the aged dependency ratio in Korea was 6.1. This means that there were 16 persons in the working age per one old person. By 2000, the aged dependency ratio has increased and reached 10.1. That indicates that there were almost 10 persons in the working age to support one old age person. In 2013, the aged dependency ratio reached 16.7 that means there were 6 persons in the working age to support one old person. In 2018, there will be 5 persons to support one older person as the aged dependency will reach 20.0. In 2026, there will be 3.2 persons to support one older person as the aged dependency will reach 30.9. By 2030, there will be 2.5 persons in the working age to support one older person as the aged dependency ratio will reach 38.6. In 2040, there will be 1.7 persons to support older people and by 2050, there will be 1.4 persons in the working age to support one old age person.

It can be concluded that with the increase in the aged dependency ratio, there is a gradual decrease in the working age people who support or will support the old age people in the years to come. Indeed, the burden of support becomes burdensome. The table shows the projected aged dependency ratio for the years 1970 to 2050. The table shown here clearly denotes the size of the aged to the working age population will increase very rapidly and to a quite substantial magnitude. An increase in the aged dependency ratio may over stress the fast approaching impact of population aging in terms of pension, medical insurance, old adult protection, and other welfare programme for the aged.

3.2.3 Child dependency Ratio

The child dependency ratio is the number of the person 0 to 14 years divided by the working age population, and then multiplied by 100. The child dependency ratio indicates how many young persons have to be supported by 100 persons in the working age. In 1970, child dependency ratio was as high as 78.2. That indicates there were relatively few

elderly persons in proportion of children. However, the child dependency ratio declined to 54.6 in 1980 just within a decade. Since then the child dependency ratio has declined gradually leading to 36.9 in 1990, 29.4 in 2000 and 26.7 in 2005. The aged population reached 47 persons per 100 children in 2005. It is predicted that the aged population will reach 416 per 100 children in 2050. It is predicted that the child dependency ratio will go as low as 17.6 in 2020, 17.4 in 2030 and 16.7 in 2050.

Table 3.6 Trends in Child Dependency Ratio, 1970-2050

(Unit: per 100 Population, person)

Year	Child Dependency Ratio
1970	78.2
1980	54.6
1990	36.9
2000	29.4
2005	26.7
2010	22.3
2020	17.6
2030	17.4
2050	16.7

Source: Statistics Korea, [Population Projections], 2005

Notes: Child dependency ratio is the ratio of the population below 15 years of age to the economically active population i.e. working age population (15-64)

On the other hand, the aged dependency ratio was as low as 5.7 in 1970, reached 7.4 in 2000, 15.0 in 2010 and 16.7 in 2013. It is predicted that the aged dependency ratio will reach 20.0 in 2018, 30.9 in 2026 and 71.0 in 2050.

It can be concluded that the child dependency ratio is declining while the aged dependency ratio is increasing dramatically. Korea is on the verge of a demographic

revolution wherein the elderly will surpass children and will bring numerous challenges ahead in the Korean society.

Table 3.7 Trends in the Dependency Ratio, 1970-2050

(Unit: 100 persons)

Year	Child Dependency Ratio	Aged Dependency Ratio	Total Dependency Ratio
1970	78.2	5.7	83.9
1980	54.6	6.1	60.1
1990	36.9	7.4	44.3
2000	29.4	10.1	39.5
2005	26.7	12.64	39.3
2010	22.3	15.0	37.3
2020	17.6	21.7	39.3
2030	17.4	38.6	46.0
2050	16.7	71.0	87.7

Source: Statistics Korea, [Population Projections], 2005

3.2.4 Aging Index

Aging index is the ratio of the elderly persons aged 65 and over for every 100 young persons below 15 years of age. It is seen that the number of the elderly persons is growing with a rapid pace in comparison with young age group surpassing the child dependency ratio. The aging index was 11.2 in Korea that indicates that there were 11.2 elderly people for every 100 youngsters.

Table 3.8 Aging Index, 1980-2060

(Unit: per 100 population, person)

Year	Aging Index
1980	11.2
1990	20.0
1997	28.6
1998	30.4
2000	34.3
2005	47.3
2006	51.0
2007	55.1
2008	59.3
2012	77.9
2013	**83.3**
2014	88.7
2016	100.7
2017	104.1
2018	108.5
2020	119.1
2030	193.0
2040	288.6
2050	376.1
2060	394.0

Source: 1) KNSO, [Population Projection], 2006

2) Statistics Korea: [Population Projection], 2005, 2006, 2011

The aging index reached 20.0 in 1990 that shows that there were 20 elderly people for every 100 youngster in 1990. It reached 34.3 in 2000, 83.3 in 2013. It is predicted that it will reach 108.5 in 2018, 193.3 in 2030, 376.1 in 2050 and 394.0 in 2060. It is seen that there will be 394.0 elderly persons for 100 youngsters in 2060, showing that the aging process is much faster in Korea.

3.2.5 Median Age

The median age is the age that classifies a population into two equal groups in such a way that half of the population is younger and the other half are older.

Table 3.9 Trends in Median Age, 1970-1950

(Unit: age)

Year	Total	Male	Female	Difference
1970	18.5	17.9	19.2	1.3
1980	21.8	21.2	22.4	1.2
1990	27.0	26.3	27.7	1.4
2000	31.8	30.8	32.7	1.9
2005	34.8	33.8	35.8	1.9
2010	38.0	36.9	39.0	2.1
2020	43.8	42.3	45.3	2.9
2030	49.0	47.4	50.6	3.2
2050	56.7	54.9	58.8	3.9

Source: Statistics Korea, [Highlights of Population Projections], 2006

The total median age was 18.5 in 1970. It reached dramatically 27.0 in 1990 and 31.8 in 2000. It shows upward trend and reached 38.0 in 2010. It is predicted that it will reach 43.8 in 2020, 49.0 in 2030 and 56.7 in 2050. The lowest difference in the median age

group was seen in the year 1980 with 1.2 and highest will be in the year 2050 with 3.9. It was also seen that the median age difference was same in the year 2000 and 2005. As per the decreasing trends in the above table it can be predicted that the median age of the male is likely to remain less than that of the female median age.

3.2.6 Labour Force participation Rate

The labour force participation rate is the size of the working age population that participates vigorously in the labour market. It gives a sign of the supply of labour ready to participate in the production of goods and services. It is determined by indicating the proportion of persons in labour force as a percentage of the working age population.

Table 3.10 Labour Force Participation Rate

(Unit: %)

Year	Age Groups	
	15 and over	65 and over
2000	61.2	29.6
2003	61.5	28.7
2004	62.1	29.8
2007	61.8	31.3
2008	61.5	30.6
2009	60.8	30.1

Source: Statistics Korea, [Economically Active Population Survey], 2010

The working age population denotes the person aged 15 and over and under 65. The elderly person aged 65 and over in Korea also shows its presence in the labour market. The proportion of the working age population aged 15 and over and below 65 was 61.2 percent in 2000. It showed upward trend and reached 62.1 percent in 2004. Since then it

has shown downward trend and reached 60.8 percent in 2009. That indicates that the proportion of the working age population is shrinking year by year. On the other hand, the share of the elderly person aged 65 and over was 29.6 percent in 2000. It showed downward trend and reached 28.7 percent in 2003. Soon in 2004, it gained momentum and reached 29.8 percent. It further showed upward trend and reached 31.3 percent in 2007. The share of the elderly persons again showed downward trend and reached 30.6 percent in 2008 and 30.1 percent in 2009 which is the second highest among the OECD countries. Iceland registered the highest labour force participation rate for the elderly among the OECD countries. It is seen that the labour force participation rate of the working age population is declining after reaching its peak in 2004 and reached 60.8 percent in 2009.

3.2.7 Sex Ratio of the Elderly

The sex ratio of the elderly is the number of male population aged 65 and over divided by female population aged 65 and over and then multiplied by 100. The sex ratio of the aged 65 and over was 59.7 per hundred female populations in 1980. It increased continuously and reached 62.0 in 2000. It showed upward trend and reached 68.1 in 2008 with an increase of 6.1 which was recorded in 2000. It reached 70.7 in 2013 and is expected to reach 81.1 in 2030. It is also predicted that it will go as high as 87.0 in 2060. It is seen that the number of the elderly male had always been less than the number of the elderly female. The sex ratio of the elderly aged 65 and over has been continuously increasing with a big difference between the number of male and female elderly, which led to the increasingly imbalanced sex ratio among the elderly.

Table 3.11 Population Aged 65 and over by Sex

(Unit: per hundred female populations)

Year	Male	Female	Sex Ratio
1980	545	911	59.7
1990	822	1,373	59.8
1998	1,155	1,914	60.3
2000	1,300	2,095	62.0
2008	2,032	2,984	68.1
2010	2,227	3,225	69.1
2012	2,428	3,462	70.1
2013	2,543	3,595	70.7
2014	2,568	3,728	71.3
2020	3,451	4,633	74.5
2030	5,682	7,010	81.1
2040	7,460	9,041	82.5
2050	8,151	9,841	82.8
2060	8,197	9,425	87.0

Note: Sex Ratio = (Males aged 65 and over / Females aged 65 and over) x 100

Source: KNSO, [Population Projection], 2006,

Statistics Korea, [Population Projection], 2011

3.2.8 Proportion of the Working age Population

The working age population is the population aged 15 to 64 who are supposed to be in the labour force under ordinary circumstances. The trends can be seen below:

Table 3.12 Trends in Working Age Population, 1990-2060

(Unit: per 100 population, person)

Year	Working Age Population
1990	13.5
1997	11.2
2000	**9.9**
2006	7.6
2007	7.3
2010	6.6
2012	6.2
2013	**6.0**
2014	**5.8**
2016	5.5
2017	5.2
2018	**5.0**
2020	4.5
2026	**3.2**
2030	2.6
2040	1.7
2050	1.4
2060	1.2

Note: Working Aged Population per aged person = population aged 15 to 64 / population aged 65 or more

Source: KNSO, [Population Projections], 2006

Statistics Korea, [Population Projections], 2011

This is the basic indicator of the employment and is measured as percentage of population. The working age population per hundred persons was 13.5 in 1990 but declined to 11.2 in 1997. Since then it has declined gradually and reached 9.9 in 2000. That was the time when Korea became an "aging society". It reached 6.0 in 2013. It is predicted that it will reach 5.0 in 2018. That will be the time when Korea will become an "aged society". It is also predicted that the share of the working age population will decline to 3.2 per hundred populations in 2026 when Korea will become a "super aged society". It is estimated that the working age populations will go as low as 1.2 per hundred populations in 2060. The decline in the working age population will have significant impact on the labour market, leading to an increase in the number of the elderly persons aged 65 and over if the low fertility and population aging will continue to take place at the current speed. And the increase in the number of the elderly in the labour market will impact the quality, quantity and productivity due to decline in the cognitive abilities at older ages. Furthermore, the country will suffer due to lack of workforce in the labour market.

3.2.9 Family and residence

The living arrangement of the elderly aged 65 and over has been also affected by the population aging. The number of the elderly living in one- generation household consisting of husband and wife was 16.9 percent in 1990. It showed upward trend and reached 28.7 percent in 2000 and 33.0 percent in 2005. The number of the elderly living in two- generation household was 23.4 percent in 1990. It also showed the upward trend but with minor increase, leading to 23.9 percent in 2000 and 24.9 percent in 2005.

The number of the elderly living in more than three- generation household was 49.6 percent in 1990 but it showed a downward trend leading to 30.8 percent in 2000 and 23.4 percent in 2005. The number of the elderly living in one-person household was 8.9 percent in 1990. It showed upward trend and reached 16.2 percent in 2000 and 18.1 percent in 2005. The number of the elderly living in households without blood relationship was 1.2 percent in 1990 but it showed downward trend and reached 0.4 percent in 2000 and then again showed upward trend and reached 0.5 percent.

Table 3.13 Composition by household type of the person aged 65 and over

(Unit: %)

Year	Total	One-generation household	Two-generation household	More than three-generation household	One-person household	Household without blood relationship
1990	100.0	16.9	23.4	49.6	8.9	1.2
2000	100.0	28.7	23.9	30.8	16.2	0.4
2005	100.0	33.0	24.9	23.4	18.1	0.5

Source: Korea Statistics, [Composition by household Type], 2005, 2006

It is seen that the number of the elderly living in one-generation household, two-generation household and one-person household is increasing continuously, but the rapid increase is seen in one-generation household and one-person household. It is also seen that the number of the elderly living in more than three-generation household is declining rapidly while the person living in household without blood relationship is fluctuating in between 0.4 and 0.5 percent. That indicates that family system of Korea is waning rapidly due to rapid increase in nuclear families, changes of value on filial piety and care duty leading to the diminishing role of the elderly in the family.

3.2.10 Educational Attainment of the Elderly

The educational attainment of the elderly aged 65 and over in Korea has been continuously increasing. In 1990, 36.3 percent of the elderly had received regular education, whereas 63.7 percent did not have the chance to receive regular education. In 2000, 55.7 percent of the elderly had received regular education, but 44.3 percent of the elderly did not receive regular education. In 2005, 66.5 of the elderly had received regular education, whereas 33.5 percent of the elderly did not have the chance to receive regular education. It is seen that the educational attainment of the elderly is continuously

increasing whether it is regular education, elementary, middle, high school, college or over.

Table 3.14 Educational attainment of the persons aged 65 and over

(Unit: thousand persons, %)

	Total	Educational attainment					None
		Regular Education	Elementary School	Middle School	High School	College or over	
1990	2,162	36.3	25.9	4.9	3.3	2.2	63.7
Male	811	55.3	34.3	9.5	6.3	5.2	44.7
Female	1,352	25.0	20.9	2.1	1.5	0.5	75.0
2000	3,372	55.7	33.8	8.4	8.0	5.4	44.3
Male	1,287	77.0	36.2	14.0	14.4	12.3	23.0
Female	2,084	42.6	32.4	4.9	4.1	1.2	57.0
2005	4,365	66.5	37.0	10.9	11.4	7.2	33.5
Male	1,736	84.5	34.4	15.8	19.2	15.0	15.5
Female	2,629	54.7	38.7	7.7	6.2	2.0	45.3

Source: Statistics Korea, [Education and Information], 2005, 2006

It is also seen that the educational attainment of the female elderly is more profound in comparison to the male elderly. The change in the educational attainment of the elderly will particularly impact the role of the elderly not only in the family, but also in the society which will also affect the form of support for the elderly.

3.3 Impact of Aging Workforce:

3.3.1 Slowdown and Decline in the Workforce

Korea's total population was 32.2 million in 1970 and the growth rate was 2.21 percent. Since then the total population accelerated, but with the declining growth rate.

Table 3.15 Trends of the total Population and Population Growth Rate

(Unit: thousand persons, %)

Year	Total Population	Population Growth Rate
1970	32,241	2.21
1980	38,124	1.57
1990	42,869	0.99
1995	45,093	1.01
2000	47,008	0.84
2005	48,138	0.21
2010	49,410	0.46
2011	49,779	0.75
2012	50,004	0.45
2013	50,220	0.43
2014	50,424	0.41
2030	52,160	0.01
2040	51,091	-0.39
2060	43,959	-1.00

Note: Population growth rate refers to the increase over the previous year.

Source: Statistics Korea, [Population Projection]

According to Korea Statistics, Korea's total population reached 47.0 million in 2000 and the corresponding growth rate was 0.84 percent. It indicates that Korea's population was almost 1.5 times than what it was in 1970. It is predicted that Korea's total population will reach its peak in 2030 with 52.1 million and the corresponding growth rate will be 0.01 percent. Thereafter, the total population will start declining. It is predicted that the total population will be 51.0 million with - 0.39 (minus zero point three nine) growth rate in 2040. By 2060 the total population growth will mark 43.9 million with – 1.00 (minus one point zero zero) growth rate. On the other hand, the proportion of the elderly will be still increasing and hence there seems substantial decrease in the total population in the years to come. It is predicted that the size of the elderly population will reach 37.4 percent of the total population by 2050 which is more than five times recorded in 2000. By 2060, the number of the elderly population will mark 40.1 percent of the total population. However, the decline in the total population will accelerate after 2030 leading to 51.0 million in 2040 and 43.9 million in 2060.

If the trend in fertility rate will keep declining, population growth is expected to slow down significantly. This in turn will affect the nation's working force. The proportion of the working age population marked 73.1 percent of the total population in 2012 which was constant in 2013 and 2014 but will start declining by 2017 marking 72.6 percent of the total population. By 2060, the proportion of the working age will decline to 49.7 percent of the total population. On the other hand, the proportion of younger age people will be 13.4 percent in 2017 while the proportion of the elderly will 14.0 percent of the total population leading to cross the young age group for the first time in Korea's history. Thus, it can be concluded that workforce aged 15 to 64 will decline after 2017.

3.3.2 Increase in the Dependency Ratio

The aged dependency ratio of the elderly aged 65 and over corresponding to the working age population aged 15 to 64 is predicted to rise from 10.1 to 71.0 in between 2000 and 2050 in Korea. It is predicted that the aged dependency ratio will be 7 times than what it was in 2000. The total dependency ratio, which is the sum of the number of children under age 15 years and the number of the elderly aged 65 and over to the working age population aged 15 to 64 per hundred persons are predicted to increase dramatically. The

total dependency ratio in Korea was 39.5 in 2000 and is predicted that it will reach 87.7 in 2050 which will be more than 2 times that what it was in 2000. The total dependency is somewhat different for the reason that it takes into account the decline in fertility rate.

Table 3.16 Trends in the Dependency Ratio, 1970-2050

(Unit: 100 persons)

Year	Child Dependency Ratio	Aged Dependency Ratio	Total Dependency Ratio
1970	78.2	5.7	83.9
1980	54.6	6.1	60.1
1990	36.9	7.4	44.3
2000	29.4	10.1	39.5
2005	26.7	12.64	39.3
2010	22.3	15.0	37.3
2020	17.6	21.7	39.3
2030	17.4	38.6	46.0
2050	16.7	71.0	87.7

Source: Statistics Korea, [Population Projections], 2005

The total dependency has shown a downward trend since 1970 but it will reach 39.3 in 2020 which will be what it was recorded in 2005. The total dependency rate will show upward trend leading to 46.0 in 2030 and 87.7 in 2050 which will be more than what it was in 1970. This indicates that the total dependency rate will reverse back in 2050.

3.3.3 Heavy Financial Burden on Public Pension and Health Care System

The unprecedented increase in the number of the elderly population will place a heavy financial burden on public pension/schemes and health care system. In 2012, elderly people consisted of 27.4 percent of the total beneficiaries of National Basic Livelihood Security Act (NBLSA) and in 2013, the elderly consisted of 29.3 percent of the total beneficiaries.

Table 3.17 Medical care expenses of the population aged 65 and over

(Unit: 100 million Won, %)

Year	Total medical care expenses	Medical care expenses of the aged	Percentage
2001	178,195	31,681	17.8
2002	190,606	36,811	19.3
2003	205,336	43,723	21.3
2004	223,559	51,097	22.9
2005	247,968	60,556	24.4
2006	285,580	73,931	25.9
2007	322,590	90,813	28.2
2008	350,366	104,904	29.9
2009	394,296	120,391	30.5
2010	_	137,847	31.6
2012	_	_	32.2
2013	_	_	34.5

Source: Statistics Korea, [Health Insurance Review and Assessment Service], 2007, 2008, 2009, 2010

Statistics Korea, [National Insurance Corporation], 2011Statistics Korea, 2014

That indicates that the proportion of the elderly gaining benefit from NBLSA is increasing each passing year. In 2012, the percentage of the elderly who received Public Pension was 31.8 and in 2013, 37.6 percent of the elderly aged 65 and over was beneficiaries of Public Pension.[3]

On the other hand, expenditure on health for the elderly aged 65 and over accounted for 19.3 percent of the whole medical care expenses in 2002 which is equivalent to 31,681 thousand Won. In 2003, expenditure on health accounted for 21.3 percent of the whole medical care. That implies that expenditure on health is increasing each passing year. The highest increase was seen in the year 2007 with 2.3 percent with respect to the previous year. Expenditure on health reached 34.5 percent in 2013. The percentage of National Pension beneficiaries, NBLSA beneficiaries and expenditure on medical care expenses is still rising, which will place a heavy burden on public pension and health care systems. It is predicted that the number of the elderly will keep rising even after 2030. Furthermore, the retirement age will be 65 in the year 2033 which will translate into more number of the beneficiaries in the near future.

3.3.4 Legislative Change in the Legal Retirement System

Since the early 1960s, Korea has had a policy of mandatory retirement. The Korean retirement system had a policy of mandatory retirement at an age of 55.[4] This mandatory retirement has been in practice since then. It is believed by the policy makers, employers and unions that mandatory retirement generates employment for younger workers. Furthermore, as age is connected with worker's compensation, employers assert that wages paid to older workers is undue liabilities on the basis of seniority. Moreover, this mandatory retirement policy has continued since then in private and public sectors, but that was contradictory to the trend of increasing life expectancy and required revision in this continuing mandatory system.

[3] Public Pension includes a National Pension, a pension for the government official and a pension for private school teachers.
[4] This term is used in Kim, Mee Hye. It refers to retirement at a fixed age.

In 2013, Korean lawmakers from both ruling and opposition party acknowledged to make legal retirement age compulsory at an age of 60.[5] The labour and environment sub-committee under the National Assembly passed the revised law stating clearly that workers engaged in both public and private sector will be subject to legal retirement at an age of 60 starting from 2016. It was also stated in the revision that public corporation and big business with 300 employees or more should set the retirement age of their workers at 60 mandatory which should come into effect from January1, 2016. In addition to that other public and private companies should apply the changed retirement age to their employees a year later. This revision, which brought an extension in retirement age, and extended it to 60 years was mainly because of the world's fastest aging population in Korea. It can be deduced that the National Assembly passed the law to foster labour force participation rate, economic growth, to postpone retirement benefit and other benefits of the welfare programme.

3.4 Quality, Quantity and performance of the Workerforce:

To quote Skirbekk (2002), cognitive abilities[6] of the elderly declines at later ages. And the decline in the cognitive abilities influences labour market performance. Most of the evidence indicates that individual's job performance shows a tendency of increase in the initial period of one's entry into the labour market but decreases at the end of one's career. It is because the speed, learning and problem solving ability declines in the old age. To quote Warr (1994), ''due to geriatric diseases in the old age, elderly people find difficulties in learning new things, especially the one which is new and qualitatively different from the previous one which they have mastered in the early phase of their life''. The decline in the cognitive abilities can be compensated by experience and more on the job training and learning.

Older workers perform their job slowly but with precision thereby able to produce better quality of the products.However, this indicates the quantity and performance go down as they perform work slowly but the quality remains unchanged because of the work

[5] This was published Xinhua news paper in 2013.

[6] A cognitive ability is the ability of intellectual functioning which comprises of numerical capabilities and mental reasoning.

experience they gained during the working periods. Furthermore, older workers may not perform new tasks assigned to them and face difficulties in acquiring new skills. In addition to that they need more time in learning and accommodating. There are evidences that suggest that older workers are as productive as younger workers, but it would be better to say that younger workers are more productive in comparison to older workers.

In other words, the productivity of older workers goes down at older ages. Furthermore, the labour force participation rate of elderly is continuously increasing in labour market while the labour force participation rate of the working age population is gradually declining so the decline in the productivity of older workers will influence the overall productivity of the workforce.

3.5 Conclusion:

Korea became an "aging society" in 2000 with 7.2 percent of the proportion of the elderly. It is expected that Korea will become an aged society with 14.3 percent in 2018 and a "super aged society" in 2026 with 20.8 percent of the elderly population. The impact of population aging is so much and so high that it has impacted almost every indices of population aging. The total population of Korea will peak in 2030 with 52.1 million and then will start falling leading to 43.9 million in 2060. The proportion of young age people aged 0 to 14 years was 21.1 percent of the total population in 2000, declined to 14.7 percent in 2013 and will further decline to 10.2 percent of the total population in 2060. The proportion of the elderly people aged 65 and over was 7.2 percent in 2013, rose to 12.2 percent just 2.5 percent behind the young age population. It is expected that the proportion of the elderly will further rise to 40.1 percent in 2060. The proportion of the working population was aged 15 to 64 years was 71.7 percent in 2000, rose to 73.1 percent in 2013 and will decline to 49.7 percent of the total population in 2060. This denotes that there will be a drastic change in the workforce in the early 2030s leading to a rapid increase in the share of the elderly proportion in the labour market and gradual decrease in the working age population. Furthermore, the aged dependency ratio, which was 10.1 persons in 2000 rose to 16.7 persons in 2013 and will further rise to 71.0 persons in 2050. The aged dependency denotes that there will be 1.4 persons in the working age to support one old age person in 2050. The increase in the dependency ratio will not only impact quality, quantity and productivity of the workforce due to decline in cognitive abilities, but also place a heavy burden on pension, health care system and other welfare programme of the country.

Chapter 4

Impact Assessment of the Workforce in the Manufacturing Industries

4.0 Introduction:

In Korea, the share of the elderly population to those of the working age population is growing at the rapid pace. The share of the elderly population was 7.2 percent in 2000, reached 12.2 percent in 2013. It is predicted the share of the elderly population will surpass the number of young age population and will reach 14.0 percent in 2017. It is also estimated that the share of the elderly population will reach 40.1 percent, which will be merely 8.1 percent behind the working age population (49.7 percent) in 2060. This is due to a continuous decline in fertility rate, increasing life expectancy; technological development in the health industry and improvements in living standards, Korea's population is aging. The proportion of the elderly in the population is going remarkably high, surpassing the young age population. The labour market is increasingly depending on elder workers as their labour force participation rate is soaring up. It is expected the number of the elderly will soon outnumber the number of people entering into the labour market. The increase in the elderly population will bring an increase in the old age dependency ratio, the burden on the national funds, health and long term care will mount, and economic growth will be negatively affected.

Demographic transition may bring decline in the labour force and sectoral shift in the industries. It is seen that the number of people engaged in the service industry is going high in comparison to the manufacturing industry. The number of people engaged in the manufacturing industries is growing, but with marginal difference. In this chapter, I will examine how an aging population may bring an impact on the industrial sectors particularly manufacturing industry while taking an account of the service sectors. I shall also provide the increase and decrease in the labour force in the particular manufacturing industry.

4.1 Demographic Trends by Age Group:

Korea is going through rapid population aging. The trend in population structure is noticeable. The young age population aged 0 to 14 years was 42.5 percent of the total population in 1970. It reached 21.1 percent in 2000 and 14.7 percent in 2013. It is predicted that the young age population will reach 13.2 percent in 2020 and will go as low as 9.9 percent of the total population in 2050. The trends in the young age population indicate the rapidity of the declining in its group.

Table 4.1 Population by Age Group

(Unit%)

Year	0 to 14	15 to 64	65 or more
1970	42.5	54.4	3.1
1990	25.6	69.3	5.1
2000	21.1	71.7	7.2
2010	16.1	72.8	11.0
2012	15.1	73.1	11.8
2013	14.7	73.1	12.2
2020	13.2	71.1	15.7
2030	12.6	63.1	24.3
2040	11.2	56.5	32.3
2050	9.9	52.7	37.4

Source: Statistics Korea, [Population Projections], 2011

The working age population aged 15 to 64 was 54.4 percent in 1970. It showed upward trend and reached 71.7 percent in 2000 and 73.1 percent in 2013. It is predicted that the working age population will decline to 63.1 percent in 2030. It is also predicted that the

working age population will go as low as 52.7 percent in 2050. The working age population also shows the rapidity of the declining after 2030.

The elderly population aged 65 or more was 3.1 percent in 1970. It reached 7.2 percent in 2000 and 12.2 percent in 2013. It is predicted that the elderly will go as high as 24.3 percent in 2030 which will be almost double of the young age population in the same year 2030. In 2050, the proportion of the elderly will be almost four times of the young age population leading to 37.4 percent of the total population. The trends in the demographic structure indicate that the younger population is declining with rapid speed, the working age population is shrinking and the elderly population aged 65 or more is increasing rapidly surpassing the young age population.

4.2 Economic Active Population by Age Group:

Table 4.2 Labour Force Participation Rate and Employment- Population Ratio (15 and over):

(Unit: %)

Year	Labour force participation Rate	Employment- population Ratio
2000	61.2	58.5
2001	61.4	_
2002	62.0	_
2003	61.5	59.3
2004	62.1	59.8
2005	62.0	_
2007	61.8	59.8
2008	61.5	59.5
2009	60.8	58.6

Source: Statistics Korea, [Annual Report on the Economically Active Population Survey], 2010

The labour force participation rate of the working age population aged 15 and over was 61.2 percent and the corresponding employment ratio (EPR) was 58.5.

Table 4.3 Labour Force Participation Rate and Employment- Population Ratio (65 or more):

(Unit: %)

Year	Labour force participation Rate	Employment- population Ratio
2000	29.6	29.4
2001	30.0	_
2002	30.7	_
2003	28.7	28.6
2004	29.8	29.6
2005	30.0	29.8
2006	30.5	30.3
2007	31.3	31.1
2008	30.6	30.3
2009	30.1	29.7
2010	29.4	28.7
2011	29.5	28.9
2012	30.7	30.1
2013	31.4	30.9

Source: Statistics Korea, [Annual Report on the Economically Active Population Survey]

http://stats.oecd.org

The labour force participation rate and EPR[7] showed upward trend and reached 61.5 percent 59.3 percent respectively in 2003. Both labour force participation rate and EPR showed highest growth in the year 2004 with 62.1 and 59.8 percent respectively. The labour force participation rate and EPR reached 60.8 and 58.6 percent in 2009.

It is seen that the labour force participation rate of the working age people showed upward trend till 2005 and then started declining leading to 60.8 percent in the year 2009. The labour force participation rate of the aged 65 and over was 29.6 percent in 2000. It showed upward trend and reached 30.7 percent in the year 2002. In 2003, the labour force participation rate of the elderly showed downward trend and reached 28.7 percent. The labour force participation rate of the elderly gained momentum in the year 2004 and reached 31.3 percent in the year 2007. The labour force participation rate reached 31.4 percent in 2013. The labour participation rate of the elderly was seen fluctuating in between 29.5 and 31.4. On the other hand, EPR of the elderly was 29.4 in 2000 and declined to 28.6 percent in the year 2003. EPR of the elderly showed the upward trend from the year 2004 and reached 31.1 percent in the year 2007. EPR of the elderly again declined from the year 2008 and reached 30.9 percent in 2013. It is seen that EPR of the elderly is fluctuating in between 28.6 and 31.1 percent.

4.3 Workforce in Service Industry:

The number of the workers engaged in the service industry was 6,482 thousand persons in 2001. The service industry showed upward trend and reached 7,396 thousand persons in 2005. The number of workers engaged in wholesale and retail trade, service industry, professional scientific and technical service industry reached 8,248 and 8,509 thousand persons in 2007 and 2008 respectively. The number of workers engaged in wholesale and retail trade, service industry and professional, scientific and technical service industry reached 8,813 thousand persons in 2009. The number of workers engaged in service sector reached 9,100 and 9,382 thousand persons in 2010 and 2011 respectively. The number of workers engaged in service sector reached 9,722 and 10, 232 thousand persons

[7] This term is used in Raquel Almeida Ramos and Daniela Ruhl (2013). It refers to the proportion of the working age population which works- work encircling "all forms of economic activity, including self employment, unpaid family work and wage employment in both the informal and formal sectors" (ILO 2010).

in 2012 and 2013 respectively. It is seen that the number of workers engaged in the service industry is increasing rapidly crossing the registered workers in the previous year. The service industry, including wholesale and retail trade, service industry and professional, scientific and technical service industry employs the highest number of workers displaying in the total workforce.

Table 4.4 Number of Workers in Service Industry

(Unit: thousand persons)

Year	Number of Workers
2001	6,482
2005	7,396
2007	8,248
2008	8,509
2009	8,813
2010	9,100
2011	9,382
2012	9,722
2013	10,232

Source: Statistics Korea, [Result of the Service Sector Survey], 2008, 2009

Statistics Korea, [Result of the Service Industry Survey], 2011, 2012, 2013

4.4 Workforce in Manufacturing and Mining Industry:

The number of workers engaged in manufacturing and mining industry was 2,327 thousand persons in 2000. It showed downward trend and reached 2,280 thousand persons within a year in 2001. In 2002, it showed upward trend and reached 2,335 thousand persons. Minor increase was seen in the year 2003 with the increase of 4 thousand persons with respect to the previous year. In 2004, there was an increase of 1

thousand persons with respect to the previous year. In 2005, there was an increase of 57 thousand persons with respect to previous year leading to 2,457 thousand persons.

Table 4.5 Number of workers in Mining and Manufacturing Industry

(Unit: thousand persons)

Year	Number of workers
2000	2,327
2001	2,280
2002	2,335
2003	2,339
2004	2,400
2005	2,457
2006	2,498
2007	2,521
2008	2,467
2009	2,465
2010	2,647.9
2011	2,712.3
2012	2,764.1
2013	2,844.0

Source: Statistics Korea, [Preliminary result of the Mining and Manufacturing Survey], 2009, 2011, 2012, 2013

In 2006, there was an increase of 41 thousand persons with respect to previous year leading to 2,498 thousand persons. The number of workers in manufacturing and mining

industry grew to 2,521 thousand persons in 2007. Again, it showed downward trend and reached 2,467 and 2,465 thousand persons in 2008 and 2009 respectively.

Change in the number of workers engaged in manufacturing industry can be seen in the below given table.

Table 4.6 Change in the Number of Workers 2009

(Unit: thousand persons, %)

By Industry	2007	2008	2009	Change (2009-2008)	Percent change (2009/2008)
Number of Workers	2,521	2,467	2,465		
< **Increase** >					
Manufacture of Pharmaceuticals, Medicinal Chemicals and Botanical Products	27	26	29	3	9.5
Manufacture of Food Products	150	148	154	6	4.2
Manufacture of Electrical Equipments	142	139	144	4	3.1
Manufacture of Other Non-metallic Mineral Products	78	78	80	2	2.5
Manufacture of Electronic Components, Computer, Radio, Television and Communication Equipment and Apparatuses	378	357	360	3	0.8
< **Decrease** >					
Manufacture of Motor Vehicles, Trailers and Semitrailers	268	259	247	△12	△4.7
Manufacture of Other Machinery and Equipment	261	262	253	△9	△3.3
Manufacture of Rubber and Plastics Products	177	172	171	△1	△0.6

Source: Statistics Korea, [Preliminary Result of the Mining and Manufacturing Survey], 2009

The number of workers again showed upward trend and reached 2,647.9 and 2,712.3 thousand persons in 2010 and 2011 respectively. Change in the number of workers engaged in manufacturing industry can be seen in the below given table.

Table 4.7 Change in the Number of Workers 2011

(Unit: thousand persons, %)

By Industry	2010	2011		
			Change	Percent change
Number of Workers	2,647.9	2,712.3		
< Increase >				
Manufacture of other Transport Equipment	147.3	157.5	10.3	7.0
Manufacture of Medical, Precision and Optical Instruments, Watches and Clocks	64.6	68.3	3.7	5.7
Manufacture of Coke, Hard-coal and Lignite Fuel Briquettes and Refined Petroleum Products	10.9	11.5	0.6	5.7
Manufacture of Motor Vehicles, Trailers and Semitrailers	276.7	290.4	13.7	5.0
< Decrease >				
Manufacture of Wearing Apparel, Clothing Accessories and Fur Articles	81.1	76.9	△4.2	△5.1
Printing and Reproduction of Recorded Media	31.4	29.8	△1.6	△5.1
Manufacture of Other Non-metallic Mineral Products	80.4	78.0	△2.4	△2.9
Manufacture of Furniture	35.2	34.6	△0.6	△1.8

Source: Statistics Korea, [Preliminary Result of the Mining and Manufacturing Survey], 2011

The number of workers grew to 2,764.1 and 2,844.0 thousand persons in 2012 and 2013 respectively. Change in the number of workers engaged in manufacturing industry can be seen in the below given table.

Table 4.8 Change in the number of Workers 2012-13

(Unit: thousand persons, %)

Classification		2012	2013	Change	Percent change
Number of Workers		**2,764.1**	**2,844.0**	**80.0**	**2.9**
Increase	Manufacture of Motor Vehicles	300.9	324.0	23.1	7.7
	Manufacture of Other Machinery and Equipment	304.5	316.7	12.2	4.0
	Manufacture of Rubber and Plastic Products	202.9	210.2	7.3	3.6
	Manufacture of Electronic Components, Computer, Radio, Television and Communication Equipment and Apparatuses	405.1	414.2	9.0	2.2
Decrease	Manufacture of Coke, Hard-coal and Lignite Fuel Briquettes and Refined Petroleum Products	11.6	10.3	-1.3	-11.0
	Manufacture of Wearing Apparel, Clothing Accessories and Fur Articles	74.0	70.8	-3.1	-4.3
	Printing and Reproduction of Recorded Media	28.3	27.6	-0.7	-2.6

Source: Statistics Korea, [Preliminary Result of the Mining and Manufacturing Survey], 2013

It is seen that the number of workers engaged in mining and manufacturing industry sometimes go upward and sometimes go downward; and the increase is very slight with respect to the previous year. On the other hand, the service industry always shows upward with big differences with respect to the previous year. That simply indicates that there is a sectorial shift in terms of labour force participation and therefore, service industry employs the highest number of employees relative to manufacturing industry. Furthermore, labour force participation rate and EPR of the working age population aged 15 and over indicates steady decline. On the other hand, the labour force participation rate and EPR of the elderly aged 65 and over indicates a gradual increase.

4.5 Impact of the Workforce in the Manufacturing Industry:

The labour force participation rate of the working age population aged 15 to 64 as of 2009 was 60.8 percent, which is less than what it was recorded in 2000 (61.2 percent). The labour force participation rate of the working age population showed a downward trend in the recent year. On the other hand, the labour force participation rate of the elderly aged 65 and above as of 2013 was 31.4 percent and showed an upward trend. That indicates that the share of the elderly population is increasing rapidly in the labour market. And if the increase in the elderly in the labour market continues, it will not only influence the productivity of the workforce, but also the efficiency in terms of fewer number of products and services. This is because the cognitive abilities of the elderly decline in the older age (Skirbekk: 2002). The elderly may produce good quality of the products because of their experience they have acquired previously, but cannot compete with the young age worker in terms of productivity and hence will lower down the overall productivity of the workforce. Furthermore, the increase in the number will place a heavy burden on national pension and healthcare system. And that in turn will place a heavy burden on nation's GDP expenditure. In addition to that the working age people are shrinking, will not be able to produce the required number of products and services in the future which will in turn influence the economic output of the country. The shrinking number of the workforce will also result in less number of tax contributors in the country which will affect the social well being of the nation as the welfare programme of Korea is run by the tax revenue.

4.6 Conclusion:

In conclusion, the demographic transition in the age structure is estimated to place a heavy burden on the national economy. Especially, the labour force participation rate of the working age population is declining while the labour force participation rate of the elderly is increasing gradually. It is also seen that the number of workers engaged in the service industry is increasing continuously with big differences, whereas the number of workers engaged in manufacturing is shows sometimes upward and sometimes downward trends. It is also seen that there is a change in the number of workers in particular manufacturing industry. Korea's industry is a labour intensive industry following Export Promoted Industrialisation (EPI) model. So, the change in the number of workers in the manufacturing industry not only influences the productivity, output of products and services but also the economic growth of the country. Also, the increasing number of the elderly in the labour market will place a heavy burden on the national pension and welfare programme which in turn will influence the social well being of the nation as the number of taxpayers are declining and the beneficiaries are increasing due to population aging.

Chapter 5

Conclusion:

The demographic transition in Korea started with the introduction of the National Family Planning Programme or Anti-Natal policy in 1962. The objective of Anti-Natal policy was to slow down population growth as it was realised that the population growth was undermining the economic growth of the country. The consequences of this policy were realised in terms declining fertility rate in the early 1980s. The total fertility rate has gone down below replacement level in the early 1980s. Since then, the total fertility rate has continued to exist below replacement level. In 1996, the government launched Quality and Welfare Improvement Policy. The objective of this policy was to maintain fertility levels below replacement level and to maintain standard of living. By 2000, Korea became an "aging society" with 7.2 percent of the elderly. It is expected to become an "aged society" in 2018 with 14.3 percent of the elderly and a "super aged society" in 2026 with 20.8 percent of the elderly. It is predicted that if nothing will be done to stop declining fertility rate, Korea will extnict by 2750. In 2006, the government introduced the Pro-Natal Policy to foster fertility rate. Pro-Natal Policy includes the First Basic Plan for Low fertility and Aging Society, Saeromaji Plan and Vision 2020 Plan. Till date, the policies have not been successful in bringing fertility level above replacement level. As of 2013, the total fertility rate is 1.19 which is below replacement level.

In the meantime, life expectancy rose to 81.9 years in 2013. The aged dependency rose to 16.7 persons per hundred populations in 2013. That means there are only six persons in the working age to support one old age person. The total population of Korea rose to 50.2 million in 2013. It is predicted that the total population of Korea will peak in 2030 with 52.1 million and start declining leading to 43.9 million in 2060. The proportion of the younger age people aged 0 to 64 years was 21.1 percent of the total population in 2000, declined to 14.7 percent in 2013 and will further decline to 10.2 percent in 2060. The proportion of the elderly people aged 65 and over was 7.2 percent, rose to 12.2 percent in 2013 and will further rise to 40.1 percent in 2060. The proportion of the working age people aged 15 to 64 was 73.1 percent in 2000, rose to 73.1 percent in 2013, and will decline to 49.7 percent of the total population by 2060.

Furthermore, the labour force participation rate of the working age population was 61.2 percent in 2000 which declined to 60.8 percent in 2009 whereas the labour force participation rate of the elderly aged 65 and over was 29.6 percent in 2000 which rose to 31.4 percent in 2013. It is found that the proportion of the working age people is shrinking in one hand while on the other hand, the proportion of the elderly is increasing. The employment- population ratio of the working age people was 58.5 in 2000, rose to 58.6 in 2009 with an increase of 0.1 only, whereas the employment-population ratio of the elderly was 29.4 in 2000, and rose to 30.9 in 2013 with an increase of 1.5.

It is also found that the number of workers is growing rapidly in the service industry, whereas the increase in the number of workers in manufacturing and mining industry is very sluggish with decrease in particular manufacturing industry. It is found that not only the labour force participation rate of the elderly is increasing, but also their employment-population ratio. That denotes that the proportion of the elderly in the labour market is increasing which will lead to slower productivity. It is because the cognitive abilities of the elderly decline in older age, which lowers down the productivity of older workers. The decline in the productivity will lead to decline in the quantity of the products and services. However, the older workers produce better quality of the products because of the experienced, they have gained in particular works previously, but that will not compensate the quantity of the products. So, if the number of elderly will increase continuously, the overall productivity of the workforce will decline, which in turn will impact the economic output of the country. Thus, aging affects not only quality, quantity and performance of the workforce but also manufacturing industry of Korea which is heavily dependent on the supply of labour.

Furthermore, the growing number of the elderly will exert pressure on the national pension, healthcare system and other welfare programme of the nation. The increase in the elderly will also put a burden on the working age people for care and support, economic support and medical support which will double the burden of working age people as they will have to support the elderly not only in the family but also paying tax for the welfare programme, government operates for the elderly. The growing number of

the elderly is exerting tremendous influence on the economic output of the nation as well as on the social well being of the nation.

At present Korea is an ‘aging society’ and is on the verge of becoming an ‘aged society’ soon. In recent years, Korea has been struggling to foster fertility rate and labour force participation rate through various policies. Korea’s past social policy which led to economic development of the country, now exerting a negative impact on the Korean society. For instance, Korea’s family planning programme, which was implemented as a tool to reduce economic burden, has accelerated the process of aging. It is found that the then government followed only one social policy which is economic development. Since late 1990s onwards, Korean government started focusing on fertility maintaining and then encouragement policy, and on social welfare programmes. Till then, aging process in Korea had already arrived.

Some of the suggestions to foster marriage, fertility rate and labour force participation rate are as follows: (I) decline in fertility rate is directly linked with the delaying and giving up marriage, but then the First Basic Plan for Low Fertility and Aging Society did not include the policy measures to raise the marriage rate. In Korea, the delaying and giving up marriage connected with economic situations and change in value on marriage and childbirth. So, the youngster should be given employment opportunities with job stability. The importance of the marriage and children among the youngsters should be given thrust by teaching at school level from their initial age. (II) The majority of the government’s aid for daycare, education, health care etc. is restricted to low income class. It should be broadened to all masses as soon as possible. (III) Korea should agree with western norms and values like cohabitations or extramarital births. (IV) Korea should adopt a new immigration policy in order to compensate the labour shortage. It will become unavoidable if the low fertility will continue in the future. In a nutshell, the government should develop such policy measures which will not only supplement the labour force participation but also bring fertility above replacement level.

6. **Bibliography** (**indicates primary sources)*

Alon, Pnina (2010), *The Aging Workforce: Addressing its Challenges Through Development of a Dignified Lives Approach to Equality*, JCD (Doctoral of Juridical Science) Thesis, Canada: University of Toronto

Arnold, Wayne (2014), "Why Asia's Greying Matters", [Online: Web] Accessed 15 Oct 2014 URL: http://online.barrons.com/articles/why-asias-greying-matters-1413193241

Choi, Sung-jae (1996), "Aging and Social Policy in Korea", *Korea Journal of Population and Development*, 25 (1)

Cho, Nam- Hoon, (1996), Achievements and Challenges of the Population Policy Development in Korea, KIHASA

Chun, Chang Bae et al. (2009), *Health System in Transition Republic of Korea Health System Review*, Denmark: World Health Organisation

Chowdhary, Dr. D Paul (1992), *Aging and the Aged: A Source Book*, Inter-India Publications: New Delhi

Coleman, D.A. (2001), "'The Replacement Migration', or Why Everyone's Going to Have to Live in Korea: A Fable for Our Times from the United Nations", UK: University of Oxford

Field, John et al. (2013), "The Sage Handbook of Aging, Work and Society", New Delhi: Sage Publication

Harvie, Charles and Lee, Hyun-Hoon (2003), *Korea's Economic Miracle Finding or Reviving?*, Palgrave Macmillan: New York

Hee, Choi Sook (2008), Korea's Rapid Population Aging: Impact and Policy Suggestions, Samsung Economic Research Institute Seoul, Korea

Howe, Neil. et al. (2007), The Aging of Korea Demographics and Retirement Policy in the land of the Morning Calm, The US: Centre for Strategic and International Studies (MetLife)

Ji, Myung-kil,(2015), " President Park Comes Out Against Raising Taxes to Fund Welfare", [Online: Web] Accessed 14 Feb 2015 URL: http://www.arirang.co.kr/News/News_View.asp?nseq=175702

Jun, Kwan-hee (2009), Pronatalist Population Policy Options in South Korea's Sub-Replacement Fertility Transition: Chungnam National University, Korea

Kim, Euijune et al. (2011), Impacts of Aging Population on Regional Economies using an International CGE Model of Korea, The Regional Economics Applications Laboratory (REAL)

Kim, Ik Ki (2000), Policy Response to Low Fertility and Population Aging in Korea: Population Davison Department of Economic and Social Affairs United Nation Secretariat, New York

Kim, Kyong Ju (2006), *The Development of Modern South Korea State formation, capitalist development and national identity*, Routledge: London and New York

Kim, Mee Hye (2005), *Coming the aged Society in Korea: Challenges and Responses*, Seoul: Ewha Womans University Press

Kim, Sunwoong (2000), "The Challenge of Rapid Aging and Low Fertility in Korea: A Discussion Paper", Department of Economics, University of Wisconsin- Milwaukee

Kim, Wan –Soon and Lee, You-il (2007), *The Korean Economy The Challenges of FDI-led Globalization*, Edward Elgar Publishing Limited: UK and USA

Kim, Y.-s. (2011), Size and Reality of Non-Regular Workers, Korea Institute for Labour and Society (in Korean)

Klassen, Thomas R. (2012), "The Future of Contractual Mandatory Retirement in South Korea", Canada: York University

* Korean Statistical Information Service provides a detailed account of Major Indicators of Korea, augmented by Statistical Data: http://kosis.kr/eng/

Kwack, Lee. et al. (2005), *Labor Cost, Productivity and Growth Implications of Population Aging: Case of Korea*, Seoul: Korea Institute for Industrial Economics and Trade(KIET)

Lee, Hyun-hoon. et al. (2012), Growth Policy and Inequality in Developing Asia: Lesson from Korea, ERIA Discussion Paper Series

Low-Lee, Florence (2009), Is Korea Ready for the Demographic Revolution? The World's Most Rapidly Aging Society with the Most Rapidly Declining Fertility Rate, Insight 2009: The KEI Exchange

Lee, Man-Gap (1986), *Sociology and Social Changes in Korea,* Seoul National University Press: Seoul, South Korea

Lee, Mason. et.al. (2008), *Social Policy at a Crossroads: Trends in Advanced Countries and Implications for Korea,* Seoul: Korea Development Institute (KDI)

Lee, Ronald et al. (2010), "Some Consequences of Global Aging: A Discussion Note for the World Bank"

Lee, Sam-Sik, et al. (2006), Causes of Low Fertility and Comprehensive Policy Response, Presidential Committee on Aging Society and Population Policy, Ministry of Health and Welfare, KIHASA

Lee, Sam-Sik (2009), "Low Fertility and Policy Response in Korea" *The Japanese Journal of Population*, 7 (1)

Lee, Sam-Sik (2010), "Low Fertility and Policy Measures in Korea" (paper presented at the EWC-KIHASA joint Conference on Policy Response to Low Fertility and Aging Society, Honolulu, Hawaii', July 6-7)

Malmberg, Bo et al (2005), "Productivity Consequences of Workforce Aging- Stagnation or a Horndal Effect?", Institute for Future Studies

Ministry of Health and Welfare, The Basic Plan for Low Fertility and Aging Society, Feb., 2006

* National Health Insurance Service (NHIS) Korea provides a detailed account on Social Security System of Korea: http://www.nhis.or.kr/static/html/wbd/g/a/wbdga0301.html

National Policy Cordination Meeting, Campaign Pledge Funding Plan to Carry Out Park Geun-Hye Administration Agenda, 2013

Pampel, Fred C. (1998), *Aging, Social Inequality, and Public Policy*, Thousand Oaks London New Delhi: Pine Forge Press

Pirie, Iain (2008), *The Korean Developmental State From dirigisme to neo-liberalism,* Routledge: London and New York

Qiang, Hou (2013), "S. Korea to make retirement age of 60 compulsory," Xinhua, Seoul, 23 April, 2013

Ramos, Raquel Almeida and Ruhl, Daniela (2013), The Employment-to-Population Ratio as an Indicator of Participation and Inclusiveness, The International Policy Centre for Inclusive Growth, No. 39

Ryall, Julian (2014), "South Koreans will be extinct by 2750", Telegraph, Seoul, 25 August 2014

Sati, P.N (1996), *Needs and Problems of Aged: A Study for Social Intervention*, Himanshu Publications: New Delhi and Udaipur

Sheng, Andrew (2009), *From Asian to Global Financial Crisis An Asian Regulator's View of Unfettered Finance in the 1990s and 2000s,* Cambridge University Press : Chennai, India

Shin, Dong-Myeon (2003), *Social and Economic Policies in Korea Ideas, network and linkages,* Routledge: London and New York

Sinha, Jwala Nand Prasad (1989), *Problems of Aging*, Classical Publishing Company: New Delhi

Skirbekk V (2002), "Variations in Productivity over the Life Span: A Review and Some Implication" IIASA Interim Report IR-02-061

Song, Young Joo (2009), South Korean Health Care System: International Medical Community

* Statistics Korea provides a detailed account of Population Aging, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/23/2/index.board

* Statistics Korea provides a detailed account on Economically Active Population, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/15/4/index.board

* Statistics Korea provides a detailed account of the aged, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/23/2/index.board

* Statistics Korea provides a detailed account of life expectancy, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/17/1/index.board

* Statistics Korea provides a detailed account of Korea's population, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/17/1/index.board

* Statistics Korea provides a detailed account of social indicators, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/19/5/index.board

* Statistics Korea (2009) provides a detailed account of the number workers engaged in industry and service, augmented by Statistical Data: http://kostat.go.kr/portal/english/news/1/14/9/index.board

Stephen, Elizabeth Hervey, Florence (2012), Bracing for Low Fertility and a Large Elderly Population in South Korea: The KEI Academic Paper Series

Sung-Jae Choi & Hye-Kyung Suh (1995), Aging in Korea: Today and Tomorrow: Seoul: Chung-Ang-Aptitude Publisher

Sung, Kyu –taik(2005), *Care and Respect for the Elderly in Korea: Filial Piety in Modern Times in East Asia,* Seoul: Jimoondang

United Nations, Department of Economic and Social Affairs, Population Division (2013). *World Population Aging 2013.* ST/ESA/SER.A/348

Warr, P. (1994), "Aging and Job Performance", in Snel, J. OECD (1998a), *Maintaining Prosperity in an Aging Society,* and Cremer, R. (eds.), *Work and Aging: A European Perspective*, London: Taylor and Francis

Wook, Um Dong et al. (2005), "Ways for Companies to Manage their Human Resource in an Era of Aging and Low Growth" Samsung Economic Research Institute

World Bank (2004), 'Republic of Korea: Four Decades of Equitable Growth' Working Paper, No. 30781

Yoon, Gene and Eun, Ki-soo (1995), "Understanding Aging in Korea", *Korea Journal of Population and Development*, 24 (2)

Yoon, Ja- young (2014), "Park under Pressure to Hike Tax for Welfare", [Online: Web] Accessed 26 Sept 2014 URL: http://www.koreatimes.co.kr/www/news/biz/2014/09/488_165050.html