Does an Ageing Population Diminish or Enhance Economic Growth? : A Survey of Literature:

Sivalap Sukpaiboonwat*, Sutida Plyngam, Jirawat Jaroensathapornkul*****

* Corresponding author, Lecturer, School of Economics and Public Policy, Srinakharinwirot University, Bangkok, Thailand.
** Lecturer, School of Economics and Public Policy, Srinakharinwirot University, Bangkok, Thailand.
*** Assistant professor, School of Economics and Public Policy, Srinakharinwirot University, Bangkok, Thailand.

Abstract

This paper is in line with the theme of survey literatures of ageing society and economic growth. Its knowledge border is also reached into diminish and enhance the growth. The former illustrates the causes of the negative impacts of old population on growth. It reveals that low fertility, long life expectancy, low consumption as well as high public spending on health care lead aggregate output growth decline in the long run. Meanwhile, the latter attempts to explain the hypotheses of why aging agent can contribute the economic growth. The key issue is the human capital accumulation according to the proposition of replicated economy. Further, the elderly factors positively affect the economic growth via increase in the effective labor, knowledge transfer as well as change in saving patterns. In conclusion, tracking down the previous researches, the conceptual framework is contributed. It is schematically represented the linkages underlying the effects of aging population on economic growth.

Keywords: Elderly population, Economic Growth, Human capital

1. Introduction

Nowadays, people are living longer and the rate of mortality has continuously declined as health care has improved. Additionally, the fertility rate of populations around the world has continued to decrease. As a result of this demographic change in many countries, especially developed nations such as Japan, the problem of ageing populations cannot be ignored or avoided.

The most important impact of ageing population is the economic problem of having more retired people than laborers. This means the dependency burden will be increased and it will be a chronic problem. Therefore, we should be awakened to the need for policy reform to prevent the effects of ageing populations on economic growth.

The pessimistic views warn countries about the need for reform of government policy in terms of public expenditure and managing the government budget. However, there are many literature reviews which have shed some light on how to solve these problems. They are presented by the role of human capital and the role of expanded labor by increased female labor and extended the age of retirement.

The answers as to whether ageing populations diminish or contribute to economic growth are ambiguous. Furthermore, a great deal of research in many countries has attempted to clarify the effect of

ageing population on economic growth. However, there is no framework to show the mechanism of ageing population and whether it has a positive or negative effect on economic growth.

Accordingly, these variables will be useful for planning policy reform in the future. Therefore, this paper gathers and explores both theoretical and empirical papers in order to investigate the in depth variables analysis behind the mechanism of ageing population on economic growth.

This paper is organized as follows: Following the introduction, the second section explains the cause of the negative effects of an ageing population on economic growth. The third section presents the causes of a positive effect of an ageing population on economic growth, followed by a conclusion.

2. Ageing diminishes economic growth

The ageing population is defined as the proportion of population aged over 60, which is more than 10 percent of the total population (United Nation, 2002). The negative effects of an ageing population on economic growth are both direct and indirect. The direct effect is the scale effect on economic growth with the low output from a low labor supply. The indirect effects are the increasing public expenditure via health expenditures and the low consumption and saving via a high dependency from the elderly population.

2.1) the scale effect

The first economist who explored the issue of population and its effect on economic growth was Thomas Robert Malthus. (Malthus, 1798) suggested that human population grows at a geometrical rate, while food production grows at an arithmetic rate. It implies the increasing population growth will be our problem in the future because of the scare resources. Therefore, the increasing population results have no growth in the future, while the opposite view argues that reduced population diminishes output in the future via the decreasing labor supply in produce. However, the relationship between population and economic growth is ambiguous. In Asia (Tsen & Furuoka, 2005), there is no relationship between population and economic growth in the long run. In the short run, Japan, Korea and Thailand have bidirectional granger causality between population and economic growth, whereas China, Singapore and Philippines have unidirectional granger causality running from population to economic growth. It concludes that low population growth depresses economic growth. Similarly, the increase in an ageing population also diminishes economic growth. For instance, in Taiwan (S. H. Lee & Mason, 2007) it has been found the impact of demographic change by an increase of elderly people affects income growth through the lowest income among three generations. In China (Peng, 2008), the ageing population causes lower economic growth through a reduction in the labor force and a reduction in new demand for investment.

2.2) Public Expenditure

The changing demographic transition is that the population as a whole has greater longevity and lower fertility. This imposes pressure on public expenditures through pension and social security in the long term. (Verbič & Spruk, 2014) suggested the public pension expenditure in the long term is worrying because the lower fertility rate and the higher life expectancy also affects on public pension via the higher old-age dependency ratio in 33 countries which are 30 high income OECD economies, one upper-middle income country and two non-OECD countries. There are similar results in European countries (Elmeskov, 2004) and in G-7 countries (Bongaarts, 2004). Among G-7 countries (Bongaarts, 2004), Japan is predicted to have the highest old-age dependency ratio from 2000-2050, followed by Italy, Germany, France, Canada, The United Kingdom and The United States. The elderly trends will

increase continuously so all seven countries will have to increase their public expenditures in the future (Bongaarts, 2004), while (Elmeskov, 2004) recommended that European countries have higher public pension and healthcare spending.

Since the greater number of elderly need more healthcare, (Hashimoto; & Tabata, 2010) investigated the relationship between ageing, health and economic growth by using an overlapping-generations model. The study found the ageing diminishes the economic growth in small economies because the rising demand in health care due to the rising number of elderly people increases employment in the health sector. However, (Aisa & Pueyo, 2013) argued that it has an ambiguous effect. Although the greater number of elderly people affects the shift of labor in the health sector, the role of capital accumulation also shifts the demand in the non-health sector because of the reducing income of elderly and their demand for health care.

(Tabata, 2005) reported that there are positive relationships among the public subsidy, life expectancy and economic growth. Welfare will be lost because the public expenditure on health for the future generation increases. Moreover, the social security also places pressure on public expenditure. (Ono, 2003) found the ageing lead to a deficit budget when government finances the social security and the tax revenue is deficient. The "pay-as-you-go" scheme would be preferred in this case. However, if the economy slows down, the fair pension scheme would be preferred. (Pecchenino & Utendorf, 1999) used an overlapping generation model to explore the effect of social security as pay-as-you-go schemes in ageing economy. They found it would diminish economic growth in case of no impact of education.

In order to prepare for an ageing population in the future, government policies need to reform. (Bongaarts, 2004) suggested many policies to solve this problem by increasing the fertility rate, immigration, and labor force participation, as well as raising the age of retirement and reducing public pension benefits. (Elmeskov, 2004) agreed that the changing retirement schemes to have the elderly retire later helps the public budget still be surplus.

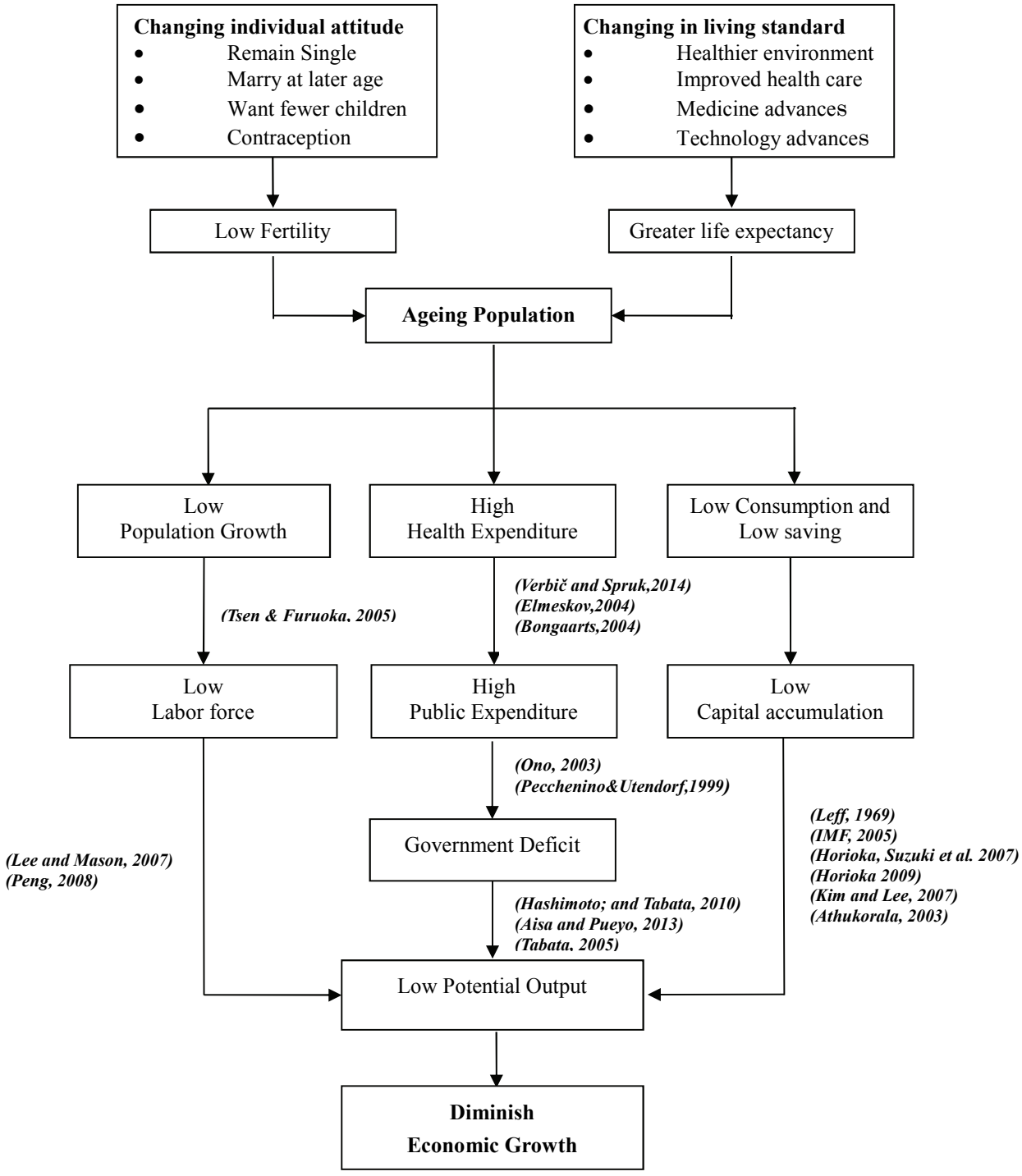
2.3) Consumption and saving

Leff's dependency hypothesis (Leff, 1969) presents an inverse relationship between dependency ratios and saving rates because their expense paid for consumption rather than production. Therefore, the demographic change has an influence on aggregate saving because the high ratio of dependents to the working age population leads to lower aggregate saving.

The saving is the important role on smoothing consumption in the future as the life cycle hypothesis theory is proposed by (Modigliani, 1988; Modigliani & Brumberg, 1980; Modigliani & Brumberg, 1954). The individual decides on consumption and saving. To smooth consumption over their life, the individual needs to save more, which depends on current income and their age and it also affects lower consumption in current period.

The decision of whether and how much to save depends on their consumption and their dependency burden. The impact of a larger ageing population reduces the saving. For instance, (IMF, 2005) asserts the increasing 1% of elderly dependency ratio leads to reduced saving by 1.50% of GDP. In Japan, (Horioka, 2009; Horioka, Suzuki, & Hatta, 2007) show the falling saving rate in households due to the rapid ageing population. In 10 Asian countries, (Kim & Lee, 2007)a greater number of elderly are also saving less in order to consume more. In Taiwan, (Athukorala, 2003) finds the significantly negative impact of Taiwanese household saving rate. The saving is necessary for increasing economic growth as the role of accumulation capital. Therefore, the impact of a larger ageing population also diminishes economic growth in the future.

Figure 1: The impact of ageing population diminishes economic growth framework



3. Ageing enhances economic growth

Population ageing is an unavoidable outcome of demographic transition. Primarily, as a result of declines in mortality and, secondarily, fertility declines, the age structure of a population becomes older. Although the number of elderly is expected to increase, it may not always have a negative effect on the economy if the elderly persons invest in human capital from childhood to adolescence. Furthermore, this part reviews selected literature that concerns the impacts of ageing populations and how it enhances economic growth, which is organized as follows:

3.1) Human capital investment

The declines in mortality and fertility lead to an increase of the aging population. However, it may have an effect on economic growth through human capital investment. In this category, a number of theoretical studies use the Overlapping Generations Model (OLG) to exam the relationship. (Azarnert, 2005; Boucekkine, Croix, & Licandro, 2003; Croix & Licandro, 1999; Gradstein & Kaganovich, 2003; Kalemli-Ozcan, Ryder, & Weil, 2000) explored the relationship between mortality and human capital accumulation in the process of economic growth. The greater longevity will increase the period of schooling because investment in education will earn a greater return over a longer time period.

As regards education systems, each country differs dramatically in the way which they finance their educational systems. Normally, the education can be provided in three ways; The first is through public funds, the second is through private funds, and the third is a combination of the two. The studies presented in the OLG model, (Gradstein & Kaganovich, 2003) found a positive impact on economic growth when increasing longevity results in an increase in public education funds. In addition, (Osang & Sarkar, 2007) found that a mix of public and private spending on education maximizes welfare. The parents must decide how to divide their income between consumption and education spending. In addition, (R. Lee & Mason, 2010) focused on the allocation via the number of children in a family as well as the level of education they attain. The low birth rate led to higher human capital expenditures per child through more education for the fewer number of children.

More precisely, human capital investment is not only learning in school, but also on the job training (Clark, Matsukura, & Ogawa, 2013). Training enhances the level of opportunities workers experience through participation in the labor market, which is another key to sustaining effective labor. In addition, (Prettner, 2013) used endogenous growth model to show that increasing longevity can promote the capita output through technological change and Research and Development (R&D) which have a positive effect on economic growth.

Besides education, the issue of health is also important to investigate.. (Chakraborty, 2004) pointed to greater longevity and lower mortality rate as a result of improve health s well as (Issa, 2005) indicated health contributes directly to the growth process because good health have a good job performance.

Overall, investment in schooling, training, R&D, and health has a positive effect on the stock of human capital because the increase in human capital accumulation has long been identified as a factor in the long-run economic growth. There is a large body of empirical evidence that has focused on the process of population ageing and economic growth. (Bloom, Canning, & Fink, 2010; Cuaresma, Lábaj, & Pruzˇinsky, 2014; Go´mez & Cos, 2008)

3.2) Life satisfaction and experiences transfer

Nowadays in Taiwan, there are many extended families which consist of at least three generations living together. . The family's life satisfaction increases when the elderly members assist in taking care of their grandchildren (Chen, Wang, & Lin, 2011). Apart from this, the elderly people foster learning by

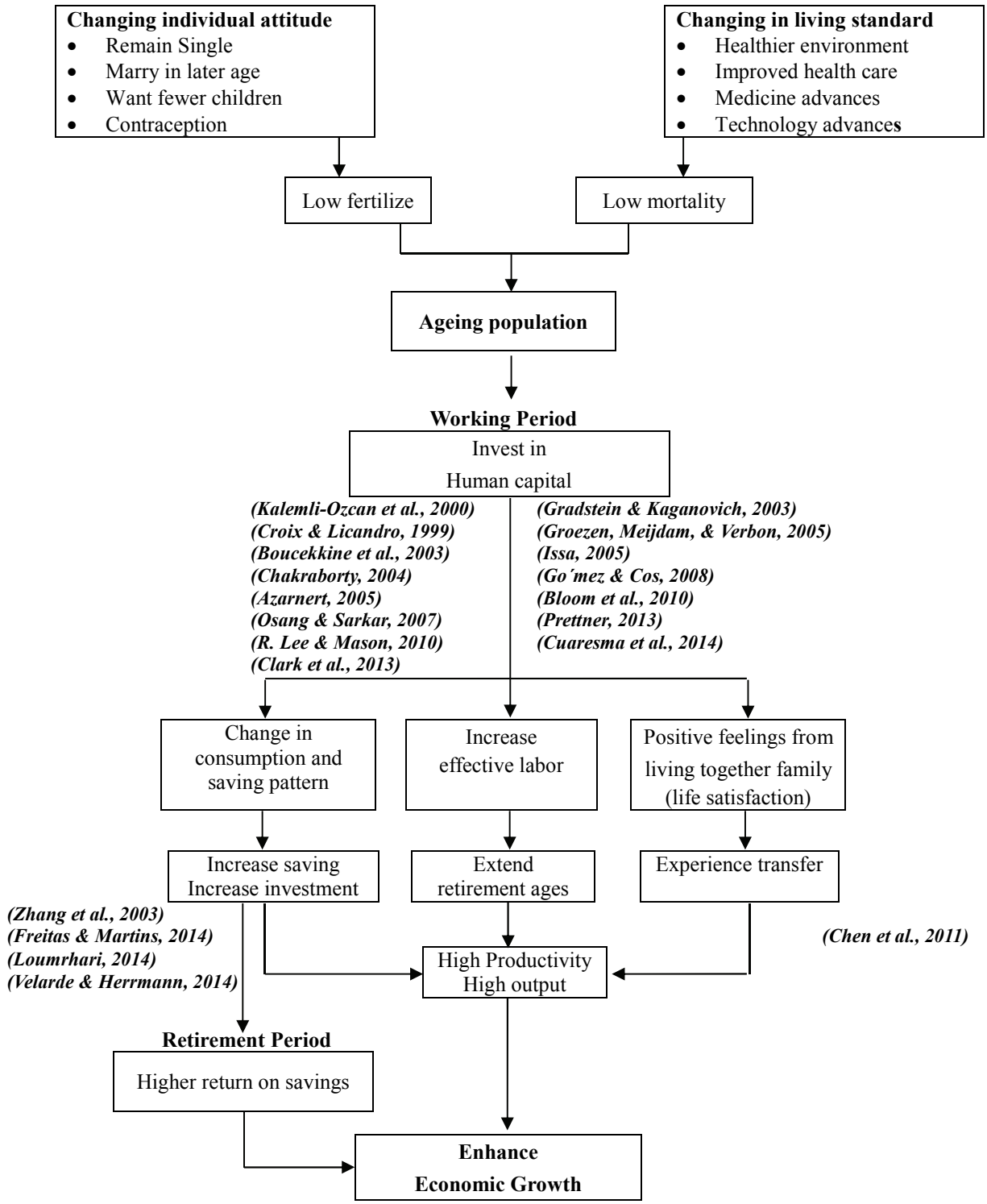
sharing their knowledge which then leads to more experience transfers in these families. For economic reasons, as younger family members gain more experiences and thus increase in their skills, it leads to greater in human capital accumulation. Consequently, this helps to drive Taiwan's economic growth.

3.3) The change of consumption and saving patterns

The economic lifespan of all individuals consists of two periods: working and retirement periods. In the first period, working adults spend their money and time on education and training for their children. Their skills lead to more productivity, which results in effective labor. When people anticipate living longer, they decide to save more money during working period in order to have adequate funds for their retirement. As global life expectancy increases, the life-cycle consumption and saving patterns of elderly persons change. Increasing longevity requires more saving and consumption in old age, as reported by (Freitas & Martins, 2014; Zhang, Zhang, & Lee, 2003). Theoretical background and empirical work, (Loumrhari, 2014), confirms the importance of private savings to finance an economy and its long-term growth. The demographic changes result in a positive saving rate effect as a greater life expectancy leads to more retirement consumption (Velarde & Herrmann, 2014).

Accordingly, the studies indicate the influence of population ageing is based on economic growth. These results show the facts of demographic transition change for a decrease in mortality and fertility rates as well as an increase in human capital investment that also increases high productivity and output. The role of human capital is an important factor input that directly stimulates economic growth as shown in Figure 2.

Figure 2: The impact of ageing population enhances economic growth framework



4. Conclusion

The frontier of ageing society and economic growth has been revised in this paper. It is also separated into diminish and contribute the economic growth. Unsurprisingly, regarding the survey of previous literatures, the former succinctly states as follows: i) the aging population causes the lower economic growth, ii) the aging population will be burden of the government spending in the future and then the public policy such as the retirement schemes, fertility policy, have to be reform, iii) the rapid aging population consigns the household saving rate goes down. On the other hand, the latter can point the interesting issues out. They are also summarized as followings. The propositions of previous theoretical works were proved that expansion of life expectancy of representative agent in the simulated economy leads the accumulation of human capital to enhance long-run growth due to the length of schooling and training. This finding is also consistent with the previous empirical work through econometrics modeling. Further, the positive longevity effect dominates the negative fertility effect according to the endogenous growth model. Apart from this, the elderly population can contribute the economic growth because of knowledge transfer. Further, the learning of younger from elderly population experiences is the key success to develop their skills. Therefore, this paper raps them up to be the conceptual framework of the impact of aging population diminishes/enhances economic growth for the future research direction.

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