Ageing, Poverty, and the Role of a Social Pension in Vietnam*

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Abstract

By using the Vietnam Household Living Standard Survey in 2004, this paper seeks to quantify the potential role and impacts of a social pension scheme for reducing elderly poverty in Vietnam. We simulate how the poverty rate, poverty gap, and poverty severity of the elderly would have been changed in the counterfactual situation that such a scheme had been introduced to Vietnam in the past. We consider a number of categorical targeting groups of elderly people along with various transfer parameters to assess the impacts of the scheme on social welfare. We find that, depending on the characteristics of the social pension, there would be beneficial poverty reductions, but also large leakages to the non-poor people. For a variety of measures, our results suggest that targeting the elderly in rural areas might be the most effective use of limited resources. Also, simulations for different budgetary constraints show that, even with limited budgeting, a social pension scheme would significantly reduce poverty incidence for the elderly. We also find that for a given program cost, combining lower benefits with lower eligibility requirements is more effective at reducing poverty than providing larger benefits to a more limited group of recipients.

Keywords: ageing, poverty, social pensions, Vietnam
JEL Classification: H55, I32, I38

INTRODUCTION

Rapid declines in fertility rates and mortality rates along with substantial improvements in health care systems have resulted in the growth of elderly populations around the world, and this trend is expected to continue in the coming years. With the definition of an elderly person as aged sixty years and over, the medium-variant population projections of the United Nations (2007) show that the number of elderly people will increase from 672 million in 2005 (or 10 per cent of the world population) to around two billion people in 2050 (or 22 per cent of the world population). Particularly in the developing countries that grow old before becoming rich, population ageing will especially present various challenges for public policies in the coming decades. In addition, under profound social and economic changes stemming from modernization and urbanization, the weakening of family bonds also suggests an urgent task for the old-age security in developing countries, where social security systems are underdeveloped with extremely limited coverage (Schwarz, 2003; United Nations, 2005; United Nations Department of Economic and Social Affairs (UN-DESA), 2007).

As one of the best performing developing economies in the world, Vietnam is experiencing the changes just described. The aforementioned projections indicate that the elderly population in Vietnam will increase significantly from 7.6 per cent of the whole population in 2005 to about 26 per cent in 2050. Moreover, swift economic transformation since *Doi moi* (renovation) programs in 1986 has had significant impacts on all areas of society, resulting in substantial improvements in living standards for many people, including the elderly. However, while such remarkable successes have been widely acknowledged, many groups of elderly people are still living in poor and vulnerable conditions. The majority of elderly are still living in rural and disadvantaged areas, and only a small percentage of the elderly in Vietnam are receiving public pensions, while others are living on their own and/or supported by family members (Ministry of Labour, Invalids, and Social Affairs (MOLISA), 2005). In addition, a potentially worrisome issue for supporting the elderly is that the past decade witnessed a continuous decline in the multi-generational family model, in which the number of elderly who lived as dependents declined, while the number of elderly who lived alone or in households with only elderly increased (Giang and Pfau, 2007a; Institute of Labour Science and Social Affairs (ILSSA) and United Nations Population Fund (UNFPA), 2007). Thus, any reduction in family support caused by such trends will leave the elderly behind with further vulnerabilities. The above situation demands that policy makers and social researchers provide more attention to discussing and introducing social welfare programs that can protect the elderly people in Vietnam.

Recently, social pensions, which are sometimes known as non-contributory pensions (NCP) or cash transfer programs for the elderly, have emerged in many countries in Africa, Asia, and Latin America. A number of studies show that these schemes are playing an important role in reducing elderly poverty as they can bring economic, social, and health benefits to the elderly recipients and their families. For example, Barrientos and Lloyd-Sherlock (2002) indicate that the rate of extremely poor would have been 16 percentage points higher in the absence of a social pension in Argentina. Similarly, Barrientos (2005) shows that people in households receiving a social pension are 18 per cent and 12.5 per cent less likely to be poor in Brazil and South Africa, respectively. In the poor and low-income countries, social pensions substantially contribute to reducing poverty and vulnerabilities of the elderly. HelpAge International–HAI (2004) shows that a social pension becomes the main source of income for Namibian poor households during droughts, helps many elderly and children in HIV/AIDS-affected households in Botswana, and empowers Indian female poor in their families. The existing social pension schemes are helping to significantly reduce poverty incidence for millions of people, while costing a small percentage of GDP in the studied countries, such as less than 2 per cent of GDP in Namibia (HAI, 2004), less than 1 per cent of GDP in Nepal and Botswana, and 2 per cent of GDP in Mauritius and Antigua (Willmore, 2004).

Learning from such findings, many researchers have examined the likely impacts of social pension programs for countries where they do not yet exist. These studies are usually completed by simulating the impact of a social pension program had it been created at some point in the past, and they generally find the potential for significant reductions in the elderly poverty (see, for example, Bhorat, 2003 for South Africa; Gassman and Behrendt, 2006 for Senegal and Tanzania; and Kakwani *et al*., 2006 for Kenya).

In Vietnam, a social pension scheme was implemented in 2004 to provide a benefit of 65,000 Vietnamese dong (VND) (or about US$ 4.2)[1] per month to the elderly aged ninety and over who did not receive a pension from the contributory system. In April 2007, the eligible age was revised to eighty-five and over, and the benefit was increased to VND 120,000 (about US$ 7.5) per month. Yet, the real coverage rate is low, as more than two-thirds of the eligible individuals have not received any benefit, and even some provinces have not carried out this scheme (National Assembly's Committee for Social Affairs, 2006). A recent report (ILSSA and UNFPA, 2007)

[1] Unless otherwise stated, throughout the paper we will use the average exchange rate in 2004 reported by International Monetary Fund (2007), in which $US 1 was equal VND 15,705.

shows that the impacts of the current scheme are limited in terms of both coverage and poverty reduction, though it has been able to help the recipients overcome certain difficulties.

Under swift social and economic changes and expected ageing population in the coming years for Vietnam, two urgent questions are how an extended social pension scheme can help to reduce poverty for the elderly people, and how much such a scheme will cost. Previously, Giang and Pfau (2008) and Weeks *et al*. (2004) simulated a *universal* old-age pension scheme in Vietnam, and they find that such a scheme would cost about 2-3 per cent of the GDP. However, with limited financial capacities for a country like Vietnam, it is necessary for a social pension scheme to be effective in various aspects, including financial costs, poverty reduction, and welfare improvement. And as such, different scenarios for a social pension scheme need to be further explored.

Guided by these research and policy needs, our paper aims to simulate how the poverty incidence of the elderly in Vietnam would have been changed in the presence of a social pension scheme. We consider a number of categorical targeting groups of elderly people along with various transfer parameters to assess the impacts of the scheme on their social welfare. The categorical targets include all elderly, only rural elderly, only female elderly, and elderly living in the poorest regions. We compare different programs based on their overall costs by varying the categorical target groups, the eligible age for benefits, and the benefit levels. In general, we find that there would be obvious tradeoffs: more expenditure would result in more poverty reduction, but also lead to more costs and leakages. More importantly, even with small budgeting, our simulations imply that a social pension scheme would significantly reduce poverty incidence for the elderly. In particular, we find evidence that focusing a program on rural elderly would be the most effective in a number of ways, and that the programs with lower eligibility ages and lower benefits would have a bigger impact on poverty than the programs with comparable costs that provide higher benefits but also have higher eligibility ages.

The remainder of the paper is organized as follows. In the next section, we will present our data and estimation methodology. Then, we will discuss the empirical results and policy implications. The last section of the paper will provide concluding remarks.

DATA AND METHODOLOGY

Data

To pursue the above-mentioned research objectives, we will use the Vietnam Household Living Standard Survey in 2004, namely VHLSS 2004. This is one of the four household surveys in Vietnam over the past decade conducted by the General Statistics Office (GSO) along with other

international agencies, as a part of the World Bank's Living Standard Measurement Surveys (LSMS). Descriptions of this survey can be found in World Bank (2005) and GSO (2007). Unless otherwise noted, our calculations will use sample weights to make the data representative for the entire population in Vietnam.

The survey is organized by household, but it also includes some characteristics for individuals in the household, such as age, gender, relationship to the household head, marital status, working status, wages, health status, and educational attainment. This structure lets us identify the elderly people (aged sixty and over), as well as the elderly households (which include at least one elderly person). The VHLSS 2004 includes 39,696 individuals in 9,189 households, in which the number of elderly people and the number of elderly households are 3,806 and 2,784, respectively. At the household level, the survey provides information on the sources of income, household expenditures, ownership of consumer durables, business and agricultural activities, poverty incidence, participation in the poverty alleviation programs, as well as social insurance, wealth, and housing conditions.

However, the data also have some limitations. Besides wages, most income sources are only identified at the household level, so it is not clear which member is the source of household income. Similarly, expenditure is identified at the household level, so we do not know who is spending and can only identify per-capita expenditure within the household. Also, wealth data are only available at the household level. These problems limit our ability to analyze intra-household sharing.

Methodology

The main aims of our paper are to quantify the potential role and to estimate the financial cost of a social pension scheme in reducing the elderly poverty in Vietnam. Our analysis will apply micro-simulation techniques with the VHLSS 2004 data. We will first consider various groups of elderly as scheme targets in order to see how the proposed schemes would be able to reduce elderly poverty, and how much they would cost. Then, under different fixed budget levels, we will simulate a number of alternatives to look for the most effective scheme in terms of poverty reduction and welfare improvement. Finally, we will investigate how the program costs would increase over time as a result of continued population ageing in Vietnam.

Measuring Poverty Incidence

This paper will measure poverty using the poverty rate, poverty gap, and poverty severity. We will apply these measures for the recipient population, the overall elderly population, and the total population of all ages. The poverty rate represents the percentage of population whose

expenditures are lower than the official poverty line.[2] In 2004, the official poverty line was measured by per-capita expenditure per year and was VND 2,077 thousand (or $US 132.3). The poverty gap indicates how much money is needed to close the gap between per capita expenditure and the official poverty line for each member of the population (it is zero for the non-poor). We must be clear that we define this as an absolute measure of income, such that Vietnam's poverty gap would be defined as the total amount of money required to bring the expenditures of all poor people up to the poverty line. Poverty severity is calculated as the sum of squares of individual poverty gaps, which puts extra weight on those experiencing more extreme poverty. All these poverty measures are weighted by the household size, so that they are representative for the whole Vietnamese population as well as the elderly population.

To examine the sensitivity of these poverty measures to the poverty line, we will introduce three poverty lines: (i) 50 per cent of the official line, which allows for a focus on extreme poverty; (ii) 100 per cent of the official line; and (iii) 167 per cent of the official line, which corresponds to the commonly used relative poverty line of 50 per cent of gross domestic product (GDP) per-capita, and this allows for consideration of those above the official poverty line but still vulnerable to poverty.

Regarding the official poverty measure, one problem is that it is based on per-capita expenditure, which is estimated by dividing total expenditure of a household by the number of household members. As indicated in many studies, such as Barrientos (2006) and Deaton (1997), such a measure is established for the household as a whole rather than for particular individuals, and it may underestimate or overestimate poverty rates under different household settings. Underestimation could occur when a household member is deprived of consumption by other members, and overestimation could occur, for instance, if larger households can enjoy economies of scale from living together that reduce their overall needed expenditures. Therefore, to mitigate possible biases of the official poverty measure, we will introduce an alternative equivalence scale. As such, our paper will consider two measures for household expenditure: (i) officially-used per-capita expenditure or the 'official per-capita equivalence scale', and (ii) the 'alternative adult equivalence scale'. The latter is adopted from Barrientos (2005), and can be defined with the following equation:

[2] In Vietnam, there are two poverty lines. The first line, namely 'food poverty line', is measured by the annual amount of money required to purchase a 'typical' basket of food items providing 2,100 calories per person per day. The second line, which is the 'official poverty line', includes the purchase of the aforementioned basket of food items and the purchase of a 'minimal' amount of non-food items. In our paper, we use the second definition of poverty line. See Phung (2004) for further explanations of how the Vietnamese poverty lines are estimated and adjusted over time.

$$\text{Alternative Adult Equivalence Scale} = \frac{\text{Total Household Expenditure}}{1+[\#\text{adult} - 1 + \beta \#\text{children}]^{\alpha}}, \quad (1)$$

where β=0.5; and α=0.75. When β=1 and α=1, we get the 'official per-capita equivalence scale'. When β is less than unity, the formula recognizes that expenditures for children need not to be as large as those for adults, and the α term accounts for the economies of scale enjoyed by larger households.

Categorical Targeting Groups

In this paper, we will consider the following four categories of elderly social pension beneficiaries. As will be discussed later, these categories are chosen based on an attempt to find more vulnerable groups. Note that none of these categories include means-testing of income or wealth, because the administrative burden of such programs in Vietnam would be immense.[3] We do note that if perfect targeting were possible, elderly poverty could be eliminated with an expenditure at 0.1 per cent of GDP, while eliminating the poverty of all members of elderly households would cost 0.4 per cent of GDP, and eliminating all poverty in Vietnam would cost 1.1 per cent of GDP.

Eligible elderly for the following categories should be relatively easy to identify:

(1) All elderly (namely 'ALL'). This is a universal scheme.
(2) Only elderly living in areas classified as rural (namely 'RUR');
(3) Only female elderly (namely 'FEM');
(4) Only elderly living in the Northwest and Central Highlands regions, which are the poorest regions in Vietnam (namely 'REG').

Measuring Impact and Effectiveness of the Proposed Social Pension Schemes

In our estimation, we will calculate how the poverty rate, poverty gap, and poverty severity of the elderly would have been changed, in percentage terms, if a social pension scheme had been introduced in the past in Vietnam. The higher the percentage change, the more effective the scheme would be.

Another measure for the cost effectiveness of the proposed schemes is the percentage of the total cost that would have been actually used to reduce the poverty incidence of the elderly recipients, the overall elderly population, and the total population of Vietnam. This provides an idea about the leakage rate of benefits to non-poor elderly, to poor non-elderly, and to non-poor

[3] Recent evaluation by Ministry of Labour, Invalids, and Social Affairs (MOLISA) and United Nations Development Programme (UNDP) (2004) on social protection programs in Vietnam showed that the targeting of beneficiaries was generally effective as most of the recipients were in fact very poor, and that reliance on means testing has had a negative effect on program coverage.

non-elderly. We estimate only the total cost for benefit payments and exclude administrative costs for the proposed schemes.

Also, for the potential impact on welfare, we will estimate changes in utility of the elderly population and the total population, which are measured as the sum of changes in the logarithms of their respective expenditures. Individual expenditures will be estimated using both of the previously mentioned equivalence scales. This measure of utility allows for diminishing returns from expenditures such that benefits received by the poor will have a greater impact, and it does not require setting any poverty line. Also, since we will not collect taxes as a source for paying benefits in our simulations, utility changes will be always positive, and it is matter of finding the program with the largest impact for a given cost.

Main Assumptions for Simulating Impacts of the Proposed Social Pension Schemes

We use the VHLSS 2004 data to simulate a counterfactual situation in which a social pension scheme had been introduced in the past. To do this, we first assume that the eligible elderly's benefits from the social pension scheme will be added to their household's total expenditures, and then divided equally among each member of the household. This is a necessary assumption, because we are unable to account for differentiated individual expenditures within the household. Under this assumption, the proposed social pension scheme would reduce poverty incidence for various groups of people, including poor elderly, non-poor elderly, poor non-elderly, and non-poor non-elderly.

Second, we assume that everything other than the social pension benefit will remain the same. In other words, the elderly and their relatives or family members will not change their behaviors in response to the potential gain from such a social pension scheme. Also, there will be no macroeconomic feedbacks from the introduction of a scheme. We must admit that these assumptions are obviously strong, since there would be a number of potential biases in introducing a social pension scheme for different elderly categories. For instance, the social pension scheme for elderly living in rural areas might encourage the urban elderly to move to rural areas. To the extent that such behaviours occur, program costs would be increased beyond our estimates.

Third, we also assume that such a social pension scheme would be operated under limited budgeting. We will first assume that the total benefit cost of the proposed scheme must be about 1 per cent of GDP in 2004, and we find the programs that match this criterion. To find the programs with specific total costs, we vary the categorical target groups, the eligibility ages, and the benefit levels while calculating total costs and searching for matches. Then the total cost will be allowed to vary between 0.25 per cent and 1.5 per cent of GDP, which is a common range for many

developing countries that are considering a social pension program (see, for instance, Schwarz, 2003; United Nations' Department of Economics and Social Affairs (UN-DESA), 2007; Willmore, 2007). Under these cost constraints, we will find the most effective program in terms of poverty reduction and welfare improvement for the different poverty lines and equivalence scale measures, which will provide information about the robustness and sensitivity of the results to different assumptions.

Simulating the Future Costs of the Proposed Social Pension Schemes under Population Ageing

To estimate the future costs of the proposed social pensions, we will apply a simulation method proposed by Willmore (2007). Suppose that the eligible elderly account for *e* per cent of the total population, and the social pension benefit provided to each person is equal to *b* per cent of per-capita GDP. The total expenditure of the scheme without administrative costs will be *t* per cent of GDP, in which $t=e*b$. This estimate implies that the benefit is not linked to the poverty line, because the poverty line grows with inflation rather than GDP. To the extent that GDP will grow faster than inflation, it indicates a growth of the benefit in terms of its percentage of the poverty line. Also, more eligible elderly or a higher benefit means more expected costs for the scheme. We will use the data from the population projections of United Nations (2007) for Vietnam during 2005-2050, which are based on three scenarios for fertility rates, including low-variant, medium-variant, and high-variant fertility rates. The low fertility rate leads to a high elderly rate (as a per cent of the population), and this is our high cost scenario. The medium cost scenario represents the UN's best forecast, and the low cost scenario includes a high fertility rate and so a low elderly rate. To get consistent projections, we will first adjust the UN forecasts for elderly rates upward so that the 2005 values match the elderly rate in the VHLSS 2004 (7.6 per cent and 9.9 per cent, respectively).

FINDINGS AND DISCUSSION

Demographic Characteristics and Poverty Status of the Elderly

Before analyzing social pension schemes, we first consider basic characteristics and poverty for Vietnam's elderly. Table 1 provides general information about the elderly in Vietnam in 2004.

[Table 1 about here]

By age, young elderly (aged 60-69) accounted for about 50 per cent of the elderly population, while the oldest elderly (aged eighty and over) accounted for about 15 per cent. The estimates show that, by all three poverty lines, the elderly at more advanced ages generally experienced higher poverty rates than did the younger elderly.

Regarding gender, female elderly were more prevalent and experienced a higher poverty rate than did their male counterparts. Meanwhile, about 60 per cent of the elderly were married. By all three poverty thresholds, the married elderly had significantly lower poverty rates than did their non-married counterparts, most of whom were widows.

In terms of residential areas, more than 70 per cent of the elderly were still living in rural areas. This number, however, has been declining over the past decade on the account of the emerging urbanization (Giang and Pfau, 2007a). The results show that, by any of three poverty thresholds, the urban elderly had a substantially lower poverty rate than did their rural counterparts. Similarly, the results for residential regions show that more than 70 per cent of the elderly were living in the four largest rice-producing regions in Vietnam, i.e., the Red River Delta, the Northeast, the Southeast, and the Mekong River Delta. The elderly living in these regions had lower poverty rates than did the elderly living in other regions. In particular, with all three poverty thresholds, the elderly living in the Northwest experienced the most poverty, and the elderly living in the Southeast region experienced the least.

By living arrangements, more than 75 per cent of the elderly were living with their children, and about 20 per cent of the elderly were living in households with only elderly. As shown in Giang and Pfau (2007a), the percentage of households with only elderly tended to increase in recent years, while the percentage of the elderly living with children tended to decrease. Distinguishing further by marital status and living arrangements, Giang and Pfau (2008) find a worrying situation in that more than 80 per cent of elderly living alone were female elderly living in rural areas. The estimated results in Table 1 show that the elderly households with only elderly had the highest poverty rate under the first poverty line, while the households where the elderly were living with children had the highest rate under the second and third poverty lines. This situation can be understood by the fact that larger households tend to have lower per-capita expenditures.

Finally, only 35 per cent of the elderly were in households receiving some forms of social security benefits. The number was even much lower when considering only pensions (Giang and Pfau, 2008). The results show that the recipient elderly households had lower poverty rates than did their non-recipient counterparts.

Table 1 highlights our choice of the four categorical targets, which tend to reflect the groups with higher poverty rates.

Impacts of the Proposed Social Pension Schemes on Poverty

We now consider the potential impacts of different social pension schemes on elderly poverty in Vietnam, as well as their respective financial costs. Table 2 presents our estimates, which are based on the assumption that *a pension of 50 per cent of the official poverty line is provided to all eligible people aged sixty and over*. It is important to note that these estimates are not directly comparable, because of the differing number of recipients and the differing costs. However, we first provide an overview of how the impacts differ among the four categories, and in subsequent tables we will analyze programs with the same costs.

[Table 2 about here]

In general, the estimates show that the total benefits paid would vary from VND 436 billion ($US 27.8 million, or 0.06 per cent of GDP in 2004) for a scheme introduced in the two poorest regions to VND 8,179 billion ($US 520.7 million, or 1.14 per cent of GDP in 2004) for a universal scheme. The estimates show that more than 50 per cent of the estimated costs would be spent by non-elderly people in the elderly households, meaning that the leakage rates in all proposed schemes would be high. Again, this result occurs on account of our assumption that the recipient's benefit becomes a part of the household's spending resources, and is subsequently shared equally by all household members.

Regarding the impacts on poverty, the estimates provide useful information about the possible reduction in poverty rates and poverty gaps for the direct recipients, the whole elderly population, and the whole population in Vietnam. Generally, the estimates indicate that the magnitude of reductions in poverty rates and poverty gaps for the elderly would vary for different targeting categories. For instance, in the case of a universal scheme, the poverty rate of the direct recipients would decrease from 17.9 per cent (without scheme) to 9.3 per cent (with scheme), while that of the whole population in Vietnam would decrease from 19.3 per cent to 17.4 per cent.

The last panel of Table 2 can help to compare the cost effectiveness of different proposed social pension models, which is measured as the percentage of total benefit payments that helps to reduce the poverty gap, or in other words, that are received by poor individuals. We refer to this as the poverty reduction efficiency. In this sense, the scheme providing benefits to the elderly in the two poorest regions would be most effective, as it would result in the highest percentage of benefits used to reduce poverty gaps for the direct recipients (10.03 per cent), the whole elderly population (10.03 per cent), and the whole population in Vietnam (31.33 per cent). A program targeting rural residents or a program targeting females follows in terms of the portion of benefits that are devoted to reducing the poverty gap for the elderly and total population.

[Figures 1 and 2 about here]

Figure 1 and Figure 2 provide additional information about the costs and impacts when we vary two key parameters: the starting eligible age and the benefit level. Both figures are created for the universal targeting scheme, in which all elderly at least as old as the eligible age would receive a benefit. These figures are made using the official poverty line to measure poverty, and using the official per-capita equivalence scale. They help to show how such a universal scheme under different assumptions would reduce poverty rates and poverty gaps for the elderly and the whole population in Vietnam. We can also see the financial costs of such schemes.

In Figure 1, we assume a benefit level equal to 50 per cent of the official poverty line, and we vary the starting eligible age from sixty to ninety. The total benefits paid will decrease as the eligible age is higher. Though it varies by starting age, the percentage of benefits that reduce poverty for direct recipients is always less than 6 per cent. For elderly as a whole, higher starting ages do witness an upward trend in this cost effectiveness measure, but still less than 8 per cent of benefits reduce elderly poverty. Even for the whole population, the percentage of benefits that reduce poverty fluctuates between just 12 and 18 per cent. The lower panel of Figure 1 shows how the poverty rate and poverty gap of the recipients, the whole elderly population, and the whole population of Vietnam would be changed with the presence of the proposed scheme. In general, these graphs show diminishing poverty reduction for the whole elderly population and the whole population of Vietnam as the starting eligible age is higher and total expenditures are less. As for recipients, the starting eligible age does not have much impact on the portion of benefits that reduce the poverty gap.

Meanwhile, in Figure 2 we present a universal social pension scheme for all elderly aged sixty and over, and we vary the benefit level from 5 per cent to 200 per cent of the official poverty line. Because this is a universal scheme for all elderly, the recipient population is always the same as the elderly population. Naturally, the total benefit cost will be increased at a linear rate as the benefit level increases. The leakage rate of the proposed scheme also increases with increasing benefits, as we can observe a decline in the percentage of benefits that reduce the poverty gap as the benefit level increases. Poverty continues to be reduced with higher benefits, but the marginal poverty reduction decreases as benefits increase. To summarize, what this figure illustrates is that an increasing benefit level produces diminishing marginal poverty reduction, and that even a relatively small benefit level can have significant impacts on poverty.

[Table 3 about here]

Given limited government revenue, we now consider in Table 3 all the alternatives of a social pension scheme in Vietnam, in which *the target for spending would be approximately 1 per cent of GDP in 2004*. The GDP in 2004 was VND 715,000 billion (or about US$ 45.5 billion). In addition, our estimates for all four categorical targeting schemes assume that *the poverty line is measured as 100 per cent of the official line, and equivalence scale is the official per-capita expenditure*. Under these assumptions, we can estimate the starting eligible age (which can range from sixty to ninety) and benefit level (which can range from 5 per cent to 200 per cent of the official poverty line) provided to the eligible elderly. Also, we can measure the percentage changes in poverty gap, poverty severity, and utility for the elderly population and the whole population of Vietnam. The most effective programs can be chosen from the list, depending on the desired outcome measure. For instance, Table 3 shows that we would choose a scheme providing to the rural elderly aged sixty and over a benefit of 60 per cent of official poverty line, because this scheme generally would be most successful in reducing the poverty gap and poverty severity and enhance utility by the most in comparison with other schemes. In particular, this program could reduce the elderly poverty gap by 59.68 per cent and the total poverty gap by 14.86 per cent. And though each program would have a slight difference in total benefit cost, it is important that we generally find for any given category that bigger poverty reduction occurs with lower starting eligible ages and lower benefit levels. This provides an important policy recommendation: *it would be better to reduce the eligible age and reduce the benefit level than to increase the eligible age and increase the benefit level for any given total program cost*.

We also note that the category 'REG' (for elderly living in the two poorest regions) does not appear in Table 3, because the number of elderly in this group is too small to be able to spend 1 per cent of GDP with benefits less than 200 per cent of the official poverty line.

[Table 4 about here]

Moving forward, Table 4 provides a robustness check by expanding the results of Table 3 to include a range of total spending levels, additional poverty lines, and both types of equivalence scales. We vary the total benefit spending for a social pension in Vietnam from about 0.25 per cent to about 1.5 per cent of the GDP in 2004. This is a common range for cost projections in many developing economies (see, for example, UN-DESA, 2007). Because we vary these additional details, in Table 4 we only list the programs that provide an optimal result for various outcome measures. This would be equivalent to showing the two rows of pension schemes for rural elderly from Table 3 that have boldfaced results, and only showing the numbers that are boldfaced in Table 3.

As can be seen in the table, for any given poverty line and equivalence scale, there would be an obvious tradeoff between the starting eligible age and the benefit level, though the impacts of each proposed scheme on the elderly poverty would vary. For example, under the official poverty line and the official per-capita equivalence scale measures, at the total cost of 0.25 per cent of GDP in 2004, we can choose either a scheme providing a benefit of 20 per cent of the poverty line to all rural elderly aged sixty-five and over or a scheme providing a benefit of 25 per cent of the poverty line to all rural elderly aged sixty-eight and over. Furthermore, which scheme we will finally choose depends on which criteria of impacts we are considering. In the aforementioned cases, for example, if we are focusing on poverty reduction, we will choose the former scheme as it could be able to reduce all poverty indices by the most for the whole elderly population and the whole population of Vietnam, while we will choose the latter scheme if we are considering the potential impact on our social welfare function.

The table also allows us to observe the diminishing returns to poverty reduction as the total costs increase. For instance, with the official poverty line and the official per-capita equivalence scale, the most effective program costing about 0.5 per cent of GDP could be able to reduce elderly poverty by 40.7 per cent. Beyond this, the additional poverty reduction when increasing spending from 0.5 per cent to 1 per cent of GDP would only be 19 percentage points, and when costs increase from 1 per cent to 1.5 per cent of GDP, the marginal reduction in the elderly poverty would be only an additional 7.2 percentage points. We could also observe this effect earlier when describing Figure 2. This detail illustrates that *strong poverty reduction can be achieved even with only a rather limited budget for the social pension*. Related to this point, we note that when we look at severe poverty by using a poverty threshold that is 50 per cent of the official poverty line, even with spending of only 0.5 per cent of GDP, we can eliminate more than 70 per cent of severe elderly poverty, and more than 20 per cent of severe poverty for the whole population. Even an expenditure of 0.25 per cent of GDP could eliminate half of the severe elderly poverty.

In addition, we also note that for the various poverty lines and equivalence scales, the category ‘RUR’ (for elderly living in rural areas) shows up repeatedly across the range of expenditures. In particular, under both 100-percent and 167-percent official poverty lines and both equivalence scales, only this category shows up. This means that under limited budgeting and desired poverty reduction, *targeting rural areas would provide the most effective use of limited resources to reduce poverty for the elderly*.

Another interesting finding from Table 4 is that under different poverty lines and total cost levels, the proposed social pension schemes using the alternative adult equivalence scale would

generally have greater impacts on poverty reduction than those using the official per-capita equivalence scale. This provides another important policy implication: *preciseness in poverty measurements is extremely crucial in evaluating social program impacts*.

Future Costs for the Proposed Schemes under Demographic Changes

A number of studies on social pensions, such as UN-DESA (2007) and Willmore (2007), show that the biggest concern for any developing country in implementing such a scheme is whether the cost of the scheme would be feasible, given various economic constraints. This question is important for the case of Vietnam as well, and in this section we attempt to project the costs of these programs to assess the impacts of population ageing and other potential demographic trends. As mentioned earlier, we will use a simulation approach proposed by Willmore (2007) to estimate the expected financial costs of the proposed social pension schemes in Vietnam through 2050. We will focus on simulating costs for different schemes for categories 'ALL' (a universal scheme) and 'RUR' (a scheme for only rural elderly). The initial cost in 2004 of each program we consider is about 1 per cent of GDP. For example, we will estimate future costs for a universal scheme providing a benefit of 55 per cent of the official poverty line to all elderly aged sixty-four and over, or a scheme providing a benefit of 60 per cent of the official poverty line to all rural elderly aged sixty and over.

In our estimates, we use the data from the population projections of United Nations (2007) for Vietnam in the period 2005-2050, which provide the three aforementioned population scenarios. Due to slight differences in elderly-related data between United Nations (2007) and VHLSS 2004, we first calibrate data from these sources, so as to get consistent elderly population projections. For the projections of rural elderly population, we assume that the percentage of the elderly population living in rural areas will be the same as that of the general population in Vietnam. This is a necessary assumption, because we are unable to estimate the future rural rate of the elderly population independently. This assumption is also supported by the findings in Giang and Pfau (2007a) that the rural rate of the elderly was relatively close to that of the non-elderly over time.

[Table 5 about here]

Since United Nations (2007) only provides the rural rate projections for the general population until 2030, we expand the projections to 2050 with an assumption that speed of reductions in the rural rate will be diminishing from 2030 onward. Furthermore, we develop the high and low cost scenarios for the rural elderly rates by adding or subtracting 5 percentage points to the medium scenario. As illustration, Table 5 provides our calibrated and projected results for the elderly and rural elderly aged sixty and over.

[Figure 3 about here]

Figure 3 shows projections for four schemes that initially cost about 1 per cent of GDP in 2004. The upper panel of Figure 3 presents the estimated future costs for two universal social pension schemes, in which the one on the left provides a benefit of 55 per cent of the official poverty line to all elderly aged sixty-four and over ('ALL64-55'), and the other on the right provides a benefit of 80 per cent of the official poverty line to all elderly aged sixty-nine and over ('ALL69-80'). We can see that population ageing will lead to large-scale projected increases in the program costs, as the medium cost projections for both of these programs in 2050 will be about 3 per cent of GDP.

Meanwhile, the lower panel of Figure 3 shows the estimated future costs for two social pension schemes targeting rural elderly, in which the one on the left provides a benefit of 60 per cent of the official poverty line to all elderly living in rural areas ('RUR60-60'), while the other on the right provides a benefit of 200 per cent of the official poverty line to all elderly aged seventy-five and over ('RUR75-200'). As shown in the figure, the projected costs will increase more slowly on account of the projected future urbanization, and the medium cost projections for both of these programs in 2050 will be about 2 per cent of GDP.

[Figure 4 about here]

Figure 4 compares the medium cost projections for different social pensions in the two above-mentioned categories, in which the upper panel of the figure shows the estimates for universal schemes ('ALL'), while the lower panel presents the estimates for rural targeting schemes ('RUR'). The initial cost in 2004 of these schemes is about 1 per cent of GDP. From this figure, we can see that programs with higher eligibility ages and higher benefits will initially experience lower cost increases because the oldest elderly rates will grow more slowly, but eventually in the next forty years these programs will grow in costs and exceed the costs of other programs as the oldest elderly become a more dominant force.

CONCLUDING REMARKS

Older persons living in countries with comprehensive formal pension systems and public transfer schemes are less likely to fall into poverty than younger cohorts in the same population (UN-DESA, 2007). Without these formal systems, elderly tend to rely on informal support from their families. But under swift social and economic changes, the traditional living arrangements, in which different generations live together and support each other, may be deteriorated or may not be able to fully protect elderly against the risk of destitution. Limited coverage of the formal social

protection system creates great challenges for providing adequate income security to the elderly. Vietnam is experiencing this situation, and it is thus suggested that Vietnam should have a more comprehensive social transfer scheme to protect millions of elderly. Using VHLSS 2004 with micro-simulation techniques, we examined the impact and cost of introducing an extended social pension scheme for the Vietnamese elderly. Our estimates generally show that such a scheme would significantly reduce poverty incidence for the elderly, particularly in rural areas, and evolve to cost about 3.5 per cent of GDP at the highest in 2050. These findings are quite robust for different measures of poverty lines and equivalence scales.

The issues of accessibility, affordability, and sustainability of social transfer schemes are increasingly debated in a number of studies and policy roundtables, as they are core issues for design and implementation. In this regard, the findings of our paper can provide a number of implications for other poor and low-income countries in considering social pension schemes to reduce poverty incidence for the elderly. First, targeting rural areas might be the most effective way to reduce elderly poverty under limited financial capacity. Second, schemes providing lower benefits to wider group of beneficiaries would be more effective in reducing poverty and improving welfare than those providing higher benefits to limited beneficiaries. Third, very small expenditures can potentially have big impacts, and the long-term cost of a social pension scheme as a percentage of GDP can be small. Lastly, the precise poverty measure used is important in both policy examination and evaluation. If a social pension scheme is carefully considered and implemented, it can complement a contributory pension scheme to create a comprehensive multilayered social protection system.

As with previous studies on the topic, there are still limitations to be addressed in future research. For instance, behavioural assumptions need to be further examined with the introduction of such proposed schemes, as we do not estimate the potential crowding out effects and reduced work effort. Additionally, if benefit receipt changes elderly living arrangements, either because it provides the means to allow for independent living or because other family members wish to move in and share the pension, then this will further affect the program impacts resulting from our assumption that benefits are shared with each member of the household. A final issue to be subsequently addressed is how to effectively administer the proposed schemes, especially in the countries with a low level of transparency and ineffective governance.

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TABLES

Table 1. Demographic Characteristics and Poverty Status of the Elderly, 2004
Official poverty line is 2,077 thousand VND ($US 132.3) per capita;
Poverty rates are calculated using the official per-capita equivalence scale

Indicators	Per cent of Elderly Population (%)	Poverty Rates for Varying Poverty Lines		
		50% Official	100% Official	167% Official
Elderly People		***1.5***	***17.9***	***47.2***
Age				
60 – 69	49.7	0.9	14.7	42.1
70 – 79	35.2	1.8	21.0	51.4
80 and older	15.1	2.6	21.0	54.4
Gender				
Male	41.6	1.2	16.4	44.0
Female	58.4	1.7	18.9	49.5
Marital Status				
Married	60.5	1.2	15.8	44.2
Non-married	39.5	2.0	21.1	51.9
Areas				
Urban	26.7	0.1	4.3	16.3
Rural	73.3	2.0	22.8	58.5
Region				
Red River Delta	25.8	0.7	16.3	45.2
North East	10.5	1.3	25.2	64.1
North West	1.9	4.6	53.2	72.9
North Central Coast	12.6	4.3	31.2	62.1
South Central Coast	9.9	2.8	21.6	55.0
Central Highlands	3.4	3.7	24.1	53.7
South East	15.4	0.3	2.8	13.7
Mekong River Delta	20.6	0.5	13.1	50.0
Living Arrangements				
Only Elderly	20.7	1.8	16.8	45.5
With Children	75.5	1.4	18.6	48.7
With Others, no Children	3.8	1.1	10.5	32.2
Receiving Social Security?				
Yes	34.9	1.3	15.7	40.0
No	65.1	1.5	18.6	51.1

Source: Own calculations using VHLSS 2004.

Table 2. Estimated Impacts of the Proposed Social Pension Schemes
A pension of 50 per cent of the poverty line is provided to eligible people aged sixty and over
(Poverty is calculated using the official poverty line and the official per-capita equivalence scale)

Indicators	All Elderly (ALL)	Only Rural (RUR)	Only Females (FEM)	Poorest Regions (REG)
Total Benefits Paid (VND billion)	8178.8	5997.7	4778.2	435.9
(As Per cent of GDP)	1.14	0.84	0.67	0.06
% Spent by Recipients	47.52	48.73	33.32	39.19
% Spent by Elderly	47.52	48.73	46.66	39.19
% Spent by Non-Elderly	52.48	51.27	53.34	60.81
Direct Recipients				
Ex-Ante Poverty Rate (%)	17.89	22.83	18.91	34.67
Ex-Post Poverty Rate (%)	9.27	12.07	11.48	25.23
% Change Poverty Rate	-48.20	-47.13	-39.29	-27.24
Ex-Ante Poverty Gap (VND billion)	670.5	637.4	411.5	92.8
Ex-Post Poverty Gap (VND billion)	280.6	272.4	205.0	49.1
% Change Poverty Gap	-58.15	-57.26	-50.19	-47.09
Elderly				
Ex-Ante Poverty Rate (%)	17.89	17.89	17.9	17.89
Ex-Post Poverty Rate (%)	9.27	10	12.0	17.38
% Change Poverty Rate	-48.2	-44.11	-32.8	-2.81
Ex-Ante Poverty Gap (VND billion)	670.5	670.5	670.5	670.5
Ex-Post Poverty Gap (VND billion)	280.6	305.5	391.6	626.8
% Change Poverty Gap	-58.15	-54.43	-41.6	-6.52
Total Population				
Ex-Ante Poverty Rate (%)	19.27	19.27	19.3	19.27
Ex-Post Poverty Rate (%)	17.35	17.55	18.0	19.13
% Change Poverty Rate	-9.97	-8.9	-6.5	-0.72
Ex-Ante Poverty Gap (VND billion)	7659.6	7659.6	7659.6	7659.6
Ex-Post Poverty Gap (VND billion)	6595.3	6657.1	6941.5	7523
% Change Poverty Gap	-13.9	-13.09	-9.4	-1.78
Poverty Reduction Efficiency (Percentage of Total Cost that Reduces Poverty Gap)				
Recipients	-4.77	-6.08	-4.32	-10.03
Elderly	-4.77	-6.08	-5.84	-10.03
Total Population	-13.01	-16.71	-15.03	-31.33

Source: Own calculations using VHLSS 2004.

Table 3. Choices for Programs that Cost about 1 per cent of GDP in 2004
(between VND 7,075 billion and VND 7,225 billion, or $US 450.5 million and $US 460 million)
Poverty line is the official poverty line; Poverty is calculated using the official per-capita equivalence scale

Cat.	Starting Age	Benefit Level as % of Official Poverty Line	Total Cost (VND billion)	Change in poverty gap for elderly (%)	Change in poverty gap for all (%)	Change in poverty severity for elderly (%)	Change in poverty severity for all (%)	Change in utility for elderly (%)	Change in utility for all (%)
ALL	64	55	7128.7	-55.22	-12.98	-59.90	-14.70	1.51	0.33
ALL	65	60	7187.3	-54.70	-12.93	-59.23	-14.63	1.52	0.33
ALL	69	80	7191.0	-49.36	-12.19	-53.19	-13.49	1.48	0.33
RUR	**60**	**60**	7197.2	**-59.68**	**-14.86**	**-65.54**	**-17.19**	1.65	**0.37**
RUR	**63**	**70**	7188.2	-58.63	-14.68	-64.30	-16.83	**1.66**	**0.37**
RUR	65	80	7161.5	-57.67	-14.51	-62.75	-16.46	1.65	0.36
RUR	66	85	7138.2	-56.91	-14.23	-61.72	-15.97	1.64	0.36
RUR	67	90	7094.4	-53.83	-13.69	-58.42	-15.33	1.62	0.36
RUR	75	200	7224.2	-34.83	-10.04	-36.96	-10.67	1.34	0.33
FEM	60	75	7167.3	-52.19	-12.52	-56.15	-13.94	1.45	0.33
FEM	64	95	7212.8	-51.73	-12.64	-54.63	-13.75	1.45	0.34

Note: 'ALL': for all elderly (or universal); 'RUR': for only rural elderly; and 'FEM': for only female elderly.

Source: Own calculations using VHLSS 2004.

Table 4. The Most Effective Social Pension Schemes under a Variety of Conditions

POVERTY LINE = 50% OF THE OFFICIAL POVERTY LINE									
Equivalence scale is the official per-capita equivalence scale									
Total cost as % of GDP in 2004	*Category*	*Starting Age*	*Benefit Level as % of official poverty line*	*Change of poverty gap for elderly (%)*	*Change of poverty gap for all (%)*	*Change of poverty severity for elderly (%)*	*Change of poverty severity for all (%)*	*Change in utility for elderly (%)*	*Change in utility for all (%)*
0.25	RUR	61	16						0.1017
	RUR	65	20	-49.86	-12.98	-59.82	-15.47	0.4739	
0.5	RUR	65	40	-70.55	-21.27	-77.97	-22.82	0.901	0.1943
0.75	RUR	63	52	-80.86					
	RUR	64	56		-25.99	-86.81	-26.83	1.3021	0.2836
1	RUR	60	60						0.3670
	RUR	62	66	-87.22	-29.92	-92.57	-30.48		
	RUR	63	70					1.6591	
1.5	RUR	61	94	-94.94	-34.22	-98.23	-33.39	2.3326	0.5253
Equivalence scale is the alternative adult equivalence scale									
0.25	ALL	71	24	-96.87	-50.78	-99.23	-51.56		
	ALL	72	26	-96.87	-50.78	-99.23	-51.56		
	ALL	73	28	-96.87	-50.78	-99.23	-51.56		
	RUR	61	16						0.0973
	RUR	65	20					0.4599	
0.5	ALL	60	22	-100	-52.22	-100	-51.94		
	ALL	62	24	-100	-52.22	-100	-51.94		
	ALL	63	26	-100	-52.22	-100	-51.94		
	RUR	64	40					0.8743	0.1860
0.75	ALL	66	48		-50.78		-51.56		
	ALL	69	60		-50.78		-51.56		
	ALL	71	72		-50.78		-51.56		
	ALL	72	78		-50.78		-51.56		
	ALL	73	86		-50.78		-51.56		
	RUR	64	56					1.2635	0.2715
	FEM	60	56	-97.79		-99.50			
	FEM	62	62	-97.79		-99.50			
1	ALL	60	44	-100	-52.22	-100	-51.94		
	ALL	61	46	-100	-52.22	-100	-51.94		
	ALL	63	52	-100	-52.22	-100	-51.94		
	RUR	60	60						0.3514
	RUR	63	70					1.6099	
1.5	ALL	63	78	-100	-52.22	-100	-51.94		
	RUR	61	94					2.2635	0.5029

(to be continued in the next page)

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POVERTY LINE = 100% OF THE OFFICIAL POVERTY LINE									
Equivalence scale is the official per-capita equivalence scale									
Total cost as % of GDP in 2004	*Category*	*Starting Age*	*Benefit Level as % of official poverty line*	*Change of poverty gap for elderly (%)*	*Change of poverty gap for all (%)*	*Change of poverty severity for elderly (%)*	*Change of poverty severity for all (%)*	*Change in utility for elderly (%)*	*Change in utility for all (%)*
0.25	RUR	61	16						0.1017
	RUR	65	20	-24.57	-5.08	-29.71	-6.29	0.4739	
0.5	RUR	65	40	-40.70	-9.00	-46.41	-10.72	0.901	0.1943
0.75	RUR	64	56	-51.94	-12.32	-57.34	-14.22	1.3021	0.2836
1	RUR	60	60	-59.68	-14.86	-65.54	-17.19		0.3670
	RUR	63	70					1.6591	
1.5	RUR	61	94	-70.43	-19.09	-76.00	-21.51	2.3326	0.5253
Equivalence scale is the alternative adult equivalence scale									
0.25	RUR	61	16						0.0973
	RUR	65	20		-13.70			0.4599	
	RUR	69	26				-18.38		
	RUR	71	32	-43.57		-55.45			
0.5	RUR	60	30				-27.69		
	RUR	65	40	-65.85	-22.23			0.8743	0.1860
	RUR	66	42			-73.61			
0.75	RUR	63	52				-33.32		
	RUR	64	56	-78.09	-28.03	-83.48		1.2635	0.2715
1	RUR	60	60	-85.57	-32.58	-90.30	-37.74		0.3514
	RUR	63	70					1.6099	
1.5	RUR	61	94	-91.57	-37.71	-94.31	-41.81	2.2635	0.5029
POVERTY LINE = 167% OF THE OFFICIAL POVERTY LINE									
Equivalence scale is the official per-capita equivalence scale									
Total cost as % of GDP in 2004	*Category*	*Starting Age*	*Benefit Level as % of official poverty line*	*Change of poverty gap for elderly (%)*	*Change of poverty gap for all (%)*	*Change of poverty severity for elderly (%)*	*Change of poverty severity for all (%)*	*Change in utility for elderly (%)*	*Change in utility for all (%)*
0.25	RUR	61	16						0.1017
	RUR	65	20	-11.38		-16.15		0.4739	
	RUR	71	32				-3.29		
	RUR	77	64		-2.32				
0.5	RUR	65	40	-21.45		-28.60	-6.04	0.901	0.1943
	RUR	72	70		-4.33				
0.75	RUR	64	56			-38.46	-8.45	1.3021	0.2836
	RUR	66	64	-30.04	-6.20				
1	RUR	60	60			-46.06	-10.53		0.3670
	RUR	63	70					1.6591	
	RUR	64	74	-37.04					
	RUR	65	80	-37.04	-7.85				
1.5	RUR	61	94	-48.83	-10.88	-57.61	-14.07	2.3326	0.5253
Equivalence scale is the alternative adult equivalence scale									
0.25	RUR	61	16						0.0973
	RUR	65	20	-18.64	-5.09	-26.83	-7.58	0.4599	
0.5	RUR	65	40	-34.65	-9.60	-45.85	-13.37	0.8743	0.1860
0.75	RUR	64	56	-47.81	-13.56	-59.61	-18.05	1.2635	0.2715
1	RUR	60	60		-16.86	-68.68	-21.76		0.3514
	RUR	63	70					1.6099	
	RUR	64	74	-57.73					
1.5	RUR	61	94	-72.01	-22.02	-80.04	-26.85	2.2635	0.5029

Source: Own calculations using VHLSS 2004.

Table 5. Calibrated and Projected Rates of Elderly and Rural Elderly aged Sixty and over

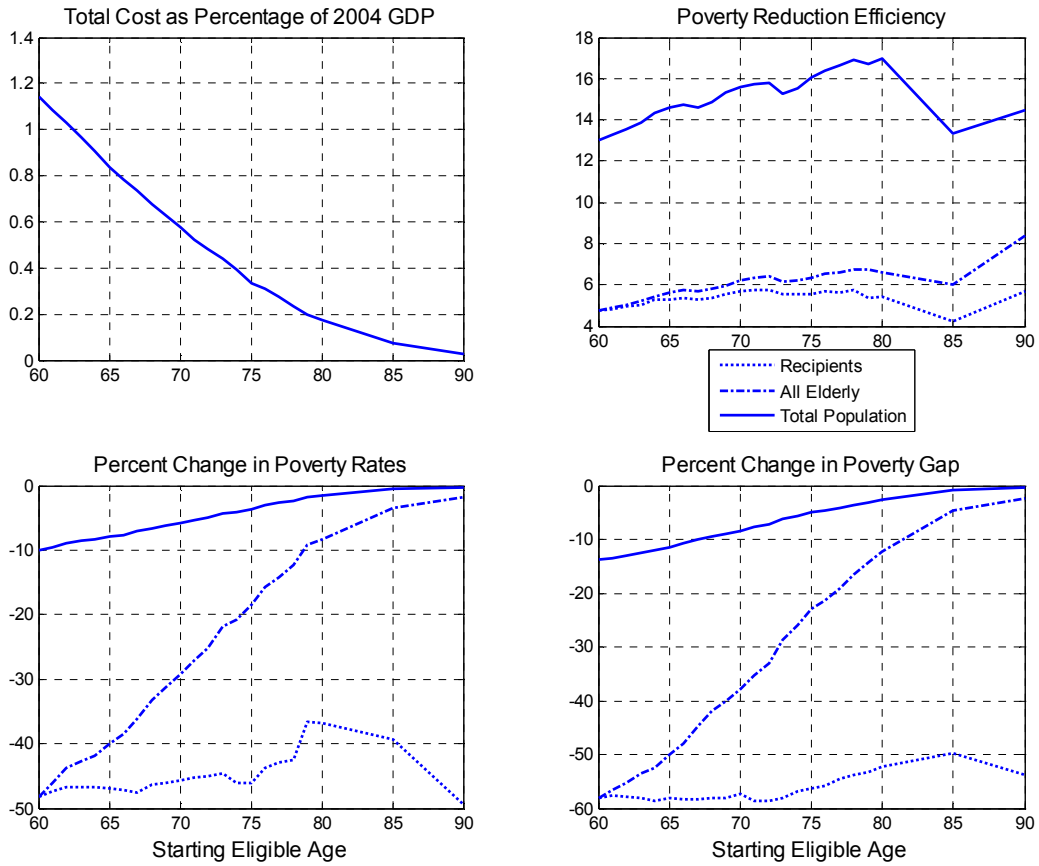
		2004	***2010***	***2015***	***2020***	***2025***	***2030***	***2035***	***2040***	***2045***	***2050***
% Rural Population (UN+Modification)	Medium	74.1	71.7	68.9	65.8	62.4	58.7	55.3	52.2	49.4	47
	Low	74.1	66.7	63.9	60.8	57.4	53.7	50.3	47.2	44.4	42.0
	High	74.1	76.7	73.9	70.8	67.4	63.7	60.3	57.2	54.4	52.0
% Elderly (aged 60 and over, UN+Modification)	Medium	9.9	10.1	11.4	13.3	15.7	18.2	20.6	23.1	25.6	28.4
	Low	9.9	10.0	11.2	12.8	14.9	17.0	19.0	20.8	22.5	24.3
	High	9.9	10.2	11.7	13.8	16.6	19.5	22.6	25.9	29.3	33.4
% Rural Elderly (aged 60 and over, UN+Modification)	Medium	7.3	7.3	7.9	8.7	9.8	10.7	11.4	12.1	12.6	13.3
	Low	7.3	6.7	7.1	7.8	8.5	9.1	9.5	9.8	10.0	10.2
	High	7.3	7.8	8.6	9.8	11.2	12.4	13.6	14.8	16.0	17.4

Note: Modifications are described in the text.

Source: Own calculations using United Nations (2007) and VHLSS 2004.

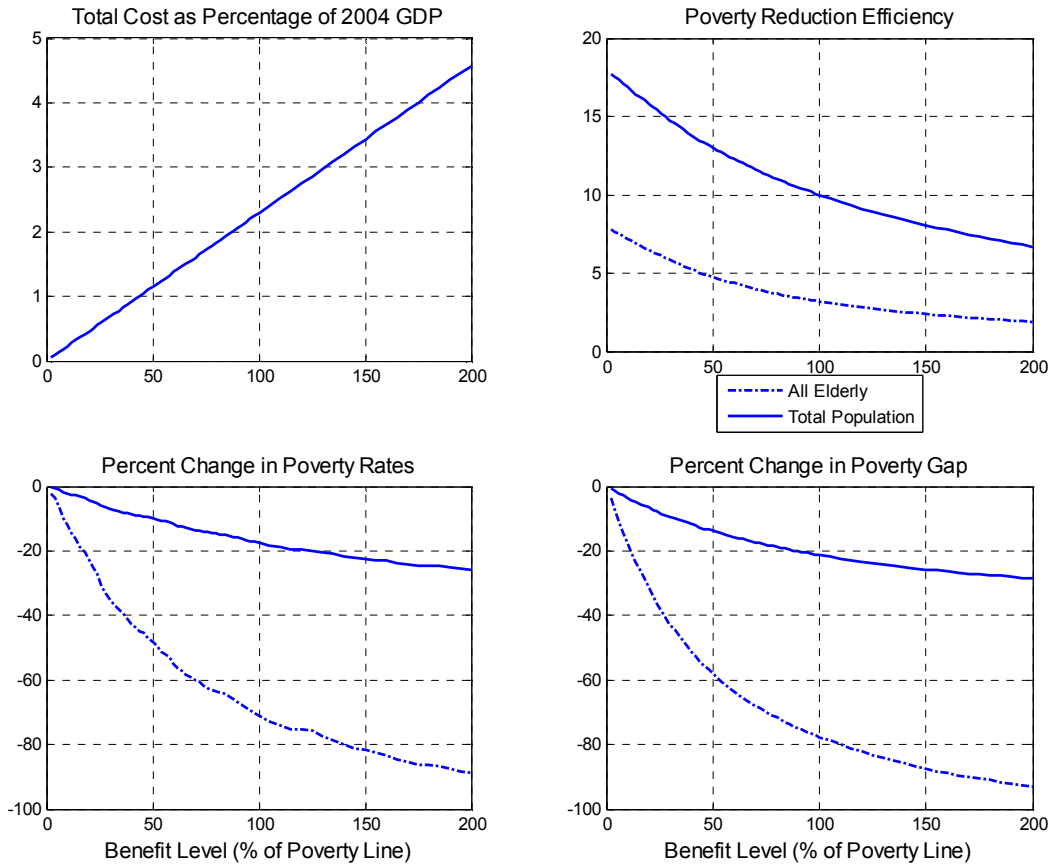
FIGURES

Figure 1. Varying the Starting Eligible Age for a Universal Scheme with a Benefit of 50 per cent of the Official Poverty Line



Source: Own calculations using VHLSS 2004.

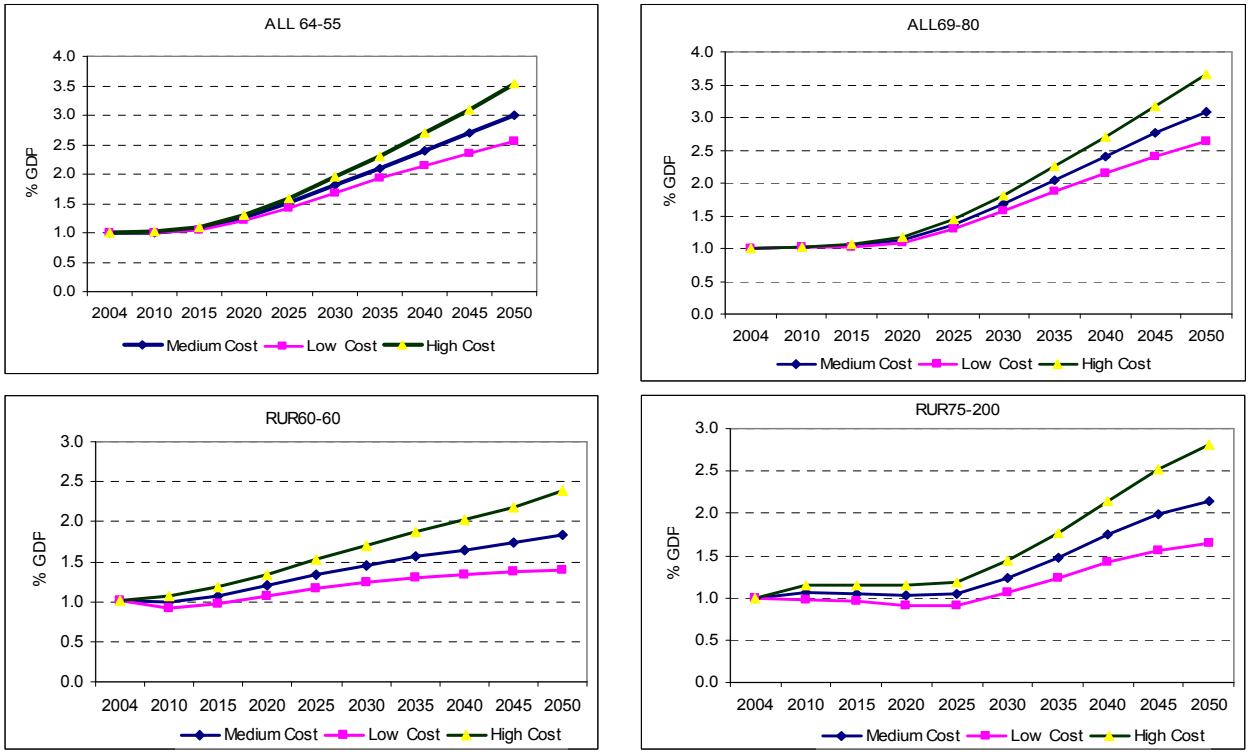
Figure 2. Varying the Benefit Level for All Elderly aged 60 and over



Source: Own calculations using VHLSS 2004.

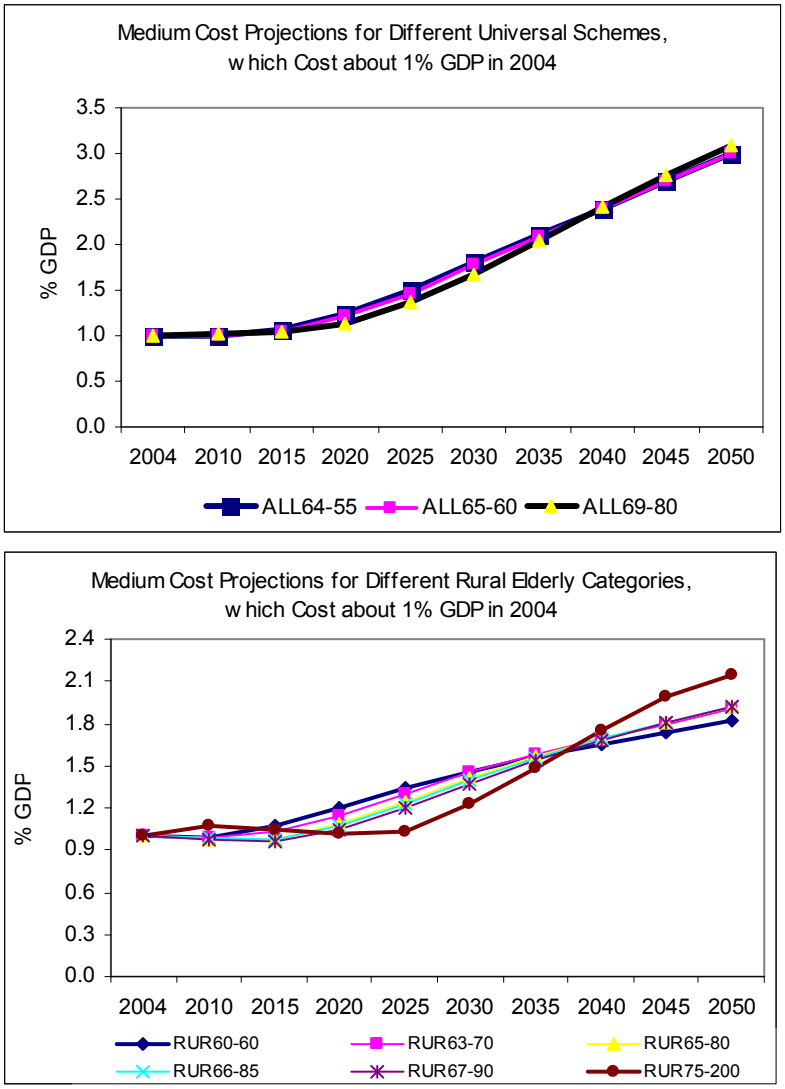
Figure 3. Future Costs of the Proposed Social Pension Schemes for categories 'ALL' and 'RUR', 2004-2050

Poverty line is the official poverty line; Poverty is calculated using the official per-capita equivalence scale



Source: Own calculations using data from United Nations (2007) and VHLSS 2004.

Figure 4. Cost Comparison within a Category



Source: Own calculations using data from United Nations (2007) and VHLSS 2004.