PENSIONS AND INTERGENERATIONAL TRANSFERS: A MALTA PERSPECTIVE

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Abstract. This study considers six pension scenarios and derives estimates of contributions payable and pension receipts under the six scenarios according to recent pension reform. The objective is to determine whether the fiscal burden on future retirees is greater than for existing or past retirees, basing the discussion on such scenarios and on existing reforms.

Introduction

The life cycle hypothesis provides the theorectical framework for understanding why societies distribute resources from one generation to another. Individuals accumulate and use economic resources during their working lives and then live on savings during their non-working years (Ando and Modigliani, 1963). This implies that individuals are forward looking in the way they consume and save as they seek to optimise their utility over their life cycle (Hurd, 1990). Individuals may also derive some benefit from the well-being of future generations by making bequests.

A pay-as-you-go pension such as Malta's two-thirds pension scheme facilitates the transfer of resources within the society. Each working population group contributes to support retired persons until that same population group in turn is supported by subsequent working generations. Intergenerational transfers, therefore, may be described as a 'social contract' between birth cohorts or generations (Sjoblom, 1985). This 'implicit' agreement is formalised in the Social Security Act but it can be amended by a simple majority in Parliament.

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Against the background, this study considers the bequest motive, the median voter theorem, intergenerational redistribution and its effects, the relevance of generational accounting, and derives estimates of contributions payable and pension receipts under six scenarios according to recent pension reform. The objective is to determine whether the fiscal burden on future retirees is greater than for existing or past retirees, basing the discussion on such scenarios and on existing reforms.

Bequest and Median Voter Models

The system of pay-as-you-go social insurance has received considerable attention from mainstream economists, in particular those who have sought to analyse how taxes and transfers are determined. The studies have mainly been inspired by the consumption loan model contained in Samuelson (1958) which showed that, under certain demographic conditions, intergenerational transfers are more beneficial to successive generations than other arrangements.

Another important study is the overlapping generations model based on 'intergenerational altruism' and contained in Barro (1974). This model assumes that individuals consciously plan their economic behaviour over their lifetime in an effort to maximise their utility. Work, leisure, consumption and saving are all assumed to be determined by their anticipated effect on lifetime earnings and wealth, and the rate of return on savings.

Also significant is the assumption that individuals exhibit 'multi-generational planning horizons'. The life-cycle hypothesis is thereby 'augmented' by a bequest motive for saving and individuals derive utility from the economic welfare of future generations. The bequest motive in an overlapping generations model is of particular significance. As argued by Hurd (1990) it plays an important part in multi-generational models of savings behaviour. Given that individuals have multi-generational planning horizons, a pay-as-you-go social insurance scheme will initially generate windfall gains for present generations. These gains will be

balanced by the losses of future generations who will have to pay for these pensions (Johnson and Falkingham, 1992).

The present generation, therefore, has every incentive to safeguard the pay-as-you-go pension scheme. However, as will be shown in this study, the benefits derived by future generations are likely to be considerably lower than for past generations though past generations, if assumed to be altruistic, would wish to compensate future generations by deliberately making bequests. This also implies that if the bequest motive for saving is sufficiently strong, then future generations will not be as worse off as compared with past generations.

The bequest motive was tested by Hurd (1987: 308) using data from the Longitudinal Retirement Survey (RHS). However, no evidence of a bequest motive was found. In general, parents care about their children and support their education but the bequest motive is driven partly by a very weak market for private annuities. Hurd also provided evidence in defence of the strict life cycle hypothesis as opposed to the life cycle hypothesis with bequests. His conclusions contrast Bernheim's (1991). The bequest motive was found by Bernheim to be important for a large propotion of the US population. According to Bernheim, saving is motivated by the desire to leave bequests. He also found that "...social security annuity benefits significantly raise life insurance holdings and depress private annuity holdings among elderly individuals" (op cit: 899).

Gale and Scholz (1994) also argued in favour of models based on the life cycle hypothesis with bequests and found that intended transfers account for at least 20 per cent of US wealth. The effect of bequest motives on aggregate saving was also studied in Weil (1994). Weil showed that saving is motivated in part by bequests. In contrast, Disney (1996) concluded that the life-cycle hypothesis of saving does not satisfactorily explain the saving behaviour of the elderly. Elderly people do not necessarily dissave as the theory suggests.

An alternative approach to understanding how taxes and transfers are determined in a system of pay-as-you-go social insurance is the median voter model of social security. This model is inspired by the median voter

theorem of Downs (1957). This theorem states that the preferences of the median voter will outweigh all other preferences and competing parties will seek to woo the median voter in order to secure the majority of votes (Brown and Jackson, 1982). Although it has been described as a 'naive behavioural specification' of the complex world of politics, the median voter theorem has been employed successfully by a number of economists for 'optimisation analysis' and to explain why intergenerational transfers have been introduced in a number of countries.

Age plays a significant role in determining individual preferences as to the most 'convenient' method of financing. The median voter is typically a middle-aged person and it is therefore easy to understand why the median voter will prefer a pay-as-you-go system of financing public pensions as opposed to a funding method even though the long-run rate of return generated by the former may be lower than the rate of return generated by the latter (Verbon, 1987). Funding generations of middle-aged voters will also be expected to oppose any attempt to replace the unfunded scheme or to reduce benefits. Browning's model (1975: 387), for instance, predicts that "...the same young people who would like to see reductions in social insurance tiday will become staunch supporters of increases when they are older."

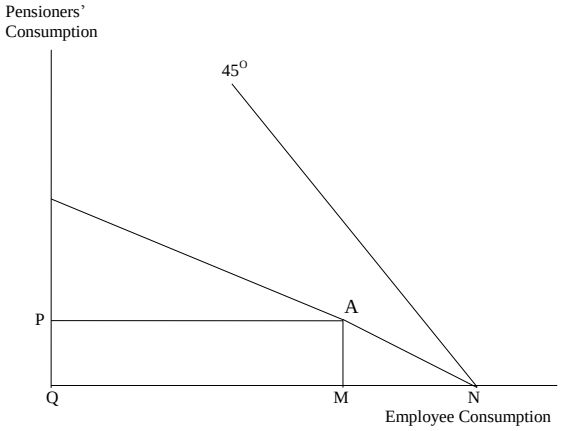
Voters may also be 'rationally ignorant' of the cost of financing pay-as-you-go social insurance and do not perceive contributions as taxes. If this 'fiscal illusion' is widely adopted, it may lead to over-expansion of social insurance. In effect, a median voter analysis of how the level of social security is determined, revealed that the desired level of social security for each voter is a declining function of the 'pre-existing level of social insurance' (Boadway and Wildasin, 1989). It is not surprising, therefore, that that newly-introduced social security systems result initially in an overexpansion of the long-run equilibrium. Browning (1975), Hu (1982) and Sjoblom (1985) also concluded that social security levels based on the median voter theorem exceed the amount that maximises lifetime utility but are less than the maximum possible level. There is a tendency, therefore, for voters to favour higher levels of social security since they may be unaware of the full cost of social insurance.

Intergenerational Redistribution

A retirement pension scheme based on a pay-as-you-go social insurance needs no funding nor does it require actuarial calculations on the basis of life expectancies (Culyer, 1980). Maltese workers and self-employed are required to pay a proportion of their basic wage or salary in the form of national insurance contributions. The funds are then redistributed to beneficiaries under the various welfare schemes.

The process of intergenerational redistribution through pensions can be explained through Figure 1 (Culyer, 1980: 165). This figure shows the relationship between the consumption of employees and self-employed and the consumption of pensioners and how pentions impact on the contribution and income tax paid by employees and self-employed persons. Employees and self-employed persons pay national insurance contributions and income tax. The amount paid is represented in the figure as the distance between M and N. The contribution rate and income tax rate is determined by government and the distance between P and Q represents pensioners' consumption.

Figure 1
Intergenerational Transfers Through Pensions



Source: Culyer (1980: 165)

These are lower than the aggregate of contributions and taxation paid by employees and self-employed persons. Culyer argues that this is due to the disincentive effects resulting from the payment of flat rate contributions, particularly for low-paid workers "whom this regressive form of tax may be expected most to deter from work" (*op cit*: 165).

This can be explained empirically by the following case. Other things being equal, contributions payable on a proportional basis are said to be more progressive than flat rate payments. Consider the case of an adult worker whose basic weekly wage or the weekly equivalent of his or her basic weekly salary does not exceed €152.30. The weekly rate of contributions paid amounts to €15.23 or 10 per cent of his or her weekly earnings. An individual on a higher pay scale, however, with say a weekly wage of €329.51, pays a rate of €32.90, also equivalent to 10 per cent of his or her weekly income.

Though pay-as-you-go social insurance may redistribute income from higher income to lower income groups (Nicholson, 1974), in practice this depends to a significant degree on the method used in estimating pensionable income. Maltese pensioners are entitled to a basic pension but they may receive additional benefits depending on their waged income prior to retirement. Hence, persons with higher incomes receive additional benefits. For instance, pensionable income for self-employed persons born from 1st January 1961 onwards is calculated on the basis of the net income of the best 10 years in the last 40 years prior to retirement. The maximum pension payable is set as €223.31 per week (year 2010). This may be considered *generous* when one considers that the minimum pension rate is set at only €33.98 per week. One could also mention the retirement pension scheme which is payable to those entitled to a second pension from their employer (this is limited to parliamentarians, a number of civil servants, and a handful of private sector employees) as a further example of schemes which run counter to the redistributive effect mentioned by Nicholson.

On the other hand, a redistribution effect from the male component of the population to the female component is also possible under the pay-as-you-go social insurance. A lot depends, however, on the differential life expectancy. In Malta the average life expectancy for women exceeds that

for men. This would suggest that the cumulated retirement benefits received by women are on average greater than the benefits received by male pensioners. As noted earlier, however, the female participation rate is still relatively low by international standards. Thus, in spite of the differential life expectancy, it is doubtful whether the pay-as-you-go scheme has brought about a significant redistribution of income from the male component to female component of the population.

More significant is the potential redistribution of resources from younger to older generations (see Hudson, 1987). Pay-as-you-go social insurance "enables a generation as a whole to receive more than the sum of the past contributions", provided that real income has increased consistently and/or the working age population is growing (Barr, 1987: 225). Evidence of this redistributive effect is provided by Rosen (1982) in a study on pensions in the United States. Similar evidence for the Maltese Islands is contained in this study. This is not surprising considering that (i) the average life expectancy has increased from 43 and 45 years for males and females respectively in 1930 to 77 and 82 years in 2010; and (ii) the fact that past contributions relative to today's benefits were significantly lower. However, since the number of contributors relative to the number of pensioners is now falling and the likelihood of further reforms in state pensions, the share of contributions paid by future generations is likely to increase considerably in future.

The rate of return on contributions is also dependent on changes in output or productivity (see Kotlikoff, 1989). Consider a steady state two-period model. The first period represents working years and the second represents retirement. Future retirees expect to receive a pension equivalent to the total contributions paid to the pay-as-you-go pension scheme multiplied by $(1+n)(1+g)$ where n denotes contributors and g denotes output. However, a fall in the number of economically active persons accompanied by a decline in productivity will adversely affect the return on contributions paid. In this event, and assuming that the economy's interest rate is greater than $n+g+ng$, a worker would have been better off if he or she had been allowed to save the amount deducted from his or her wages or ${}_{\theta}W_t(1+r)$ where ${}_{\theta}W_t$ and r denote respectively the fixed percentage deducted from wages and the rate of interest.

The hypothesis is all too familiar for most OECD countries. Expenditure on pay-as-you-go pension schemes has increased sharply and in some cases has accounted for half the social security budget (OECD, 1988). In a steady-state equilibrium with no demographic and economic changes, the lifetime benefits of a given birth cohort will be equal to the lifetime benefits received by the same cohort. In a non-static world, however, changes in the fertility and mortality rates, and the economic environment affect the level of expenditure on social security pensions. The pay-as-you-go pension scheme, therefore, is difficult to sustain in the long run unless successive birth cohorts are willing to *accept* the additional burden resulting from demgraphic and economic changes.

Generational Accounting

Clearly, the size of tax contributions depends to a great extent on the size of the workforce relative to the number of pensioners, and the degree of 'maturity' of the pay-as-you-go social insurance. In effect, the "greatest gains are captured by the initial generation which pays no contribution but receives windfall benefits" (Johnson and Falkingham 1992: 130). However, when the ratio of workers to pensioners falls, benefits must be shared among a larger number of pensioners and an increase in per capita contributions will be required. As noted in Peterson (1988), Johnson et al (1989), Walker (1990) and Phillipson (1991), this may result in an 'intergenerational conflict' since workers will want to avoid paying higher rates of social security contributions.

The generational accounting literature contains an analysis of the effects of transfers from workers to pensioners (see Lee and Lapkoff 1988, Hills 1992, and Thomson 1991). Thomson, for instance, concluded that New Zealanders born between 1920 and 1945 were 'net gainers'. On average, social security benefits exceeded contributions but successive generations were 'net losers'. However, Hills (1992:2) argued that Thompson's conclusions may not be true for other countries.

For instance, Hills found no evidence of 'intergenerational inequity' in Britain. In other words, there were no substantial net gainers or net losers

from social security. Though this study will show that Maltese retirees (in line with the assumed scenarios) *may* be net gainers, the extent of the gains depend on the whether an individual is a current or a future retiree. The gains are derived because the contributions paid cover only a fraction of the benefits received. However, the gains made by say a minimum wage earner would be expected to be much lower than for other earners.

These calculations are based on what current and later generations can expect to pay during their lifetime in net (taxes paid net of transfer payments received). As stated in Auerbach *et al*. (1994:75):

> "Generational accounting indicates not only what existing generations will pay, but also what future generations must pay, given current policy and the government's intertemporal budget costraint. This constraint requires that those government bills not paid by current generations must ultimately be paid by future generations."

The intertemporal budget constraint in generational accounting is such that the present value of next tax payments of current and future generations covers the present value of future government spending and its current stock of debt. Failure to satisfy this constraint means failure on the part of government to meet its future liabilities. The constraint can be shown as:

$$\sum_{s=0}^{D} N_{t,t-s} + \sum_{s=1}^{\infty} N_{t,t+s} = \sum_{s=1}^{\infty} G_s \ (1+\mathrm{r})^{t-s} - \mathrm{W}_t^g$$

Where N_t denotes the account of a generation in year t, and s in the first summation runs from 0 to the maximum lenght of life, D. Two values can, therefore, be estimated: the present value of net payments of the generation born in year t, and the present value of remaining net payments of the oldest generation alive in year t.

The second summation estimates the present value in year t of the payments of the generation born in year $t+1$. Government consumption in year s is denoted as G_s and is discounted by the pre-tax real interest rate, r. Government's net wealth in year t is denoted as W^g_t.

The following expression represents a set of generational accounts:

$$N_{t,k} \sum_{s=\max(t,k)}^{k+D} T_{s,k}\ P_{s,k}\ (1+r)^{t-s}$$

Where $T_{s,k}$ denotes the projected average net tax payment made by a member of the generation born in year k. The number of surviving members of the cohort in years s who were born in year k is represented by $P_{s,k}$. For generations who are born prior to year t, the summation begins in year t. On the other hand, for generations born in year k, the summation begins in year k. All values are discounted to year t, and the combined value of existing and future generations adds up to the present value of government spending less initial government wealth.

In theory, the fiscal burden imposed on future generations could be estimated by making assumptions about the future time paths of government consumption and the generational accounts of current generations. Projections of population by age and sex, and average taxes for each generation in each year could be used for this purpose.

Given the existing complex economic environment, especially in making assumptions about future time paths of consumption and average taxes for each generation, what has been attempted in this study is a scenario-based approach where contributions and pensions payable are estimated in line with with existing pension reforms.[1]

Six scenarios have been considered with varying assumptions. The life expectancy for males and females are assumed to be 77 and 82 years of age respectively. In scenarios 1 to 4, for persons born before 1962, the 2011 National Insurance Contribution (NIC) rates apply. In the case of persons born in 1962 and after and earning a basic wage of more than €17,116 in 2011, the applicable rates are those in 2011, 2012, and 2013. The maximum salary scale is set as 2011 and pension rates are based on NIC rates, as stated above. The start year of employment is assumed to be 22 years whereas the pension start is assumed to be the first calendar year following

[1] An acknowledgement is due to Mark Musú, Benefits Department, Ministry for Justice, Dialogue and The Family.

retirement. An early pension option is assumed not to be availed of and statutory bonuses, and service pension are not included.

Specifically in Scenario 1 for a male aged 35 in year 2011, the salary at age of first employment is assumed to be comparable to Scale 10 of Public Service (based on existing Collective Agreement). The salary now (age 35) till retirement age is assumed to be comparable to Scale 5 of Public Service. In Scenario 1, the object is (i) to calculate contributions paid between 22 years till retirement age in line with existing pension reform, and (ii) to calculate the pension payable from age of retirement till average life expectancy. Scenario 1 shows that the amount of contributions paid and pension received are €89,373 and €167,712 respectively. The weekly pension rate is €268.77 whereas the weekly NIC rate in 1994 is €21.85, €22.29 in 1995, €22.68 in 1996, €23.02 in 1997, €23.29 in 1998, €25.50 in 1999, €28.59 in 2000, €28.93 in 2001, €29.28 in 2002, €29.67 in 2003, €29.85 in 2004, €30.26 in 2005, €30.77 in 2006, €31.16 in 2007, €31.94 in 2008, €32.33 in 2009, €32.91 in 2010, €35.39 in 2011, €37.85 in 2012, and €40.32 in 2013. The rates for the years between 1994 to 1997 were worked out as follows: NIC rate of Y-1=(NIC rate of Y)-(1/12(NIC was 1/12 up to 1998 for employee) of Cost of Living for Y). By way of example the NIC rate for 1997 = NIC rate for 1998 – 1/12 of COL for 1998. Y is defined as income.

The present value for contributions paid and pension receipts was also estimated using a discount rate of 5 per cent. A 5 per cent discount rate is generally applied for discounting public funds across the European Union (see Council Regulation (EC) 1083/2006). As expected, applying the time value technique heavily discounts values occuring well into the future. Since pension receipts occur between 2042 and 2053, the time value of these receipts are low compared with payments in the early years of an individual's working years. A negative NPV of - €18,114 is in fact derived from the estimated payments and receipts under Scenario 1.

Scenario 1

This scenario refers to a male person aged 35 at year 2011. The salary at age of first year of employment is comparable to Scale 10 of Public Service. The salary now (at age 35) till retirement age is comparable to Scale 5 of Public Service.

Objectives:
a. To calculate contributions paid between age 22 till retirement age in line with Pension Reform
b. To calculate pension payable from age of retirement till average life expectancy

Table 1
Scenario 1: Contributions Paid and Pension Receipts

From	To	Salary €	Ceiling €	Weekly NIC rate €	Weekly Pension rate €	a. (€)	b. (€)
1994	2010	18,174	17,116	Explained above	-	24,762	-
2011	2011	25,714	18,400	35.39	-	1,840	-
2012	2012	25,714	19,681	37.85	-	1,968	-
2013	2041	25,714	20,964	40.32	-	60,803	-
2042	2053	-	-	-	268.77	-	167,712
Total	**-**	**-**	**-**	**-**		**89,373**	**167,712**

Source: Estimates based on Social Security Methodology

Scenario 2
In Scenario 2, the same assumptions as in Scenario 1 apply. However, the female is assumed to have a break in employment between the age 26 and 30 (for maternity reasons). The same weekly pension rate, and weekly NIC rates apply as in Scenario 1.

The amount of contributions paid add up to €83,104 whereas the pension received amounts to €237,593. In Scenario 2 the female pensioner receives €69,881 more than the male pensioner in Scenario 1 and pays €6,269 less in contributions. The difference in pension receipts reflect the longer average life expectancy for Malta's female population. Again, when considering time values, a negative NPV is derived. The value, however, is more favourable (-€11,067.8).

Table 2
Scenario 2: Contributions Paid and Pension Receipts

From	To	Salary €	Ceiling €	Weekly NIC rate €	Weekly Pension rate €	a. (€)	b. (€)
1994	2002	18,174	17,116	Explained above	-	11,819	-
2007	2010	18,174	17,116	Explained above	-	6,674	
2011	2011	25,714	18,400	35.39	-	1,840	-
2012	2012	25,714	19,681	37.85	-	1,968	-
2013	2041	25,714	20,964	40.32	-	60,803	-
2042	2058	-	-	-	268.77	-	237,593
Total	**-**	**-**	**-**	**-**		**83,104**	**237,593**

Source: Estimates based on Social Security Methodology

Scenario 3

This scenario apples to a person aged 22 at first employment, with a salary at age of first employment comparable to Scale 10 of Public Service and a salary at age 35 till retirement age comparable to Scale 5 of Public Service.

Objectives:

a. To calculate contributions paid between 2011 till age of retirement in line with reform.
b. To calculate pension payable from age of retirement till average life expectancy

In Scenario 3, the age at first employment is taken as 22. The salary at age of first employment is comparable to Scale 5 of Public Service and the object is to calculate contributions paid between 2011 till age of retirement in line with existing pension reform, and to calculate pension payable from age of retirement till average life expectancy. For a male who retires in 2025 and receiving a weekly pension rate of €268.77, the total contributions payable amount to €88,342 (between 2011 and 2054) whereas pension receipts total €167,712 between 2055 and 2066, a difference of €79,370. On the other hand, in Scenario 4, a female retiree with a break in employment pays €81,072 between 2011 and 2054 and receives €181,686 between 2054 and 2071, a difference of €100,614. The scenarios show that the difference between

receipts and payments is more favourable for the female retire than for her male counterpart, despite the break in employment. Again, the reason for this difference is the average life expectancy for females in Malta.

Table 3
Scenario 3: Contributions Paid and Pension Receipts

From	To	Salary €	Ceiling €	Weekly NIC rate €	Weekly Pension rate €	a. (€)	b. (€)
2011	2011	18,174	18,400	34.95	-	1,817	-
2012	2012	18,174	19,681	34.95	-	1,817	-
2013	2024	18,174	20,964	34.95	-	21,809	-
2025	2054	25,714	20,964	40.32	-	62,899	
2055	2066	-	-	-	268.77	-	167,712
Total	**-**	**-**	**-**	**-**		**88,342**	**167,712**

Source: Estimates based on Social Security Methodology

From the above, one can note that a male retiree under Scenario 1 receives and almost pays the same amount as a male starting employment in 2011 and retiring in 2054. However, compared with Scenario 2, a female starting employment in 2011 and retiring in 2041 will receive less by way of pension receipts than a 35 year old female retiring in 2054. Though life expectancies may increase by the retirement dates in all four scenarios, it is unlikely to affect the results of this analysis. As expected in this case too, a negative NPV is derived. The value is -€19,790.08.

Scenario 4
Same as in 3 but for a female with break in employment between age 26 till 30

The NPV derived for Scenario 4 is also negative (-€17,654.12) but is more favourable than for the male counterpart.

Table 4
Scenario 4: Contributions Paid and Pension Receipts

From	To	Salary €	Ceiling €	Weekly NIC rate €	Weekly Pension rate €	a. (€)	b. (€)
2011	2011	18,174	18,400	34.95	-	1,817	-
2012	2012	18,174	19,681	34.95	-	1,817	-
2013	2015	18,174	20,964	34.95	-	5,452	-
2020	2024	18,174	20,964	34.95	-	9,087	-
2025	2054	25,714	20,964	40.32	-	62,899	
2054	2071	-	-	-	268.77	-	181,686
Total	**-**	**-**	**-**	**-**		**81,072**	**181,686**

Source: Estimates based on Social Security Methodology

Scenarios 5 and 6

Under these scenarios life expectancy is assumed to be 77 years for males and 82 years for females. The NIC rates are estimated as at 1971, 1978 and 1993 (earnings-related scheme enacted in 1979; wage freeze from 1983 to 1989). The salary scales are estimated maximum as at age 35, 44, 54 and 57. The pension rates are estimated from pension age to 2011. Pension start date is the first calendar year following retirement. Statutory bonuses are not included and service pension is not applicable.

In the final scenarios, Scenarios 5 and 6, life expectancy is again assumed to be 77 and 82 for males and females respectively. The scenario now is that we have a male and female retiree at age 75, and therefore the applicable NIC rates from 1956 to 1971 are estimated as at 1971 (National Insurance Act came into force on 7th May 1956). Changes in the earning-related system that came into force in 1979, as well as the wage freeze from 1983 to 1989, were taken into account in the 1978 and 1993 estimates. The age when starting employment is assumed to be 18 with a salary at age 18 comparable to Scale 20. The salary at age 35 is assumed to be at maximum of scale 15 of the Public Service. The salary scales are at estimated at maximum as at age 35, 44, 54 and 57. The pension rates are estimated from pension age to 2011 and the pension start date is the first calendar year

Table 5
Scenario 5: Contributions Paid and Pension Receipts

From	To	Salary €	Ceiling €	Weekly NIC rate €	Weekly Pension rate €	a. (€)	b. (€)
1956*	1971	1,102	-	0.40	-	322	-
1972	1979	1,761	-	2.23	-	928	-
1980	1989	3,930	15,723	6.30	-	3276	-
1990	1997	7,542	15,723	12.09	-	5,029	-
1998	1998	-	-	-	110.67	-	5,755
1999	1999	-	-	-	113.39	-	5,896
2000	2000	-	-	-	114.94	-	5,977
2001	2001	-	-	-	132.53	-	6,892
2002	2002	-	-	-	134.87	-	7,013
2003	2003	-	-	-	138.30	-	7,192
2004	2004	-	-	-	141.73	-	7,370
2005	2005	-	-	-	145.35	-	7,558
2006	2006	-	-	-	147.67	-	7,679
2007	2007	-	-	-	151.83	-	7,895
2008	2008	-	-	-	157.38	-	8,184
2009	2009	-	-	-	162.99	-	8,475
2010	2010	-	-	-	168.73	-	8,774
2011	2011	-	-	-	169.50	-	8,814
Total	**-**	**-**	**-**	**-**	**-**	**9,555**	**103,474**

*NI Act came into force on 7 May 1956

Source: Estimates based on Social Security Methodology

following retirement. Statutory bonuses are not applicable and a service pension is not included either.

The object in this scenario is to estimate contributions paid between 18 to 61 year of age, and to calculate the pension received between 61 till now (age 75). Based on the above assumptions, the male retiree has by 2011 received €103,474 by way of pension receipts against a payment of €9,555, a difference of €93,919. Again, no allowance was made for inflation but in terms of NPV the male retiree in this case *gains* from the pay-as-you-go system, particularly when compared with future retirees. The NPV is positive and the value is €7,064. The same conclusions can be drawn from

Scenario 6 for a female retiree who started employment at age 18 but had a break in employment between 22 and 26 years of age. As expected the NPV is also positive and the value is €9,180. A female retiree under Scenario 6 gains most from the pay-as-you-go system.

Scenario 5
Male aged 75 in 2011
Age when male started work 18
Salary at age 18 comparable to Scale 20
Salary at age 35 comparable to Scale 15
a. To calculate contributions paid between age18 to 61
b. To calculate pension received between 61 till now (age 75)

Scenario 6
Same as in Scenario 5 but for female with age at first employment of 18 but with break in employment between 22 till 26 years of age.

The conclusions derived from these scenarios are consistent with those in Auerbach *et al*. (1994) and in von Brockdorff (1999). In other words, the fiscal burden faced by future generations is likely to be greater that for past or possibly current generations. In terms of generational equity, this raises the question whether future generations should pay a higher share of their lifetime earnings to government than past generations.

According to Auerbach *et al*., generational equity can only be guaranteed if the lifetime net tax rate of current newborns (and past generations) and of current generations are equal. They argue that there are two possible ways how this condition could be satisfied: either raised taxes now or reduce all transfer payments. However, if taxes are raise now this would impose a heavy burden on young and working-aged generations. On the other hand, if transfer payments are reduced, this would seriously affect the living standards of pensioners.

Table 6
Scenario 6: Contributions Paid and Pension Receipts

From	To	Salary €	Ceiling €	Weekly NIC rate €	Weekly Pension rate €	a. (€)	b. (€)
1956*	1958	1,102	-	0.40	-	52	-
1963	1971	1,102	-	0.40	-	187	
1972	1979	1,761	-	2.23	-	928	-
1980	1989	3,930	15,723	6.30	-	3276	-
1990	1996	5,288	15,723	12.09	-	4401	-
1997	1997	-	-	-	107.96	-	5,614
1998	1998	-	-	-	110.67	-	5,755
1999	1999	-	-	-	113.39	-	5,896
2000	2000	-	-	-	114.94	-	5,977
2001	2001	-	-	-	132.53	-	6,892
2002	2002	-	-	-	134.87	-	7,013
2003	2003	-	-	-	138.30	-	7,192
2004	2004	-	-	-	141.73	-	7,370
2005	2005	-	-	-	145.35	-	7,558
2006	2006	-	-	-	147.67	-	7,679
2007	2007	-	-	-	151.83	-	7,895
2008	2008	-	-	-	157.38	-	8,184
2009	2009	-	-	-	162.99	-	8,475
2010	2010	-	-	-	168.73	-	8,774
2011	2011	-	-	-	169.50	-	8,814
Total	**-**	**-**	**-**	**-**	**-**	**8,844**	**109,088**

Source: Estimates based on Social Security Methodology
* NI Act came into force on 7 May 1956

It should be stressed that the results of this study are highly sensitive to the assumptions made. No allowance was made for instance for inflation rates. A further limitation is that the the assumptions are based on current policies. The persistence of current policy is unrealistic but as argued by Auberbach *et al.* (1994):

> "... in asking what would happen if policy were not to change, we are illustrating the inevitability of such policy changes, and offering an analytical framework within

> which the fiscal policy implications and integenerational impacts of any changes can be examined."

Though no macroeconomic feedback effects have been taken into account it should be noted that general equibilbrium assumes perfect foresight or rationality on the part of individuals. This is a very bold assumption since nobody can claim to be completely foreward-looking.

Conclusions

What the results of the various scenarios show is that (i) pensions reforms taken thus far were inevitable, and (ii) one cannot exclude *a priori* further reforms, especially in view of Malta's ageing population where fewer workers relative to retirees are anticipated. The state may also need to modify the 'social contract' on which the pay-as-you-go pension scheme is built. According to Walker (1996:13) the:

> "... social contract is interpreted as being a social policy contract based on intercohort transfers of resources through the mediums of taxation and social expenditure."

Unlike any normal contract, however, the 'social contract' is *imposed* by the state on the working age population. It is not freely negotiated and the relationship between cohorts is mediated by the state. In the context of population ageing, the increasing burden faced by the working age population may place this 'social contract' at risk and may result, as in other countries, in a re-negotiation of intergenerational transfers. In some eurozone countries, the new contract has led to cuts in social security pensions and reductions in rights of access to health care. In Britain, pension provision has been re-structured and benefits reduced.

In the current eurozone crisis there seems to be an urgency to re-structure and re-negotiate a new 'social contract' and the driving force does not seem to be ideological but driven by economics and the opposition to public expenditure on welfare as well as the supply-side view of the costs to employers of social security contributions. In the Maltese context, there is at present no evidence to suggest tensions between Maltese generations.

This notwithstanding, and in view of the estimates derived in this paper and in terms of generational equity, young Maltese embarking on their careers are unlikely to be any better off than their parents while those who have retired recently have had a better return. The generational rift is accentuated by the fact that the real disposable income of younger generations has not appeared to increase in recent years. It should also be highlighted that older generations have greater levels of accumulated wealth and if it were not for the strong bequest motive characteristic of the Maltese Islands, the level of wealth among the younger generations would be significantly lower. All this goes to show that we may be already facing generational imbalances and this may explain why the younger generation is increasingly reliant on what is defined in recent literature on the 'family welfare' model in which the younger generation is dependent on support from parents and grandparents (Gregg, 2008).

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