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AN ANALYSIS OF THE DEBATE ON
INTERGENERATIONAL EQUITY AND FISCAL
SUSTAINABLITY IN AUSTRALIA

by

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I. Introduction

The *Charter of Budget Honesty Act 1998* requires the Treasurer to publish an Intergenerational Report (IGR) at least once every five years. The aim of the report is to assess the long-term sustainability of current Commonwealth government policies over the next 40 years, including accommodating the financial implications of demographic change in Australia.

In Australia, in common many other developed and developing countries, there is growing concern about rising cost of public programmes, particularly public health, aged care and social security. Several factors account for this concern. Perhaps the most important is technological advancement, which is raising the unit cost of medical treatment and greatly extending longevity. Demographic change, arising from declining fertility and rising longevity, is also an important factor. The concern is that the public cost of supporting retired people will lead to exaggerated tax burdens on future generations.

The IGR is due no later than April 2003. It is thus appears timely to explore the long-term issues of intergenerational equity and fiscal sustainability, and to identify policies that may assist in ensuring that the Australia adopts a 'sound' fiscal policy for current and future generations of Australians.

The paper itself is divided into 7 main sections.

2. Intergenerational Equity

A fundamental principle of intergenerational equity is the benefit principle. According to this proposition, taxpayers in each time period should (as a group) contribute to public expenditures from which they derive benefits in accordance with their share of those benefits. In other words, they should 'pay their way', without either subsidising, or being subsidised by taxpayers in other time periods. This approach provides for contemporaneous taxation of any expenditure the benefits of which are enjoyed contemporaneously (Robinson 1998:447 and Musgrave 1988:133).

Intergenerational equity can be contrasted with intra-generational equity, the latter being concerned with the distribution of income within a generation. Intra-generational equity does

not adhere to the benefit principle. Following this view, income is redistributed on equity grounds so that all citizens should enjoy some minimum standard of material well being irrespective of their capacity to generate income.

Intergenerational equity can also be seen in terms of the distribution of tax burdens across generations according to their capacity to pay taxes. If per capita incomes rise over time, then there is a case for present generations to shift some tax burden to future generations. Musgrave (1988) regards this as being an optimal distribution, which can be distinguished from the distributionally neutral (and narrower) concept of benefit finance.

Intergenerational equity calls for initial debt finance to be followed by debt amortization over the useful life of the asset. This involves the decomposition of the budget between current and capital expenditure, with the former being tax and the latter being debt financed. This raises the issue of the definition of a capital outlay. For public assets there is no useful analogy with ownership as it is employed in the accounting concepts of the private sector. Public assets include investment in human capital via health and education and in the natural environment via protection and remediation measures. However, the task of clearly defining what portion of expenditures is capital and current, and then depreciating the components of capital over their estimated lives would be difficult. Added to this difficulty is that the intergenerational benefits may not be derived from income-yielding capital, since they may take an intangible form. For example, the cost of a war, fought successfully by one generation, should be shared by the next, because the latter generation shares in the benefits (Musgrave 1988:134).

3. Generational Accounting

Intergenerational equity presents perplexing measurement issues that generational accounts attempt to overcome. Generational accounting is based on the government intertemporal budget constraint, which requires that either current or future generations meet the government's obligations. These obligations are the present value of projected expenditures plus official net debt. From these obligations are subtracted the present value of tax payments (net of negative taxes such as social security payments) implied by current policy. By comparing the growth-adjusted lifetime net tax burden facing members of future generations with those facing current newborns, who pay according to current policy, sustainability of current fiscal policy can be assessed (Auerbach *et al* 1999:3).

Generational accounting can then be used to calculate the present value changes in net taxes of generations both living and future, resulting from changes in fiscal policies. Generational

accounting can also be employed to identify the set of suitable policies available the government to restore intergenerational balance. Proponents of generational accounting argue that the deficit as the traditional measure of a country's fiscal position bears no necessary relationship to fiscal policy since it simply reflects the current government's choice of how to label receipts and payments. The main advantage of generational accounting is that it deals directly with the incidence of tax burdens across generations, and employs a set of microeconomic and macroeconomic assumptions to assess the impact of changes in fiscal policy (Auerbach *et al* 1999:3).

Generational accounting does not closely follow the benefit principle of intergenerational equity. When comparing the burden of current with future generations, generational accounting apportions tax on the basis of the spread of public expenditures, not on the benefits of that public expenditure. This is not so much a criticism of generational accounting, but a deviation from the ideal framework in order to make the estimation procedure feasible.

However, generational accounting is not without its problems. Firstly, generational accounting requires projections well into the distant future, and the degree of accuracy diminishes rapidly. Secondly, current policy is not well defined. For example, legislation determines current policy for income tax rates, but in practice, tax bracket creep (associated with rising incomes) tends to be 'given back' to taxpayers every three years or so. The problem is that current policy is modified by accepted traditional practice.

Thirdly, there is a problem with the accuracy of the implicit incidence assumptions. Generational accounting assumes that taxes on labour income are paid by workers, taxes on capital are paid by owners of capital, and goods and services taxes, excises, etc., are paid by consumers. It thus invokes the legal incidence of taxation rather than its economic incidence. However, the economic incidence can be quite different since people bargain to maximise their returns according to their respective negotiating powers. Generational accounting thus ignores the policy-induced changes in factor returns, which can alter the ultimate incidence of fiscal policies.

Fourthly, generational accounting may not accurately reflect those changes in a generation's utility levels associated with their efforts to avoid fiscal burdens, such as consuming more GST exempt fruit and vegetables and less processed food in order to avoid payment of GST (Fehr and Kotlikoff 1999:44).

Fifthly, governments can take measures that cause intergenerational redistribution that will not be detected by generational accounts. For example, government regulation has the capacity to shift costs from the public to the private sector and across generations (Ablett 1998:75).

A significant problem resides in the choice of discount rate. Portney and Weyant's (1999:4) identify two schools of thought on the choice of the discount rate. Firstly, the so-called 'ethical principles' or rules which relate to the way the well-being of different generations that should be applied. Secondly, the rate of return on capital invested approach. While the debate continues, they argue that the economics profession gets a sense of unease about discounting due to its technical complexity and especially issues relating to ethical considerations, which cannot be 'scientifically' tackled.

Portney and Weyant (1999) raise other concerns about discount rates. Firstly, debates about choice of discount rate appear to confuse economic efficiency with distributional equity. For example, a policy action may generate benefits that exceed costs but the policy may nevertheless be rejected, even if the effects are immediate, on the redistributional argument that the benefits will be enjoyed by the rich and the costs are borne by the poor. Thus, in the context of 'greenhouse' policy, even if it is efficient to reject such programs because they do not reach the minimum rate of return, one might reasonably object on distributional grounds, especially if the effects of the decision are irreversible and/or compensation will not be available to future generations. Secondly, there is a broad consensus that the discount rate should by greater than zero. Thirdly, there was also general agreement that the standard procedure for the evaluation of projects with horizons less than 40 years should use the opportunity cost of capital. However, beyond that timeframe, the consensus rapidly vanishes. Fourthly, Arrow (1999:13), Weizman (1999:27) and Klopp and Portney (1999:120) all suggest that the longer the time period the lower should be the discount rate.

Finally, calls from proponents of generational accounts to have them replace traditional budget statements have attracted additional criticisms. Haveman (1994:108) argues that while generational accounts are useful, they should not replace the current annual budget for various reasons. Firstly, generational accounting is concerned only with the present values of taxes and transfers, but not with their timing. In common with the households, governments are liquidity constrained. Moreover, annual budgets stimulate economic discipline and fiscal control. Secondly, proponents of generational accounting contend that there are no generally accepted economic or accounting principles to guide the calculation of an annual deficit, thus allowing for the manipulation of accounts. But generational accounting is not immune from

manipulation either. Indeed, the quality and detail of the budget papers is far more transparent than under generational accounting. Finally, advocates of generational accounting assert that neither official nor adjusted deficits are related to a variety of important macroeconomic variables. Empirical findings are mixed, but studies that adjust the required deficit for the effects of inflation, real value of assets, and cyclical factors with lags seem to find a statistically significant relationship between the deficits and macroeconomic variables.

4. Generational Accounts for Australia

In an attempt to measure the likely impact of population aging on fiscal balance, Albett (1999; 1998) constructed generational accounts for Australia. Generational accounts are based on the intergenerational budget constraint for the Australian public sector, under which future net tax payments of current and future generations must be sufficient (in present value terms) to cover the government's projected expenditures and net indebtedness. Using the 1994-95 official data published by the Australian Bureau of Statistics (ABS), the results of the baseline accounts show a generational imbalance to the favour of current generations. The imbalance is 32.2 per cent: that is, to achieve intergenerational balance an individual born tomorrow would have to pay 32.2 per cent more in taxes than the present generation.

There has been deterioration in this imbalance since the most recent accounts were produced, based on 1990-91 data. Higher government purchases, increased government indebtedness and cyclical changes in government revenues and transfer payments reflected that the Commonwealth government generated a surplus in 1990/01 only, that a severe recession was experienced in 1992 and that the subsequent economic recovery was slow.

Various policies that would reverse the generational imbalance were identified by Ablett (1999). Firstly, the achievement of the public sector total outlay and revenue projections up to the fiscal year 1998-99 contained in the 1996 *National Fiscal Outlook* is significant. With the benefit of hindsight, these projections were more or less achieved. Secondly, Ablett modeled zero growth in per capita public age pensions. This scenario incorporated the move toward self-funded retirement incomes through the compulsory superannuation guarantee (SG). However, in the case of the latter, under current rules, compulsory saving for retirement is unlikely to have a significant moderating effect on public age pension benefits until well into the twenty first century. Possible initiatives include plans to raise the SG rate and/or hypothecate superannuation earnings. Other possibilities might include lifting the age at which people have access to superannuation and tightening the rates for access to pensions by eliminating provisions that enable persons to 'double dip'. This term is used to describe the phenomenon in which people at retirement draw their entitlement to lump-sum

superannuation earnings and covert this (taxable) asset to owner-occupied residential property (non-taxable) and then claim the age pension. Lump-sum payouts represent 78.5 per cent of all superannuation payments. While average lump-sum superannuation payouts are still low, by 2010 average payments are projected to be in the order of $120,000 (Australian Prudential Regulatory Authority (APRA) 2001) and the incentive to 'double dip' will therefore grow. All of these measures would reduce the burden on pension outlays.

Ablett (1999:153-159) paid specific attention to the effects of migration on generational accounts for Australia. A major conclusion of the simulation results holds that immigration is likely to result in a reduction in the generational account imbalance in Australia, and that this effect is greater the higher the level of immigration. This result may explained by two factors. First, the composition of currently recorded and future projected migrant intakes is such that many migrants receive all or most of their education in their home countries before migrating to Australia. Second, there is a relative dominance of young working age (and tax-paying) people in the composition of migrant intakes, relative to the resident Australian population.

An interesting feature of these accounts is the intergenerational gender imbalance. Interpreting the base case presented by Ablett (1999:147, Table 6.1), the present value imbalance for males is far less than for females. This arises because men earn higher incomes and thus contribute more taxes, accumulate more superannuation and thus rely less on age pensions. Men generally live shorter lives and thus draw lower total pension payments. Policies promoting equality of women in the workplace is thus consistent with achieving intergenerational balance.

5. Fiscal Sustainability

Fiscal sustainability is a multi-faceted, complex and imprecise concept. We will examine number of approaches to the notion of fiscal sustainability that exist in the literature.

Non-Increasing Debt

Chalk and Hemming (2000: 3) contend that one common practic al approach to assess fiscal sustainability is to follow the rule of non-increasing debt. Under this rule, governments must satisfy both an intertemporal budget constraint and (in each period) a static budget constraint. In a closed economy (abstracting from the complications of external debt and monetary considerations) the present value budget constraint (PVBC) model holds that: sustainability (or solvency) requires that the present value of future primary surpluses must exceed the present value of primary deficits by an amount sufficient to cover the difference between the initial debt stock and the present value of the terminal debt stock.

The present value of terminal debt could be positive, if the government rolled over its debt in full every year by borrowing to cover both principal and interest. However, if the government were to roll over the debt in perpetuity some individual would have to hold government bonds at some infinite point in time. As a result, this individual would have lower consumption in at least one period, thereby experiencing lower welfare compared to a situation in which debt were not held. In other words, the government would eventually run out of individuals willing to hold its liabilities. This measure of sustainability thus respects the PVBC.

Debt Linked to GDP Growth

In a different approach to fiscal sustainability, Wells (1995:273) argues that in a growing economy, if the GDP growth rate exceeds the interest rate on debt (or the primary fiscal surplus is positive), then fiscal policy is sustainable.

Balanced Budget Rule

A somewhat different approach is the familiar balanced budget approach, used by most governments in their budget statements. Under the balanced budget approach, all contemporaneous expenditure is financed by contemporaneous taxes, and any public debt is thus an unfair imposition upon future generations. The balanced budget approach has been based on a cash system, under which all expenditure including capital expenditure is treated as on outlay, to be offset by taxes in the year it is incurred. In recent times, Australian governments have moved on from cash accounting to accrual accounting whereby capital expenditures are replaced by depreciation over the life of the asset. While the spreading of the cost of physical assets and associated debt financing of capital expenditure is a little closer to the benefit principle there are nevertheless significant differences. Under accrual accounting, capital expenditure is defined by reference to the physical durability of assets, rather than by reference to the timing of benefits. Moreover, there are many other forms of expenditure that generate benefits over multiple time periods without requiring a durable physical asset. In stock terms, a balanced budget in accrual accounting terms is equivalent to the maintenance of constant 'net worth' (Robinson 1998:448).

Fiscal balance Rule

The fiscal balance rule is based on the economy's intertemporal budget constraint and is thus closely associated with the macroeconomic concepts of fiscal policy. This approach therefore considers the actual resource costs and benefits of tax and expenditure. The fiscal balance rule is defined as follows: 'take in present value terms, from each new young generation an amount equal to the flow of government consumption less interest on the difference between (a) the value of the economy's capital stock and (b) the present value difference between the future consumption and labor earnings of existing older generations' (Kotlikoff 1999:25-27). Another way of expressing this rule is to say that the lifetime payment of each successive generation should equal the flow of government consumption less interest on the economy's capital stock that remains after taking into account the amount consumed by the current elderly. Since this involves a time path for each variable, future values must be converted to present values. The advantage of this rule is that each variable can be measured, and thus does not involve the use of arbitrary accounting rules.

Budget Flexibility Indicators

A separate strand of the literature examines how far fiscal policy departs from sustainability by means of indicators. Such indicators are not backed by formal definitions of fiscal sustainability, but rely on their intuitive appeal. One indicator is to maintain constant the ratio of public sector net worth to the current level of output. A permanent primary deficit is calculated that achieves this ratio. While this is reasonably easy to interpret, it is difficult to get an accurate assessment of the size of government net worth. One way around this problem is to examine the change in policies required to maintain the current debt ratio. Two indictors of sustainability are developed. The first is the primary gap indicator, based on the permanent primary deficit necessary to stabilize the debt ratio. Secondly, a tax gap indictor is calculated, based on the permanent tax to output ratio necessary to maintain a given debt ratio. The difference between these indicators amounts to a question of emphasis, with the former pointing to a reduction in the deficit required for sustainability of the debt, and the latter indicating the increase in tax required for sustainability of debt for given current spending policies (Chalk and Hemming 2000:7-8).

A third method is to examine the structural budget balance (SBB). The SBB is the residual balance after purging the actual balance of the estimated budgetary consequences of the business cycle. The International Monetary Fund (IMF) find this approach a useful tool for enforcing the maximum deficit specified in the Maasricht Treaty. This approach involves estimating the underlying potential output and the associated gap between actual and potential output, quantifying the cyclical component of expenditures and revenues, and deriving the cyclically adjusted SBB.

The principal weakness with indicators of this kind is that they are based on arbitrary definitions of sustainability, especially the notion of a constant ratio and then relating this ratio to some malleable measure such as net worth (Chalk and Hemming 2000:9).

Zero Net Worth

There are also fiscal sustainability indicators that target zero net worth. The Commonwealth government adopted accrual budgeting in 1999/2000 as a means of improving fiscal management by better matching revenue with ongoing expenditures and the consumption of assets. In so doing, the Commonwealth government constructed a balance sheet of assets and liabilities, which enabled the measurement of net worth. Net worth measure has been argued to be superior to net debt as a target of fiscal sustainability because it takes into account changes in all government assets and all liabilities (see, for example, Bradbury *et al* 1999:13). Furthermore, the measure gives an overall view on whether borrowing is undertaken for investment or construction since the latter would increase liabilities without a matching increase in assets (so net worth would thus fall). Moreover, the net worth measure overcomes the distortions arising from privatization of public assets since the sale of a public asset would be recorded as a reduction in debt and a reduction in assets with the net effect only being reflected in net worth.

The usefulness of this measure is limited by accounting conventions since only physical assets are recorded in the public sector balance sheet (for example, it excludes human capital), liabilities are limited to financial liabilities (for instance, ii excludes legislative entitlements to pensions). Moreover, there is no recognition of the Commonwealth government's greatest 'asset' - its capacity to tax.

A thorny problem with the notion of net worth is whether anyone pays much attention to this indicator. Consider the following argument: The Commonwealth net worth in 2000-01 was minus $33 billion (Commonwealth of Australia 2001:8-19). If the Commonwealth were a private company, then it would be bankrupt, and creditors would not lend it funds. The observation that lending continues indicates that creditors do indeed have sufficient 'confidence' and the Commonwealth government's position is thus 'sustainable'.

Treatment of Uncertainty

Policies that are sustainable in a world of certainty may no longer be sustainable in an uncertain world. Accommodating uncertainty involves (i) discounting at the marginal rate of

substitution between time periods which differs from the interest rate on government debt, and (ii) use of expected values for key economic variables that can vary according to the various states of nature. Under this framework, a test of sustainability resides in whether the primary surplus responds positively to an increase in debt. If it does, then the government has an 'effective' fiscal policy. Uncertainty can also be handled through 'stress testing'. Using this technique, possible shocks can be simulated to appreciate the impact on and transmission mechanism of a country's fiscal position (Chalk and Hemming 2000:10; Hemming and Petrie 2000:11).

Linkage with External Sustainability

In an open economy, like Australia, fiscal sustainability and external sustainability are inextricably linked together. Chalk and Hemming (2000:20) observe that such a link has not yet been systematically examined, the difficulty being that there is no direct correspondence between fiscal sustainability and external sustainability, in the same way as there is no direct correspondence between the 'twin deficits' (the fiscal deficit and the current account deficit). Nonetheless, these measures of sustainability are surely not entirely independent. For example, in a situation of both fiscal and external sustainability, if net foreign liabilities (expressed in domestic currency) are greater than government debt, then there will have to be an excess of private saving over private investment (in present value terms) to cover the future external debt service.

This is indeed the case in contemporary Australia. Conversely, if there is fiscal sustainability but the external deficit is unsustainable, then private saving is insufficient to cover external debt service. In this situation, private sector net external liabilities grow faster than the foreign interest rate (that is, the private sector is rolling over its external liabilities) and default on external debt service is likely. To avoid this situation the government would need to change macroeconomic settings, and that may include raising national savings by reducing public sector debt through change in fiscal policy.

Optimal Taxation

In the aforegoing discussion, fiscal sustainability has been expressed in terms of the size of public debt, solvency, and so on. But governments can achieve fiscal sustainability simply by raising taxes. Put differently, it is conceivable that a government can address its own financial affairs at the expense of its citizen's welfare. Accordingly, in order to ensure that fiscal sustainability is achieved without damage to the welfare of the economy, the concept of optimal taxation should be considered. Optimal taxation represents the rate of tax at which the marginal benefit of public expenditures is equal to the marginal cost of taxation. At this point the optimum size of government is determined. Embodied in this definition are the principles of good tax design: taxes should be horizontally and vertically equitable; be 'neutral' with

respect to economic incentives; be administratively simple; and so on. However, the theoretical concept of optimal taxation is very difficult to apply to real-world situations. For example, there is a problem of time inconsistency of optimal policy. Thus, even if a 'one-off' lump-sum tax is efficient, the possibility of a recurrence of the tax might create incentives to change savings behaviour to reflect the expectation that the more citizens save now the more tax they will be burdened with in the next period. Similarly, there are many trade-offs between efficiency and equity in tax design, and equity can be defined in a myriad of ways Rosen (2002:320).

For simplicity in intergenerational reporting, tax revenue is generally assumed to be a constant proportion of GDP, which implicitly assumes a regime of optimal taxation. This is clearly contentious.

6. International Disclosure of Intergenerational Factors

Public disclosure of intergenerational information is an important step in raising debate that can lead to policies to bring about intergenerational balance. Since the Commonwealth government has not yet produced an intergenerational report for Australia, it is thus timely to briefly review reports produced by other countries to get some insight into what might be expected from the Commonwealth IGR. Intergenerational reports are produced by several other advanced nations, including the UK (2000), the US (2001, 2000), the European Economic Policy Committee (EEPC) (2001), New Zealand (2001) and Canada (2000).

These reports differ quite widely in their objectives and methods. Firstly, the explicit assessment of sustainability is not usually the main aim of the reports, except for the UK report. This report produces long-term fiscal projections, and compares these with the rate at which public expenditures can grow while maintaining the two rules for assessing fiscal sustainability in the long-term: namely (a) the golden rule: over the economic cycle, the government will borrow only to invest and not to fund current spending, and (b) the sustainable investment rule: public sector net debt as a proportion of GDP will be held constant over the economic cycle at a stable and prudent level (below 40 per cent of GDP).

Secondly, none of the reports present generational accounts along the lines advocated by Auberach *et al* (1999). In the case of the EEPC, generational accounting techniques are mentioned, but their use is explicitly rejected on the basis that there are too many unwieldy assumptions.

Thirdly, the NZ and UK reports focus only on the 'bottom line', whereas the US, Canadian and EEPC reports present projections of main categories of age-sensitive social expenditures. The duration of the projections is variable, from as short as 10 years for NZ to as long as 75 years for US.

Fourthly, with the exception of the Canadian report, government revenue is projected to grow at a constant rate of GDP. The Canadian report projects revenues by estimating the revenue yield from population cohorts and then projecting revenue as the composition of the cohorts change with age. This is the superior method, since it picks up the effect of a significant increase in the ratio of dependants to tax paying citizens.

Finally, in all reports non-demographically sensitive expenditure (such as defense) is combined into a single projection and assumed to grow according to a simple parameter, such as population growth, real per capita income or real wage growth.

The Canadian Government (2000) is the only one of those surveyed to publish intergenerational projections at both the federal and provincial/territorial level. The simulations trace long-term debt paths for each government capturing the effects of population ageing and economic growth. Sensitivity analysis is conducted around the growth in health and other social expenditure per capita, and the rate of growth in federal transfers to the provinces and territories.

These simulations show that Canadian jurisdictions will be able to accommodate the fiscal impact of ageing population and significantly reduce debt, although the impact varies between jurisdictions according to age structure and the initial position on debt. Under Canada's fiscal federal system of government, responsibility for health spending is almost exclusively assigned to the provincial jurisdictions and financed by the federal government through intergovernmental fiscal transfers. The report demonstrates that the provinces will have adequate funding for health as the population ages and the federal government will have the resources to meet the intergovernmental fiscal transfers. The government's report is consistent with the findings of the generational accounts for Canada. Oreopoulos (1999:215) has demonstrated that recent fiscal austerity measures undertaken in Canada brings that country close to intergenerational balance.

However, Australia is in quite a different situation. Long-run projections show that social expenditures will grow by 5 percentage points of GDP over the next half century (Dang 2001:19). While this estimate is not dissimilar to the Canadian projections, the implications

for fiscal-federal relations are quite different. Firstly, as Ablett (1999) shows, Australia is in intergenerational imbalance, so future governments will have to adopt policies that will bring about balance. Secondly, the current assignment of health expenditure responsibilities is shared between the Commonwealth and state governments. But inherent cost-escalating factors influence the growth in Commonwealth expenditure by far more so than the states. The Commonwealth will thus have to bear almost all of the growth in social expenditures whereas the states will be largely unaffected. In a nutshell, the states escape the fiscal pressure because the projected growth of health care (mainly in hospitals) is offset by (a) cost shifting from the states to the Commonwealth government associated with community care initiatives, and (b) a fall (as a proportion of GDP) in primary and secondary education expenditure as the long-term effects of lower fertility are felt.

Given the high degree of vertical fiscal imbalance between the Commonwealth and the states, fiscal sustainability and intergenerational equity are policies that must be pursued together by all tiers of government since the policy actions of one level of government can greatly influence the policy choices of other jurisdictions.

Most of the intergenerational reports project social expenditures on a 'no policy' change basis. However, looking back over the post-World War Two trends in the size and structure of the public sector, there is clearly dramatic change. This change has been as much a result of policy change as it was a consequence of underlying trends. Policy shifts can be brought about internally through changes in community attitudes (e.g. social reforms of the 1970s) or external factors (e.g. World War Two in the 1940s) or the long-run consequences of human behaviour (e.g. technological change and environmental degradation). This obviously underscores the need for budgetary flexibility.

7. Policies for Intergenerational Balance

In addition to the policy guidance offered under the principles of intergenerational equity and fiscal sustainability, and a call to improve the public disclosure of intergenerational information, there are specific policies that governments could consider to induce intergenerational balance.

Population Policy

Raising fertility rates from the current 1.7 children per woman in Australia to at least the population replacement rate (of 2.1 children per woman, allowing for child morality) would

facitate a rebalance between the young and the old. However, this is not a simple matter of offering pecuniary rewards for child bearing. Australian society seems to have embraced the need for a woman to pursue a career. Accordingly, there needs to be an attitudinal change to perceptions on the value of child bearing relative to the value of activities. Increased immigration can also assist in bringing about intergenerational balance as we have seen.

Retirement Income Policy

Increasing the capacity of older persons to fund their own retirement will also take the pressure off the public purse. Australian public pensions are modest by international standards, and as the materialistic 'baby boomers' move into retirement there may be pressure exerted on the government by 'grey power' political coalitions to raise pension levels. With the over-65 age cohort growing from 12 per cent of the population in 2001 to 25 per cent of the population by 2050, the burden of pensions through volume and rate increases may thus be considerable. The compulsory employer-funded SG has been implemented in Australia. Its initial success has not so much derived from funding retirement (since it is in its formative stage), but rather that it has taken the pressure off raising the public pension from 25 per cent of male average total weekly earnings (MATWE) to 30 or even 35 per cent of MATWE.

Hypothecation of Social Expenditures

Related to the SG is the concept of self-funding certain retirement expenses from superannuation, such as health and aged-care facilities. Schofield (1998:27) has shown that persons over 85 years old receive 9.3 times the average per capita subsidy on the Pharmaceutical Benefits Scheme than that received in the lowest subsidy group (10-19 year olds). Raising the SG now, for access by beneficiaries for specific expenditures or at an age threshold, say, at the age of 70 years may therefore be a way of shifting the social expenditure burden to those who receive the service rather than to future generations.

Encouraging Older Workers to Stay in the Workforce

When the age pension was introduced for public sector workers in the 1930s, life expectancy after retirement was less than 5 years. Since then, life expectancy has risen from late 60s to mid-80s and life expectancy is projected to rise further by one year per decade. With many more years of active life, workers could be encouraged to remain in the workforce and thereby boost the income pool available to fund retirement. Flexible labour market policies and age discrimination legislation are thus necessary.

Review of Fiscal-Federal Relations

Given that the burden of the growth of age-related social expenditure is projected to fall largely on the Commonwealth government, with the states largely unaffected, there is a need

to consider the efficiency and equity arguments of the re-assignment of expenditure and revenue responsibilities between the Commonwealth and the states.

Intergenerational Decision Making

The long-term fiscal implications of proposed policy changes are rarely discussed in government processes for decision-making, yet some of the policy choices have drastic long-term consequences. For example, the relaxation of eligibility criteria for 'gold cards' for older persons will have major fiscal consequences in coming decades. All advice to policymakers should include information on the long-term consequences of policy decisions.

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OVERLAPPING GENERATIONS MODEL
(Source: Rosen 2002:431)

Transaction	Not Yet Born	Young	Middle Aged	Old
Current: 2000				
1. Income		12,000	12,000	12,000
2. Borrowings*		-6,000	-6,000	0
3. Benefits		+4,000	+4,000	+4,000
Future: 2020				
	Young	**Middle Aged**	**Old**	
4. Govt raises tax to repay debt	-4,000	-4,000	-4,000	0
5. Govt pays back debt to bondholders*		+6,000	+6,000	0

In this model there are three generations (young, middle-aged and old). The government borrows in the current period from the young and the middle-aged, the old are not willing to lend because they will not be around in 20 years to receive the repayment. All of the current generation receives an equal benefit. In 20 years time all are older, and the old generation has departed and a young generation has appeared. Its time to repay the debt and taxes are raised to do so. The young generation in 2020 is at the short end of the stick because they pay taxes for a public service they never received.

FISCAL SUSTAINABILITY, INTEREST AND GROWTH
(Source: Wells 1995: 273)

According to Wells (1995: 273) fiscal sustainability is defined as a situation where, for current expenditure and tax policy, the ratio of government liabilities to GDP either remains constant or falling over time.

This can be expressed as follows:

$$LG_t - LG_{t-1} = r^*_{t-1}LG_{t-1} + G_t - T_t$$

$$= r^*_{t-1}LG_{t-1} - PFS_t \qquad \text{………(1)}$$

The change in real government liabilities from period t-1 to t ($LG_t - LG_{t-1}$) is given by two components. First, is real interest paid on net government liabilities at the beginning of the period ($r^*_{t-1}LG_{t-1}$). Second, the change in the real primary fiscal surplus ($G_t - T_t$, or PFS_t). Where 'primary' refers to the fact that it is the fiscal surplus excludes any taxation revenue on interest earned to bondholders on government liabilities.

Converting (1) to a growth rate form:

$$dLG = r^*LG - PFS \qquad \text{……..…(2)}$$

and define:

$$pfs \bullet \frac{PFS}{Y} \qquad \text{……….(3a)}$$

$$g \bullet \frac{DY}{Y} \qquad \text{………..(3b)}$$

$$Lg \bullet \frac{LG}{Y} \qquad \text{……….(3c)}$$

Where pfs is the primary fiscal surplus (PFS) expressed as a percentage of aggregate income, γ is the growth rate of the economy and lg is government liabilities expressed as a percentage of aggregate income.

So the percentage change in the proportion of government liabilities to aggregate demand is decomposed into two elements, namely the change in government liabilities and the change in aggregate income:

$$\frac{dlg}{lg} = \frac{dLG}{LG} - \frac{dY}{Y}$$

$$dlg = lg \left(\frac{Dlg}{LG} - \frac{Dy}{Y} \right)$$

$$= lg \left(\frac{r^*LG - PFS - g}{LG} \right) \qquad \text{……using (2)}$$

$$=\lg \ (\ r^{*} - g^{*} \ ) -\lg \ (\frac{PFS}{LG})$$

$$=\lg \ (\ r^{*} - g^{*} \ ) -pfs \qquad \ldots\ldots(4) \qquad \text{using (3a) and (3b)}$$

As the definition of sustainability is the ratio of government liabilities to GDP, lg, either falls or remains constant, then

dlg £ 0

then, from (4), this is likely to happen when the real after tax growth of the interest rate is less than the growth in GDP, or the primary fiscal surplus is positive.

As Wells (1995:296) points out, with unchanged fiscal policy there is a simple relationship between the interest rate and the growth rate that can be used to determine whether the path of debt-to-GDP ration is sustainable over time. It is assumed that the debt-to-GDP ratio does not effect the growth rate or interest rate, but this may occur as discussed elsewhere in the text, so the analysis is a partial analysis.

Using data from 2001-02 Budget Paper No. 1 (2001:1-5, 8-16, 8-25), the sustainability of the public sector is given by the following:

- Ratio of net government liabilities to GDP = 4.9 per cent
- Projected value of the interest rate, r^{*}, is = 3.0 per cent
- Projected value of the growth rate, γ, is = 3.25 per cent
- Primary fiscal surplus as a proportion of GDP, pfs, is = 1.0 per cent

So, using equation (4):

dlg = 0.049(0.03 – 0.0325) – 0.01
= - 0.0101225

Therefore using the fiscal settings announced in the 2001-02 Budget, net liabilities were projected to rise (as a proportion of GDP) by 1.01 per cent. In other words, assuming the interest rate and growth rate forecasts are correct, the primary fiscal surplus could fall by 1.01 per cent of GDP and still achieve fiscal sustainability. However, the calculation is sensitive. For example, if Australia's growth rate slows to under three per cent or fiscal policy is loosened to counter economic slowing. Nonetheless, in the context of OECD projections on the fiscal impact of ageing (Dang 2000:19), Australia's low debt position places the country in a good position to cope with the impact of ageing relative to many other OECD countries.