Shortcomings of Government Financial Management: A Generational Accounting Critique

Paul J M Klumpes - p.klumpes@imperial.ac.uk
Liyan Tang – l.tang@imperial.ac.uk

Abstract

This paper examines the inter-generational financial dimensions and accounting implications of under-funding practices in the public sector. We explain why inter-generational financial disclosure has become such an urgent issue internationally, and discuss a generational accounting framework for calculating the necessary financial information to reveal the inequities and resource allocation problems afflicting public sector organizations. The main limitations, assumptions and applications of a generational approach to analyse the financial sustainability of public sector enterprises are briefly discussed.

Keywords: Generational accounting, public sector under funding practices

JEL Classifications: M41, L31, J18, and H55

Introduction

The public sector commands a substantial proportion of any nation's total capital investment. However, unlike privately funded organizations, public sector organizations are typically under-funded in the sense that the government fails to pay the necessary contributions as they fall due. Moreover, the increasing importance of government and other public sector entities in providing either explicit or implicit insurance guarantees for pensions, social security and health care programs, which involve inter-temporal investment and consumption commitments, has significantly reduced the relevance and reliability of traditional financial statements, that are based on accrual-based accounting. This is because, under accrual-based accounting principles, the recognition and payment of their obligations related to various social programs and welfare services is effectively deferred until the relevant entitlement must be paid, which has important implications for general taxpayers who ultimately bear the cost of employer contributions towards government insurance programs. Thus, the liability created by population ageing and the associated under-funding shifts responsibility for payment away from the present generation of taxpayers onto future generations who must make up the funding shortfall as the benefits actually fall due. This effectively forces future generations of contributors or taxpayers to bear the burden of funding the retirement benefits of previous generations of beneficiaries. Under-funded government liabilities for public sector obligations constitutes a major expenditure in the management of social programs in many countries, but to date has not attracted much attention from accountants as it does not easily fit within an accrual-based accounting system, despite the recession causing many governments to further postpone their future obligations. Existing or proposed international standards continue to assume that obligations are only accountable if the service has already been provided and/or that the amount measured is limited to a 'curtailment' valuation. However, these standards, while applicable to private sector, may not apply to the public sector where governments are expected to make a continuing and ongoing commitment for

the future welfare and provision of health care, social security, pensions and other insurance-related commitments. The OECD has recently issued calls for greater disclosure of liabilities and contingent obligations (OECD, 2004, IMF 2009).

Given that behavioral persistence of under-funding practices of most insurance-related guarantee programs is typical of many OECD countries, a major unresolved accounting issue is their generational implications for affected stakeholders. However it is not at all clear that this form of inter-generational equity is a concern of governments. Under the Westminster Principle of government, governments are only accountable for, and elected on, the basis of policies during the elected term of their office. These principles can in turn induce governments of cash-strapped economies to take myopic views. For instance, the UK government recently consolidated the assets of a publicly unfunded pension scheme (Royal Mail), but argued that it was not required to be accountable for the obligations (e.g. Financial Times, 9 May 2009). Moreover, prior researchers have only tended to focus on the accrual accounting aspects of public sector under-funding practices. For example, Marks et al. (1988), Mitchell and Smith (1994) and Chaney et al. (1997) examine the determinants of pension funding in the US public sector by reference to short-term, legalistic measures of the obligations and assets.

However, while concluding that past under-funding practices are likely to continue in the future, prior USA-based researchers have not examined their inter-generational equity implications. This is because relevant US GAAP, as promulgated by the Government Accounting Standards Board ('GASB') requires, in accordance with accrual-based accounting principles, USA government insurance programs to recognise the periodic difference between the market value of pension fund assets and the under-funded element of the equivalent pension fund obligation (GASB, 1994, Para 22). However, recently the Federal Advisory Standards Accounting Board proposed amending this to allow for recognition at the point where the benefit is acquired rather than at the point where it is payable (FASAB, 2006). This is consistent with a lifecycle approach to investment and finance (Bodie, 2006). Only the US federal government has proposed the introduction of a 'Statement of Social Insurance for Social Security', which effective in 2007, will show forecast information for the present value of future benefit payments and future contributions, and the net actuarial imbalance in 75 years (FASAB, 2006, IPSAS 2005). However, the information does not extend to recognizing the 'inter-generational liability', nor does it articulate with the overall reported funding position of the US federal government. In addition, governments provide financial guarantees or insurance policies that oblige the government to make promised payments on a financial contract if the issuer fails to do so (Bodie and Merton, 1992). An example of such a guarantee is the Pension Benefit Guaranty Corporation. These guarantees are potentially valuable for the third party, and moral hazard behavior for under-funded pension obligations can lead to significant exposure by the government that is not currently recognised.

This paper proposes a generational accounting framework that is consistent with a life cycle perspective on the financial management of under-funded public sector liabilities. Generational accounting was motivated by the claim that the measured public deficit need bear no relationship to the underlying inter-generational stance of fiscal policy, and the tendency of governments to use short-term budget deficits as an instrument for long-term planning by excluding social security from the deficit (Kotlikoff, 1986, 1992, 1993). Auerbach, Gokhale and

Kotlikoff (1991) developed generational accounting, which is a method for estimating the economic impact of fiscal policy on different cohorts – including future ones – as distinguished by birth year and gender (Gokhale, 2009). However as generational accounting is also based on a prospective per capita life time net tax burden faced by different cohorts, it also presents a number of challenges for implementation in financial management contexts. This article first discusses the background, then summarises the major features of generational accounting, its applications, and identifies its limiting assumptions and potential applications, and finally discusses its policy implications.

The Institutional Context

In many countries, unlike the private sector, public sector insurance-related program activities are typically under-funded since the relevant program may either be totally unfunded or involve specified assets that at any particular time may not cover the equivalent liabilities for which the fund is responsible

The under-funding generally arises in two ways (Mitchell and Smith, 1994). One method is to adopt unrealistic assumptions that reduce legally required contributions. For example the spread between the assumed rate of return on investments and the rate of assumed wage growth determines, in effect, the real discount rate applied to future liabilities. The other major form of under-funding arises because governments do not pay their contributions into the fund as they fall due. This practice, consistent with the behavioral persistence hypothesis, effectively shifts the burden for payment of present generations of workers onto future generations of taxpayers, who meet the shortfall because the government effectively pays benefits out of their (annual) contributions to the general revenue fund, including the net effect.

The continuation of this fiscal policy makes it doubtful whether future tax revenues will be sufficient to secure their obligations in many OECD countries (World Bank, 1994; Roseveare et al., 1996). Ageing populations in many countries (including Australia) imply an unreported tax burden on future generations. This is because, contrary to government accounting conventions, they must bear the burden of funding their own pension benefits as well as paying off accumulated deficits for the benefits of previous (and larger) generations of workers.

The non-payment or under-payment of contributions by governments result in various insurance-related programs totally unfunded, and thus represents a major form of public borrowing against the future. Continuation of past practices in government fiscal policy of under-funding public sector pensions may adversely affect future revenue-raising potentials of governments. It also puts at risk the income security of public sector retirees, which is critically affected by under-funding policies. Further, since the public sector workforce is maturing along with the rest of the population, these under-funding practices take on increasing importance as time passes (Mitchell and Smith, 1994). These practices have significant inter-generational financial consequences for at least three groups of stakeholders – present and future taxpayers, beneficiaries, and government policy makers. Thus, the demand for evaluating inter-generational effects of government policies is very important. However, although now used extensively by macro-economic policy makers, the application of these concepts to financial reporting by government and public sector entities has been largely overlooked.

At the whole of government or public sector reporting entity level, there is still a lack of financial disclosure in government financial reports that will allow users to make judgments about (i) the extent of aggregate under-funding, (ii) the implicit taxation burden placed on future generations and (iii) implications for inter-generational equity issues, despite OECD recommendations (Kotlikoff and Burns, 2004). Current deficit/surplus type government reporting conveys little information about the generational taxation consequences that arise from under-funding practices (Kotlikoff, 1993). The deficiency persists at whole of government financial reporting levels, despite the replacement of cash based accounting with accrual accounting conventions as the preferred model for government accounting in Australia. The accrual measures used in current reporting requirements continue to reflect a 'stock' view of the world at a point in time, rather than a 'flow of required obligations' perspective (Auerbach et al., 1991, 1992; Mitchell and Smith, 1994).

There are also limitations associated with relying on a single 'stock' funding ratio to assess the financial condition of government insurance programs. First, under-funding policy is dynamic and cannot be described by a short-term measure that entirely ignores its likely future consequences. Second, a single measure cannot identify the inter-generational distribution of the burden of fiscal pressure at any given time (Auerbach et al., 1994). Without dealing with these issues it is impossible to identify how the burden of fiscal pressure is distributed across generations, information often demanded by users of government financial reporting (e.g.: Henke, 1987; DioGuardi, 1995). Indeed, Copley et al. (1997) conclude that there is little reason to expect accrual-based accounting reforms to increase the citizen use of government financial reports.

The need for supplementary disclosure to reveal inter-generational aspects of government financial management policies is gaining recognition with public sector accounting standard setters. According to the GASB's Statement of Objectives of Government Financial Reporting (GASB, 1987, Para 2), financial statements need to report on inter-period equity as a key element in demonstrating accountability in the government context. This view implies that public under-funding is undesirable and perceives financial reporting as a monitoring mechanism in promoting inter-period equity (Marks et al., 1988).

Under deficit/surplus accounting, governments sum up current period total dollar outlays and revenues of all kinds and express the difference between these as a 'deficit' or 'surplus'. This form of accounting has resulted in public employee pension system borrowing being kept 'off the books' at the whole of government level (Mitchell and Smith, 1994).

Financial and Generational Stability

This section overviews the basic concepts related to financial and generational sensitivity of unfunded government programs related to social security, pensions and health care obligations. We first define the key concepts of financial and generational sustainability. We then briefly discuss the relative merits of this approach.

Features of FI and GI

Studies of generational accounting generally assume either economic assumptions and models or use accrual accounting as a baseline to develop generational accounts. Klumpes (2000) examines

the generational accountability of the management of Australia's largest public sector entity. Klumpes (2001) examines the financial accountability of Australia's Medicare system. Klumpes (2003b) measures the obligations of six European governments to unfunded pay-as-you-go pension systems. Klumpes and McCrae and Tang (2005) examine the extent of pension under-funding in the Australian public sector. Klumpes and Tang (2008) examine the cost incidence of the NHS in the UK using a generational accounting analysis.

Table 1: Studies Applying Generational Accounting to the Financial Sustainability of Governments and Public Sector Enterprises

Topic	Authors	Context	Major findings
Pension underfunding by State governments	Klumpes (2001)	Analyzes the evolution of funding patterns of the State of New South Wales Superannuation scheme from 1995-2004.	Scheme has evolved from public to private sector. The impact of political visibility on the generational accountability of the SASB is examined over time.
	Klumpes, McCrae and Tang (2005)	Project the burden of under-funded government employer pension obligations to three generational cohorts of public sector employees, based on a data set describing flow of funding characteristics of 12 federal, state and local Australian government funds.	The demographic trends imply a serious imbalance in equity across existing and future generations. Relative to accrual-based reporting practices, a statement of inter-generational equity provides additional insights into the generational visibility of public pension funds. Underfunding practices concerning hidden public pension obligations across the EU vary considerably across governments
Unfunded health care systems	Klumpes (2001)	Analyze funding of Australian Medicare system	Australian Medicare is significantly underfunded and is financed by future generations.
	Klumpes and Tang (2008)	Analyzes cost incidence of UK NHS system	A combination of fiscal and generational imbalances largely explains the underfunding of the NHS. Data are taken from both historical trends in expenditure and ageing as well as projected demographics. The analysis implies that there is significant inter-generational-inequity in the funding of NHS.UK NHS is significantly underfunded
Unfunded social security systems	Klumpes (2003a)	Hidden obligations of EU states	EU states have significant variations in the level and extent of underfunding

	Klumpes (2003b)	Determinants of social security underfunding in the OECD	Variations in behavioral patterns across continental European and Anglo-American countries in the underfunding of public pensions
Pension underfunding by government-private enterprises	Tang and Klumpes (2009)	Nature of sharing of unfunded pension obligations by Chinese SOEs	The simulation analysis identifies the dimensions of inter-generational transfer with important implications for financial reporting by SOEs to affected shareholders. A underfunding re-distribution rule is designed to investigate these implications.

However, all of these studies rely on accrual-accounting as the baseline, whereas other studies (e.g. Gokhale and Smetters, 2003, 2006; Gokhale, 2008) use economic models. Thus there is an inconsistency in models across these studies. Gokhale and Smetters (2003) introduce the concept of 'fiscal imbalance', which adds to a government entity's current accounting-based liabilities the present value of the difference between all projected non-interest spending and all projected revenue. Following their approach, any government or public sector entity insurance-related guarantee program may be considered to be financially sustainable if today's publicly held debt plus the present value of projected non-interest spending and the present value of projected non-interest spending is equal to the present value of projected government receipts. The spending and revenue projections are made under current policies. 'Present values' mean that amounts paid or received in relation to a government insurance guaranty program throughout the future are discounted at the long-term gilt yield in order to reflect their true value today. A financially sustainable policy can be sustained without changing either outlays or revenues. Hence a financially sustainable measure as of the end of year *t* is defined as (Gokhale and Smetter, 2003, 8):

$$FI_t = PVE_t - PVR_t - A_t \qquad (1)$$

This definition is the excess of total expenditures over available resources in present value. PVE_t is the present value of projected expenditures under current policies at the end of period *t*. PVR_t is the present value of projected receipts under current policies, and A_t is assets in hand at the end of period *t*.

For government insurance program funding policy to be financially sustainable, its FI must be zero. The government cannot spend and owe more than it will receive as revenue in present value. If the *FI* measured under current policies is positive, those policies are unsustainable and policymakers will have to change them at some future point in time.

However the FI measure is not capable of providing the financial impact of all possible policy changes. This is because, any new policy that changes projected expenditures and revenues so that their increments are exactly equal in present value will provide offsetting increases in PVE_t and/or PVR_t, leaving FI unchanged. However, such FI-neutral policies could transfer net tax

burden from living to future generations. Thus a complementary measure is needed to show such redistributions of financial burdens. The FI measure exclusively reflects the sustainability of a given policy, but another measure is needed to indicate how FI is distributed across population subgroups. Another measure is needed to indicate how much of the FI arises from older generations shifting tax burdens to younger (including yet unborn) generations. Gokhale and Smetters (2003) define this as the 'generational imbalance' ('GI'):

$$GI_t = PVE^L_t - PVR^L_t - A_t \qquad (2)$$

PVE^L_t represents the present value of projected outlays that will be paid to current generations. PVR^L_t represents the present value of projected tax revenues from the same generations. A_t represents the insurance program's current assets. Therefore GI captures that part of FI arising from all transactions with past and living generations throughout their lifetimes. The projected contribution to FI by future generations equals the difference between FI and GI.

While the FI measure captures many large unfunded payment obligations not included in traditional accounting perspectives on government insurance programs, the GI measure captures the redistributive effect of alternative policies. Under a pay-as-you-go financed government insurance program funding policy, the GI measure increases even though FI does not change. This implies that the imbalance on account of future generations decreases. It also suggests that policymakers must achieve two objectives simultaneously; first, reduce the FI to zero. Second, choose a policy that delivers the best trade-off in costs imposed on different generations.

The FI/GI Framework – A Way Forward?

The above institutional review suggests that in recent years, public sector accounting has increasingly utilized the accounting techniques and practices of the private sector through the greater reliance on accruals-based principles. Thus it is not surprising that concepts such as 'cost', 'efficiency', 'economy' and 'effectiveness' have entered into political discourse on the accountability of the public sector during this time. However a much neglected alternative line of economic reasoning argues instead that it is necessary to consider the impact of government policies across generations.

The currently implemented accrual-accounting principles assume that the primary focus and objective of financial reporting concerns the stewardship or custody of existing resources of public enterprises. By contrast, the FI/GI framework implies that the efficient and equitable management of government public finances involve a broader objective of achieving inter-generational altruism and therefore implies a form of 'implicit social contracts or inter-generational trusteeship'. The same argument applies to public sector organizations, which are typically under-funded relative to private organizations as governments who guarantee their services fail to pay all necessary contributions as they fall due. Specifically, obligations related to various benefits, such as pensions, are deferred until the entitlement must be paid. Current taxpayers, although benefiting from the services provided by contemporary public sector, are not paying the full cost of them, as the cost of the benefit payments being accrued are postponed to a time when existing contributors will have retired. The cost of these benefits will instead be borne by future taxpayers, who will not have benefited from services provided by today's public sector workforce. Of course this would not matter if the composition of the population was

unchanging. The problem arises because, in all industrialized countries a combination of falling birth rates and increasing longevity means that progressively fewer workers will be supporting each public sector retiree. The result is that future generations of taxpayers will be forced to bear the growing burden of funding the retirement benefits of previous generations of beneficiaries.

Relative to accrual-based accounting principles, we consider that the FI/GI framework perspective serves a broader objective in reporting on inter-generational equity. It also addresses Copley et al.'s (1997) concerns about the decision usefulness to the citizenry of the application of accrual-based accounting to the public sector, by providing information relevant to a broader users' constituency of both current and future generations of taxpayers. Finally, we believe that a FI/GI framework is applicable to government insurance programs by recognizing explicitly those items that are required to bring an entity into generational balance. The FI/GI framework indicates the zero-sum nature of insurance related guarantee programs policy in the public sector, when viewed from an inter-generational perspective. Table 2 summarizes the major conceptual differences between accrual-based accounting and the FI/GI framework. An intuitive explanation is provided, below.

Table 2: Major Conceptual Differences Between Generational and Accrual-based Perspectives in Government Financial Reporting

Conceptual Framework	**Accrual-based Perspective**	**Generational-based Perspective**
Objective	Report on inter-period equity (GASB, p. 22)	Provide information about inter-generational equity (AAS 31, p. 10)
Intended Users	Present and potential taxpayers	Current and future generations of taxpayers
Recognition Criteria	For each entity, revenues when earned and expenses when related good or service used	For each generation, net payments and receipts over lifetime

Benefits and Costs of Generational Accounts

In this section, we consider the relative benefits and costs of implementing generational accounts to an accrual system of accounts for acquitting inter-generational equity. From a conceptual perspective, Gokhale and Smetters (2003) argue that any government accounts concerning policies or commitments that involve inter-generational contracts should possess a number of desirable characteristics. The first is that they are forward-looking. Adopting new forward-looking performance measures would reveal a very different and more accurate picture of the government program's financial status, as well as the size and nature of the needed policy adjustments.

A second desirable feature of a proper measure is that it should include all future years, i.e. calculated in perpetuity. By contrast, accrual-based accounting estimates do not completely account for the financial imbalances because of the arbitrary truncation of the projection horizon. If deficits beyond the forecast horizon are large and growing, then annuity-based estimates will severely understate the full magnitude of the financial sustainability of such programmes.

Gokhale and Smetters (2003, 19) argue that a third desirable feature of a financial measure is that it be complete – i.e. it should encompass the entire operations of the entity. Since most government entities operate to provide society with some form of either implicit or explicit insurance against risk, it is not at all clear that accrual-based accounting principles capture these contingencies given the standard accounting convention that any measured event can only arise from past transactions.

A fourth desirable property is that that the measure should be based on current policy. For a proposed measure to be useful, it must characterize current policy. By contrast, accrual accounting adopts a 'shutdown' liability measure because it effectively assumes that the entity will not be in existence in future years, and therefore does not include future expected expenditures. By contrast, it is reasonable to assume that governments have the power to amend policies, e.g. taxes, expenditure.

A fifth criteria argued by Gokhale and Smetters (2003) is that the measure should correctly reflect the impact of all policy changes. This includes the fact that the measure should not change when policy changes are actuarially neutral for all generations. It must also accurately reflect all actuarially non-neutral policies. By contrast, a standard assumption underlying the accrual system of accounting means that revenues and expenses are recognised only at the time that the sales are made and the "input" used, etc., and not when the monetary consequences of such actions occur.

Finally, the sixth desirable feature argued by Gokhale and Smetters (2003, 20) is that the measure should be conceptually straightforward and possess properties that are easy to communicate. Under accrual accounting, the definition of an event is defined primarily by the time period in which a transaction occurs, e.g. the correct measurement of the effect of a sale requires that both the revenue (sale) and its associated expense (Cost of Goods Sold, COGS) should be recognised simultaneously (i.e. matched). By contrast, the generational accounting measure allows for a separation between the time when an item is recognised and the time when the service is acquitted. For example, health care, pensions and social security obligations arise whenever a citizen becomes entitled to that service, and grows over time at the rate of interest. Hence a change in the measure from one year to the next can be broken down into the amounts due to accumulated interest, policy changes, differences in economic outcomes relative to projections, and updates to economic assumptions used in making budget projections. The generational accounting measure is also simple because it equals the amount of fiscal imbalance that is due to current and past generations. However, other complementary measures could also be used, including ones that describe imbalances by narrowly defined birth cohorts, gender, rates and so on.

On the other hand, Gokhale (2009) identifies a number of criticisms of generational accounts. First, it measures the net costs of taxes and transfers but excludes the indirect benefits derived from government public goods and service purchase. If the benefits from government transactions accrue much later, then the average generational account facing future generations may not accurately reflect their treatment under current policies. Similar criticisms can be leveled at accrual accounting. In fact, the conservatism principle is intended to safeguard against

the natural tendency for 'over optimism' in presenting profit. We must recognise revenues only when they are certain (i.e. actual sales, not advance orders or advance receipts). On the other hand, we should be careful not to understate expenses (which would also cause profits to be too high). However from a government perspective, such principles may end up hindering rather than enhancing accountability, where the affected resources have implications for future use beyond the current horizon.

A second major criticism of generational accounting is that it does not factor in the costs and benefits from government insurance provision. However, Gokhale also cites other dynamic simulation studies which imply that generational accounts correspond reasonably well to welfare gains and losses arising from policy changes. By contrast, government guarantees have only very recently been subject to any attention by accrual-based accounting standards, and in any case are mostly generally regarded as 'contingent events', and therefore not certain in amount to be recognised on the balance sheet.

Gokhale (2009) notes a third major criticism of generational accounting, that it ignores economic responses when estimating policy adjustments for restoring generational balance. On the other hand, Gokhale (2009) also acknowledges that its 'static' estimates probably constitute a 'lower bound of required adjustments'. By contrast, accrual-based accounts only account for efforts that are 'realised'. For instance, consistent with private sector accounting practices, when a government entity makes a sale on credit, it cannot be sure that the cash value will ever be realised. So it is normal to set off a provision for bad debts against the debtors to reduce the net value of the asset, by allowing for a degree of non-payment by customers. Yet similar considerations cannot be applied to 'future events' e.g. 'provisions' cannot be made for future events.

A fourth limitation of generational accounts is that it employs a hypothetical policy for future generations. By contrast, current budgetary constraints mean that many government and public sector enterprises wish to measure the effects of keeping their policies unchanged. Gokhale and Smetters (2003) solve this issue and develop alternative fiscal and generational imbalance measures that do not involve hypothetical policies.

A fifth limitation of generational accounting is that it discounts future flows using a common discount rate whereas taxes and transfers may well be subject to different degrees of policy and/or economic uncertainties. Related, it may be appropriate to use different discount rates for different cohorts because they face different risks. To the extent that the discount rate is of concern, Gokhale (2009) notes that generational accounting studies often include sensitivity analysis under alternative assumptions, including alternative discount rates. By contrast, accrual-based accounts are only based on a specific set of actuarial assumptions; and it is generally left to the reader to interpolate how a change in assumption or policy might affect the reported numbers.

Summary, Conclusions, and Policy Implications

We propose a FI/GI framework approach developed by Gokhale and Smetters (2003) to provide a basis for sustainable financial management of the public sector insurance-related guarantee programs. The framework is shown to be more consistent with a life cycle perspective on public

sector investing and finance principles. We argue that the FI/GI approach is more applicable than existing accrual-based accounting systems to better understanding government funding policies and guarantee programs. In addition to enhancing transparency and accountability, it also provides a number of unique insights into the financial dimensions and accountability implications of insurance guarantee programs. We believe that disclosing this type of present-value based information can significantly extend the nature and scope of financial accountability of under-funded public sector funds to a broad set of stakeholders and thereby provide a useful supplement to current-value financial statements based on accrual-accounting principles. Such a framework is potentially applicable to a broader range of public sector entities whose liabilities and/or capital funding is subject to the effects of demographic transition (e.g. pay-as-you-go funded social security and health care schemes).

At a conceptual level, the framework that we propose questions the appropriateness of current, standard conventions of public sector accounting and accountability that are framed by reference to accrual-based accounting principles (e.g. Funnell and Cooper, 1999). Accordingly, we fully expect that the FI/GI framework will attract controversy and criticism from the broader professional and academic accounting and management communities for a number of reasons.

First, whereas accrual-based accounting principles imply a current or market-value basis of measuring a public sector entity's existing assets obligations, generational accounting methodology implies instead a measurement system that is based entirely on ex ante information. This is because generational accounting is based on the annual estimates of lifetime cash contributions of each cohort to an entity, less the estimates of lifetime benefits receivable by them, all suitably discounted to their present values. Consequently, the calculations are not based on verifiable value but are based on far-reaching assumptions of life expectancy, incomes, economic growth, inflation and productivity. While many view market values as a *de rigueur* component of both the theory and practice of accounting measurement, present values are still viewed by many academics and professionals as being the province of actuarial science and economics.

A more fundamental criticism of generational accounting from a traditional accounting viewpoint concerns the fact that values of public fund net worth derived under each system have significantly different decision-making implications. A zero net value for a pension fund under accrual-based accounting principles implies that a public fund is just meeting its obligations. Thus, accrual-based accounting principles provide a basis for determining the fund's overall net worth in terms of its aggregated assets and liabilities based on past funding policies. By contrast, a zero net present value of net contributions indicates that each generational cohort is just paying its way. Generational accounting models thus provide a basis for judging whether the continuation of current policies involves a prospective inter-generational redistribution of pension fund net worth. This emphasis on the stakeholder implications of the under-funding of public sector obligations contrasts with standard notions of public sector under-funding practices. For instance, the GASB standard identifies efficiency and effectiveness in the use of existing resources as the primary objective of financial reporting, rather than asking whether their mode of financing is equitable to participants and other stakeholders (Marks et. al., 1988).

These criticisms bear upon the wider academic debate as to whether equivalent accounting

principles should apply to both the private and public sector (e.g. Barton, 1999a). Indeed the public sector increasingly is utilizing the accounting of the private sector. Thus cost, efficiency, economy and effectiveness have entered into political discourse. By contrast, generational accounting implies that a different form of accountability applies to the public sector, at least for certain types of entity whose resources involve the allocation of risk among various generational cohorts of participants.

There are at least three major policy implications. First, the FI/GI framework implies a serious imbalance in equity which reflects the combination of the explicit liability to service very large amounts of public spending and the implicit liability to pay substantial sums to existing and future generations of public welfare beneficiaries. Second, our analysis raises serious questions over the differential ability of levels of governments to maintain inter-generational equity in their under-funded public sector services. Third, the FI/GI framework can apply to other demographic and inter-generational equity sensitive public policy settings, such as environment, long-term health care and the valuation of infrastructure. They can also be applied to other private sector entities with inter-generational long-term insurance related obligations, such as unfunded pension funds and health care obligations.

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