

Pension underfunding in the public sector

Paul J M Klumpes

EDHEC Business School

Key questions

- Objective of financial reporting in PS is relevance to decision makers concerning intergenerational equity = private sector?
- Underlying assumption is financial sustainability – provision quality continues
- Alternative hypotheses on underfunding
 - Behavioural persistence
 - Regression to the mean

Prior research 1

- Public v private sector reports: compatible? (Barton 1995)
- Conceptual frameworks for reporting in public sector; consistent with private sector? (Laughlin 2009)
- US research
 - – funding is sensitive to fiscal pressure (eg Banker and Raman 2001), Stone et al (1993)
 - - GASB exposure draft impact: US state pension plans in crisis ? eg Pridgen (2012)
- Balance sheet focused v cash flow focused?
- Assumes ABO is relevant measure of obligation

Literature review 2 -

- Public economics perspectives of public sector finances
 - Early equity tax considerations: Voltaire, Ricardo;
 - Impact of underfunded pensions on economy Barro (1976) v Feldstein (1977) + NBER research (Bodie et al)
 - Generational accounting: Auerbach et al (1991); Kotlikoff (1993; 2001); Kotlikoff and Burn (2003)
 - Generational imbalances: Gokhale and Smetters (2003)
 - Relation of pension fund to employer sponsor?
 - corporate finance v retirement income insurance Bodie 1990
 - Insurance guarantee fund (Ippolito 1985)

Literature 3

- prior research ignores that public sector interdependency of cash flows (contributions, wages and salary levels)
- Mitchell and Smith (1994) recognise develop and test competing regression to the mean and behavioural persistence hypotheses for a sample of US public sector funds
 - They develop a structural behavioural model where wage levels salary and expected returns are endogenous
 - They find underfunding is related to fiscal pressure and regression to the mean behaviour

Institutional setting

- Pension funds reports to members?
 - US FASB SFAS 35 1980
 - UK SSAP 24, UK SORP (PRAG) v FRS 17;
 - International; IAS 19, EU pension directive
 - New FASAB, GASB standards: recognition
- Australia accounting standard AAS25 1990
 - Adopted US approach
 - Applies to BOTH public and private sector
 - Based on ‘accrued benefit obligation’ (v EBO)

Limitations of Accrual-based basis for public pension report

- Assumptions about nature of nature of contracts: explicit spot or implicit lifetime?
- Emphasizes deferrals and matching: encourages myopic earnings management : **ignores cash flows!!**
- Resource allocation priorities: ‘efficiency’ vs. equity between generational cohorts?
- Non-recognition of hard to measure insurance guarantees
- Facilitates short-term political visibility?
- Entire focus on assets and liabilities – ignores equitable distribution of burden across generations?

Generational Accounting

- Aggregate in present value terms, what each generation can expect to pay now in future
- Forward-looking, multiperiod set of present values - “actuarial valuation balance sheet”
- Elements of financial reports:
 - remaining lifetime net contribution existing government’s financial position
 - expected future net investment income

Table 1

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

Generational accounts

$$\sum_{k=t-D}^t N_{t,ks} + (1+r)^{-(k-t)} \sum_{k=t+1}^{\infty} N_{t,k} = \sum_{s=0}^{\infty} (1+r)^{-(s-t)} G_s + W_t^g$$

Where

G_s = PV of pension fund revenues and expenditures discounted to year t

R = real pre-tax (constant) rate of return

W_{gt} = pension fund's net assets in year t

$N_{t,t-s}$ = PV of net payments of existing generation born in year t

$N_{t,t+s}$ = PV of payments of future generations

Present value of remaining lifetime net contributions of existing generations:

$$N_{t,k} = \sum_{s=\kappa}^{k+D} \bar{T}_{t+s,k} P_{t+s,k} (1+r)^{-(s-\kappa)}$$

Where

$\kappa = \max(t, k)$

$T_{t+s,k}$ = accrued average net contribution to pension fund of generation born k

$P_{t+s,k}$ = no. of surviving members of cohort in year s born in year t

Constructing Generational Accounts

- Use accrual-based accounts as baseline net assets (W_t^g)
- Calculate PV of future growth in assets (G_s)
- Project population ageing for relevant generations expected to fund/benefit over relevant study period
 - use demographic/gender population statistics
- Calculate PV of each currently living generation's average (contributions - benefits) into future ($N_{t,k}$) to cover position
 - assume base year (as per annual accounts)
- $W_t^g + G_s - N_{t,k}$ =inferred under-funding that presumably must be covered by future generations

Sample

	Average net deficit p.a. (A\$m)	Average Contribution p.a. (A\$m)	Average Benefits p.a. (A\$m)	Average Male Workers	Average Female Workers
CSS	40,200	2,337	2,591	29,858	13,693
PSS	5,700	413	465	51,088	69,990
SASB	3,757	157	681	12,286*	12,286
SSNSW	13,173	1,523	1,874	61,461	59,051
SSVIC	14,994	1,064	1,977	94,338*	94,338
GESBWA	5,454	229	504	102,355	161,842
QSUPER	1,748	787	654	83,561*	83,561
RPFBTAS	2,106	199	216	10,209*	10,209
QLGSB	78	130	121	24,728*	24,728
LGSBSA	20	47	24	7,070*	7,070
NTGPASS	307	45	39	4,368	6,900
WALGSB	2	45	23	11,487*	11,487

Generational Accounts

Generation of public sector employee		$r_f=0.02; r_m=0.12,$ $r_g=0.02$ (A\$m)	$r_f=0.04; r_m=0.10,$ $r_g=0.03$ (A\$m)	$r_f=0.06; r_m=0.08,$ $r_g=0.04$ (\$Am)
(1) Males	60+	-103	-116	-131
	40-59	32	19	2
	20-39	<u>74</u>	<u>53</u>	<u>35</u>
	Subtotal	3	-44	-94
(2) Females	60+	-119	-134	-151
	40-59	20	7	-10
	20-39	<u>54</u>	<u>37</u>	<u>23</u>
	Subtotal	-45	-90	-138
(3) Future		<u>49</u>	<u>120</u>	<u>205</u>
		<u>7</u>	<u>-14</u>	<u>-27</u>
Net Worth		-82	-82	-82
Contributions		<u>89</u>	<u>68</u>	<u>55</u>
		<u>7</u>	<u>-14</u>	<u>-27</u>

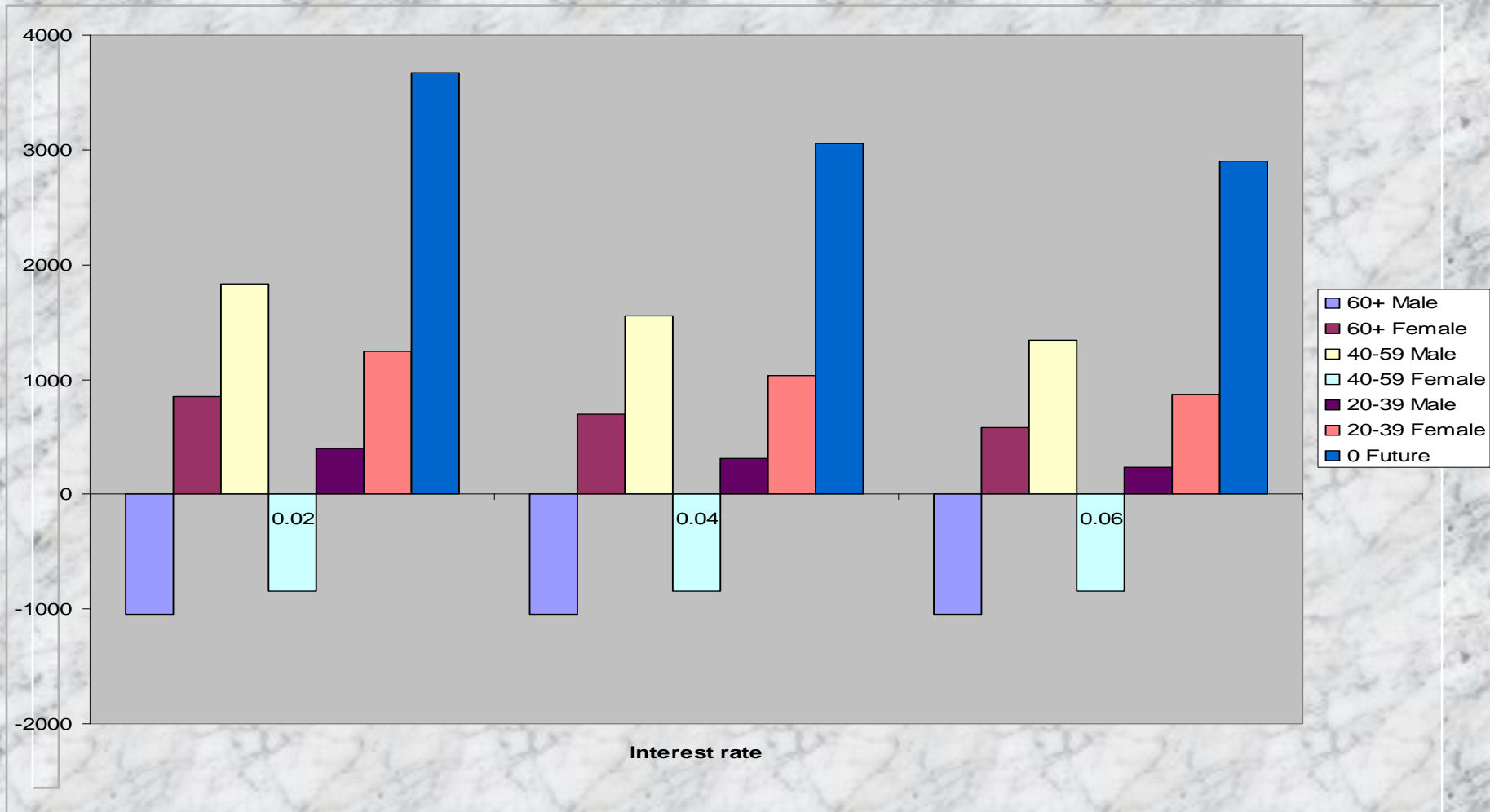
Alternative presentation of GA

<i>Generational Accounting under Different Actuarial Assumptions</i>					
<i>(A\$m)</i>					
<i>Actuarial Assumptions</i>		$r_f=0.02;$ $r_m=0.12,$ $r_g=0.02$	$r_f=0.04;$ $r_m=0.10,$ $r_g=0.03$	$r_f=0.06;$ $r_m=0.08,$ $r_g=0.04$	
<i>Projected PV of Generational Accounts of Current Generations</i>	Males	60+	-103	-116	-131
		40-59	32	19	2
		20-39	<u>74</u>	<u>53</u>	<u>35</u>
		Subtotal	3	-44	-94
	A	60+	-119	-134	-151
Females	40-59	20	7	-10	
	20-39	<u>54</u>	<u>37</u>	<u>23</u>	
	Subtotal	-45	-90	-138	
	<i>Projected PV of Generational Accounts of Future Generations</i>		<u>49</u>	<u>120</u>	<u>205</u>
<i>Left-hand side</i>		<u>7</u>	<u>-14</u>	<u>-27</u>	
<i>Initial Financial Position</i>	D	-82	-82	-82	
<i>Projected PV of Prospective Pension Deficit/Consumption</i>	C	<u>89</u>	<u>68</u>	<u>55</u>	
<i>Right-hand side</i>		<u>7</u>	<u>-14</u>	<u>-27</u>	

GA by Level of Government

Generation of public sector employee		Federal (n = 2) (A\$m)	State (n = 6) (A\$m)	Local (n = 4) (\$Am)
(1) Males	60+	-29	-73	-1
	40-59	18	14	1
	20-39	<u>36</u>	<u>37</u>	<u>1</u>
	Subtotal	25	-22	1
(2) Females	60+	-32	-86	-1
	40-59	7	12	1
	20-39	<u>16</u>	<u>36</u>	<u>1</u>
	Subtotal	-9	-38	1
(3) Future		<u>-44</u>	<u>98</u>	<u>-5</u>
		<u>-28</u>	<u>38</u>	<u>-3</u>
Total Worth		-40	-41	-1
Contributions		<u>12</u>	<u>79</u>	<u>-2</u>
		<u>-28</u>	<u>38</u>	<u>-3</u>

Generational Accounts for Average Fund



Generational Accounts by level of Government



Behavioural model

- Mitchell & Smith (1994) develop structural model of public employers pension funding behaviour; explore links between required pension contributions (REQ), actual annual pension contributions (ACT) + public employee earnings (AVEPAY)
- Behavioural model:
 - $REQ_i = f(AVEPAY_i, BEN\%, STOCK_i, SPD_i) + e$
 - $ACT_i = f(REQ_i, STOCK_i, UNEMPD_i, UNION_i) + e$
 - $AVEPAY_i = f(W_a, UNION_i, REQ_i, ACT_i, UNEMPD) + e$
- Past funding practices to be perpetuated ?

Conclusion

- We develop generational accounts of underfunded public sector funds in order to examine alternative hypotheses concerning the political visibility of under-funded pensions by Australian governments.
- Consistent with a political visibility hypothesis, we predict and find that the persistence of pension under-funding and the resulting inequity across present and future generations of taxpayers is relatively greater for Federal government level than for either State or local government levels.
- Our analysis challenges validity of accrual based accounts as a basis of equitable resource allocation and budgeting for public sector pensions

Policy Implications

- *Statement of inter-generational equity* is now a policy commitment of EU (?) as part of its budgetary process
- *Decision-making uses*: efficient /effective use of resources or equitable allocation?
- *PV calculations*: assumed life expectancy, incomes, growth, inflation and productivity
 - accounting ‘numbers’ or economic estimates?

Other related research

- Financial sustainability of the public sector
 - Case study of Australian state-owned pension entity
 - Hidden pension liabilities of 6 EU states
 - Australian and UK health care systems
 - Pension under-funding in the OECD
 - Financial sustainability of PFI funded NHS trusts