

THE CRISIS IN PENSIONS - WHAT DOES IT MEAN FOR THE ASSET MANAGEMENT INDUSTRY?

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Overview

- Is there a crisis in pensions?
- Underlying issues include funding, portfolios and asset returns.
- Our main focus is equity returns:
- Short term research:
 - The bear market
 - Macroeconomic developments
- Long term research:
 - Productivity and equity prices
 - Demographics and asset prices

Is there a crisis in pensions?

- Current key issue is underfunding
- In UK, end-2002 estimates suggested deficits of £160-300 billion (2-3% of GDP), with some firms having funding ratios as low as 65% (average 80%), or deficits of 40% of market capitalisation
- Rising market in 2003 has not fully resolved issue
- Underlying factors:
 - Bear market with large holdings in equities, averaging around 70%
 - Earlier government policies which raised the accrued benefit obligation, notably compulsory indexation up to 5% of current and deferred pensions

- Tax policies which encouraged holidays from contributions by employers, notably limits on overfunding in previous bull phase
- Heavier taxation of dividends for pension funds
- Declining bond yields and rising longevity raising liabilities
- Switch from actuarial basis of funding calculation based on sustainable income basis for assets and part-equity discount for liabilities to current market value basis for assets and corporate bond yield discount for liabilities
- Last point reflected initially in the uniform Minimum Funding Requirement requiring shortfalls be corrected in 3-10 years, depending on severity (now being replaced)...

- ...and also from 2005 in accounting standard FRS17, which requires deficits be declared on balance sheet at current market prices...
- ...while rating agencies declare that deficits count as debt - concern of companies to lose credit rating due to pension liabilities,
- Also burden of topping up (doubling of 2000 contributions needed by 2005) limiting dividends and fixed investment – and affecting UK growth
- Broader issue of awareness of risks by CEOs from defined benefit obligations
- Other adverse developments for defined benefit funds:
 - Proposed pension benefit insurance burdening schemes
 - Overall burden of regulation increased since mid-1980s

- Closure will not remove burden of accrued benefits
- Problems not limited to UK defined benefit funds
 - Underfunding for US, Dutch and German funded schemes
 - Loss of confidence in UK personal and occupational defined contribution funds
 - Loss of confidence in annuities, aggravated by Equitable Life (low bond yields)
- Despite problems, long term pressures on pay-as-you-go favour more funding outside UK

Underlying issues

- Regulatory and accounting rules – arguably too oriented to short term market values but days of SSAP24 and actuarial smoothing unlikely to return
- Risk management – need for better hedging against shortfall risk?
- Portfolio distribution between asset classes most crucial for pension fund returns (issue of active versus passive security selection)
- May need lower share of equities given revealed risk and growing maturity of funds...

- ...but too large a shift may miss out on upturn, liabilities still generally long term and bonds also face reinvestment risk
- Design of funds may need to split demographic (longevity) and earnings (salary growth) risk from return risk – but more an issue for trustees and sponsors than asset managers
- Long term returns continue to favour equities for long term pension assets (younger workers) – see table – but 1920-99 returns far below average since 1980 suggesting need to adjust projections
- Our focus is on future asset returns – some key points from four recent research papers

Long term asset returns (1920-99 geometric means)

	US	DE	CA	UK	FR	IT	JP
Real equity returns	8.5	7.7	6.2	6.9	5.6	2.4	4.9
Real bond yields	2.3	3.9	3.3	2.6	-3.8	-4.2	-1.7
Growth	3.0	3.3	3.8	2.2	2.9	2.9	4.3
Inflation	2.7	2.3	2.7	3.7	8.1	9.4	7.7
Memo: 1975-99							
Real equity returns	10.2	9.5	7.1	10.2	11.5	6.8	4.4
Real bond yields	3.6	4.0	4.5	3.1	3.7	2.7	2.7

The bear market

- National Institute Review article comparing current and 1972-4 bear market, when price falls comparable
- Long period before real equity prices recovered 1972 level (1980s-1990s)
- Earlier period much more severe in terms of economic developments, notably high inflation
- Current situation also presents some risks, in particular a disruptive correction of US sectoral imbalances
- Also evidence of overvaluation in late 1990s (risk premium and dividend yields) – and less scope for international diversification

Share price behaviour following 1974 crisis

	UK	US	Germany	Japan	Canada	France	Italy
Peak of share prices	Aug-72	Dec-72	Jul-72	Jan-73	Dec-72	Apr-73	Jun-73
Fall to trough in nominal terms (date of trough)	68.5% (Dec-74)	48.4% (Sep-74)	34.4% (Sep-74)	40.2% (Oct 74)	35.5% (Sep-74)	52.7% (Sep-74)	42.9% (Dec-74)
Return to original nominal level	Sep-77	Nov-80	Mar-76	Jan-79	Jan-79	Sep-79	Oct-80
Fall to trough in real terms (date of trough)	77.2% (Dec-74)	56.1% (Sep-74)	43.0% (Sep-74)	56.2% (Oct-74)	46.7% (Dec-74)	68.1% (Apr-77)	82.4% (Dec-77)
Return to original real level	May-87	Aug-93	Jun-85	Feb-85	Oct-96	Aug-86	Aug-86

Share price behaviour to end-2002 in current bear phase

	UK	US	Germany	Japan	Canada	France	Italy
Peak of share prices	Dec-99	Mar-00	Feb-00	Mar-00	Aug-00	Aug-00	Oct-00
Trough to date	Sep-02	Sep-02	Sep-02	Oct-02	Sep-02	Sep-02	Sep-02
Nominal fall to trough	43.5%	47.9%	65.3%	47.8%	48.9%	56.0%	50.1%
Nominal fall to December 2002	40.3%	43.7%	63.7%	48.8%	45.2%	52.5%	45.5%
Real fall to November 2002	40.6%	43.6%	60.2%	44.4%	48.2%	50.5%	45.7%

Sector financial balances/GDP

Annual averages	UK	US	Germany	Japan	Canada	France	Italy
Current account							
1972	0.2	-0.5	0.4	2.1	-2.2	0.1	1.4
1973	-1.5	0.5	1.6	0.0	-1.6	0.6	-1.7
1974	-4.0	0.1	2.8	-1.1	-2.9	-1.4	-4.5
1975	-1.7	1.1	1.1	-0.1	-4.8	0.8	-0.3
Government balance							
1972	-1.6	-1.2	-0.5	-0.1	-1.0	1.4	-8.2
1973	-3.2	-0.3	1.2	0.4	0.6	1.4	-7.7
1974	-3.5	-1.2	-1.3	0.3	1.1	1.0	-7.5
1975	-4.4	-5.1	-5.6	-2.0	-3.5	-1.6	-12.3
Private sector balance							
1972	1.9	0.8	1.0	2.2	-1.2	-1.2	9.7
1973	1.7	0.9	0.4	-0.4	-2.2	-0.9	5.9
1974	-0.5	1.3	4.0	-1.4	-4.0	-2.4	3.0
1975	2.8	6.2	6.7	1.9	-1.3	2.4	12.0

Sectoral financial balances/GDP

Annual averages	UK	US	Germany	Japan	Canada	France	Italy
Current account							
1998	-0.6	-2.3	-0.3	3.0	-1.2	2.6	1.7
1999	-2.2	-3.2	-0.9	2.6	0.2	2.4	0.7
2000	-2.0	-4.2	-1.2	2.5	2.6	1.5	-0.5
2001	-1.6	-3.9	0.3	2.1	2.7	1.6	0.0
Government balance							
1998	0.2	0.3	-2.2	-5.5	0.1	-2.7	-3.1
1999	1.1	0.8	-1.6	-7.1	1.7	-1.6	-1.8
2000	1.6	1.5	1.2	-7.4	3.1	-1.3	-0.6
2001	0.9	-0.4	-2.7	-7.1	1.8	-1.4	-2.2
Private sector balance							
1998	-0.8	-2.6	1.9	8.5	-1.3	5.3	4.8
1999	-3.3	-4.1	0.6	9.7	-1.5	4.0	2.5
2000	-3.7	-5.7	-2.4	9.9	-0.5	2.9	0.0
2001	-2.5	-3.5	3.0	9.3	1.0	3.0	2.2

Estimated equity risk premia

	Germany	US	UK	France	Canada
1960-69	7.6	4.4	4.5	6.6	5.1
1970-79	5.8	7.5	9.4	11.4	7.6
1980-89	2.3	1.8	3.2	4.1	1.1
1990-94	0.8	1.7	1.9	-0.3	-1.2
1995-99	0.4	0.4	1.6	-0.1	-0.6
Memo: 1972	5.9	3.5	4.3	8.9	5.3
Memo: 1999	0.0	-0.4	1.0	-0.4	-0.1

Dividend yields

	UK	US	Germany	Japan	Canada	France	Italy
1972	4.2	3.3	4.3	5.4	3.9	4.9	2.9
1973	3.1	2.7	3.1	2.9	3.3	4.2	3.2
1974	3.2	2.8	3.8	2.0	3.1	3.4	1.9
1975	11.0	4.9	5.6	2.8	4.8	7.2	2.3
1998	3.3	2.0	1.8	0.8	2.0	2.0	2.7
1999	2.8	1.7	1.6	1.0	2.1	1.7	1.7
2000	2.4	1.3	1.9	0.7	2.1	1.6	2.2
2001	2.2	1.0	1.6	0.7	1.1	1.1	2.1
2002	2.3	1.2	1.3	0.8	1.6	1.3	2.5

Market correlations with world indices

	UK	US	Germany	Japan	Canada	France	Italy	Country averages
1972	0.74	0.83	0.47	0.63	0.66	0.17	0.22	0.53
1973	0.64	0.96	0.51	0.65	0.88	0.45	0.03	0.59
1974	0.59	0.95	0.39	0.09	0.78	0.80	0.50	0.59
1975	0.72	0.96	0.51	0.72	0.72	0.50	0.69	0.69
1998	0.92	0.94	0.87	0.75	0.93	0.81	0.72	0.85
1999	0.71	0.97	0.88	0.61	0.85	0.86	0.54	0.77
2000	0.78	0.96	0.44	0.54	0.81	0.66	0.22	0.63
2001	0.96	0.98	0.95	0.72	0.89	0.95	0.90	0.91
2002	0.98	0.99	0.95	0.40	0.88	0.97	0.95	0.88

Equity prices and the macroeconomy

- Research with Ray Barrell (NIESR) on how share price changes may affect macro developments – with implications for future asset returns
- Equity prices and equity markets are both sources of shocks and channels of propagation of shocks to the global economy
- As seen above, market falls comparable to those in the early 1970s, and remarkably similar across the G-7
- Research sought to calibrate impact of these falls and assess appropriate policy responses to absorb them
- Methodology was to undertake simulations with NiGEM global macromodel

- Wealth effects on consumption – not just in US but across the G-7 (net financial wealth or “illiquid” wealth). Impact rising over time.
- Importance of equities in wealth, and hence decline in wealth/income ratios over recent bear market, varies...
- ...reflecting differences in sectoral pattern of equity holdings and importance of equity as a means of finance
- Wealth coefficients in consumption functions also vary due to scope of guarantees (defined benefit pensions, life insurance)
- Impact on investment may also be anticipated, via Tobin’s Q and debt-equity ratio (financial accelerator)

Household wealth-income ratios

Net financial wealth/personal disposable income							
	UK	US	Germany	Japan	Canada	France	Italy
1998	3.87	3.96	1.54	2.96	2.45	2.45	2.83
1999	3.34	4.42	1.65	3.27	2.46	2.92	3.03
2000	3.35	4.09	1.62	3.30	2.43	2.83	2.98
2001	2.82	3.41	1.59	3.32	2.36	2.56	2.63
Net illiquid financial wealth/personal disposable income							
1998	2.95	2.75	0.46	1.22	1.81	1.59	2.12
1999	2.60	3.22	0.58	1.42	1.85	2.02	2.39
2000	2.56	2.70	0.60	1.38	1.88	2.00	2.27
2001	2.02	2.19	0.57	1.31	1.86	1.74	1.91
Memo: Personal sector direct equity holdings/personal disposable income							
2001	0.59	0.85	0.36	0.34	0.99	1.08	0.62
Memo: Total direct plus indirect equity holdings/total financial wealth							
2000	53.4	48.5	27.1	13.1	39.8	47.8	30.5

Source: National flow-of-funds balance sheet data, DataStream

- Experiments to cut US share prices 35% and trace effects in NiGEM – then allow for contagion
- Major impact of equity market falls is in the US because wealth matters more and economy more weighted to equities
- The shock to the US is partly absorbed by lower long rates and a lower exchange rate
- Links in equity premia help increase the shock, but the contagion we have seen appears larger than historical links or common premia shocks
- Contagion to investment increases shock considerably
- Overall, recent falls would slow output noticeably relative to baseline if sustained
- Suspension of policy rules (notably fiscal) may be needed to cushion the impact

GDP Effects of Equity Premia and Equity Price Shocks

(percentage point difference from baseline level)

		2003	2004	2005	2006
Canada	<i>US Premium</i>	-0.70	-1.16	-1.00	-0.66
	<i>All Premia</i>	-1.15	-1.89	-1.66	-1.17
	<i>All Equity Prices</i>	-1.52	-2.54	-2.10	-1.18
Euro Area	<i>US Premium</i>	-0.56	-0.28	0.17	0.48
	<i>All Premia</i>	-0.69	-0.41	0.15	0.57
	<i>All Equity Prices</i>	-0.91	-0.90	-0.30	0.30
Japan	<i>US Premium</i>	0.38	0.50	0.18	-0.08
	<i>All Premia</i>	0.47	0.62	0.24	-0.08
	<i>All Equity Prices</i>	0.42	0.13	-0.50	-0.69
UK	<i>US Premium</i>	-0.62	-0.50	-0.32	-0.21
	<i>All Premia</i>	-0.74	-0.82	-0.61	-0.36
	<i>All Equity Prices</i>	-0.83	-1.08	-0.78	-0.29
US	<i>US Premium</i>	-1.95	-2.03	-1.07	-0.37
	<i>All Premia</i>	-2.03	-2.09	-1.00	-0.21
	<i>All Equity Prices</i>	-2.39	-2.51	-0.90	0.40

Output impact of contagion to US investment

Percent difference from US Premium

	Canada	Euro Area	Japan	UK	US
Year 1	0.33	-0.05	0.91	-0.44	-1.09
Year 2	-0.25	0.29	1.54	-0.48	-3.30
Year 3	-1.08	0.46	1.13	-0.58	-3.93
Year 4	-1.56	0.58	0.34	-0.59	-3.36

Productivity and equity prices

- Research with Jakob Madsen (Copenhagen University) on link productivity to share price gains
- Conventional view that labour productivity is most crucial indicator for equity valuation– or possibly potential output
- Labour productivity may be an inaccurate measure of firm's earnings, which underlie equity valuations
- Capital productivity is a better measure of earnings – labour productivity gains ultimately accrue to labour not capital
- This can be shown empirically by Granger causality, VAR and vector-error-correction methods

- Capital productivity slower-growing than labour productivity, notably in 1990s (overestimate of relevant productivity growth contributed to asset price bubble)
- Also can argue unexpected increases in capital productivity growth (e.g. the IT revolution) will have their strongest effects on share prices in the short term (note share prices precede investment as forward looking – rise when news of innovation reaches market)
- Higher stock prices will lead via increased investment to a rise in the capital stock and in the presence of diminishing returns, real stock prices are bid down again.
- Also the case for R and D investment itself

Long term productivity trends (1920-99 geometric means)

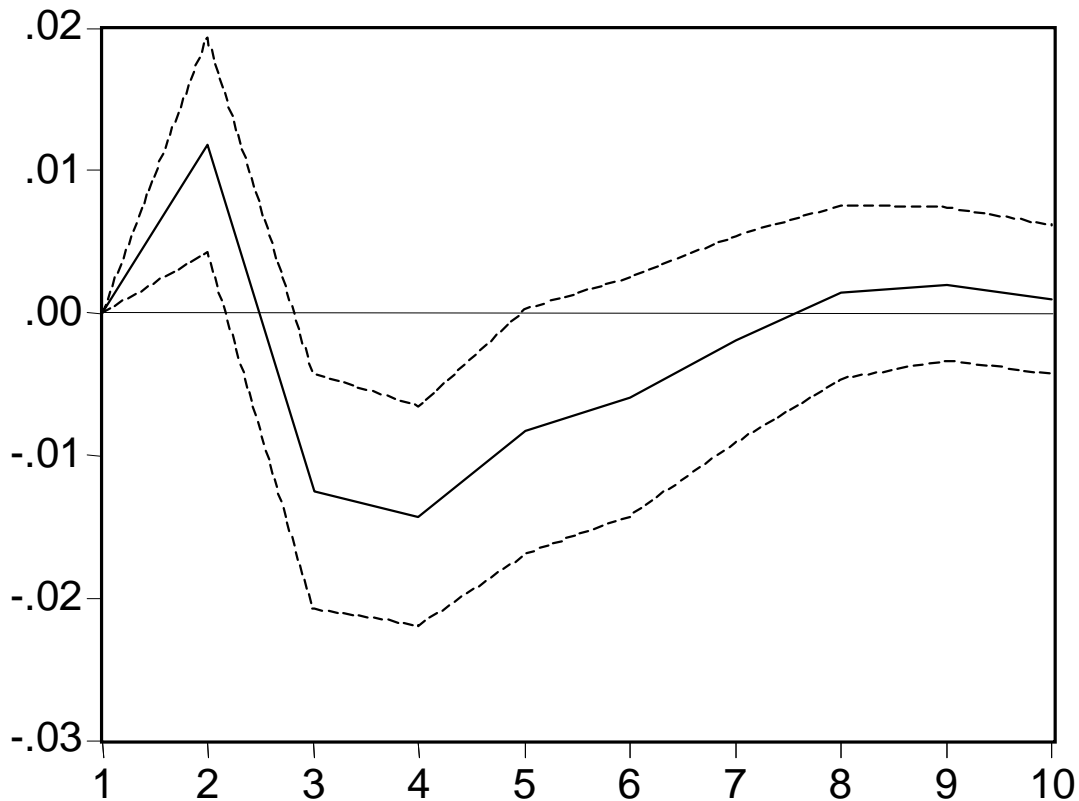
	US	DE	CA	UK	FR	IT	JP	NL
Labour productivity	1.6	3.1	2.1	2.0	3.0	2.3	3.8	2.0
Capital productivity	0.7	0.3	0.1	-0.6	0.6	0.2	-0.8	-1.0
Total factor productivity	1.6	1.5	1.5	1.0	2.1	1.7	1.9	0.9

Granger causality results

	Capital Productivity		Total factor productivity		Labour productivity	
Dependent variable	DKP	DRSP	DTFP	DRSP	DLP	DRSP
Independent Variable	DRSP	DKP	DRSP	DTFP	DRSP	DLP
US	**					
Germany		**				
Canada	**					
UK	**					
France		*				**
Italy	*					
Japan	**		**		**	
Denmark					**	
Australia	**		*			
Netherlands						
Sweden	**					

Response of capital productivity to share prices

Response of USDLKP to Cholesky
One S.D. USDLRSP Innovation

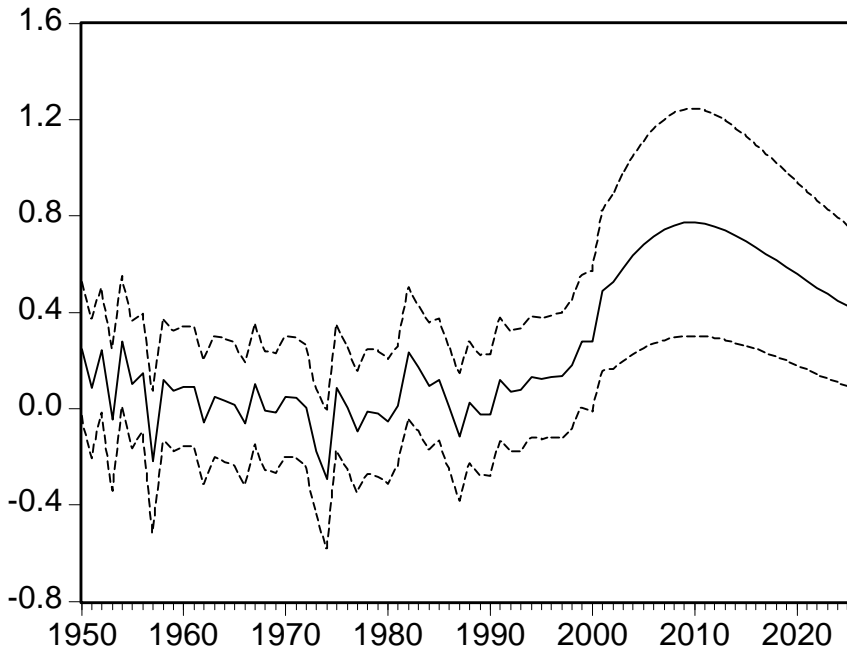


Demographics and asset prices

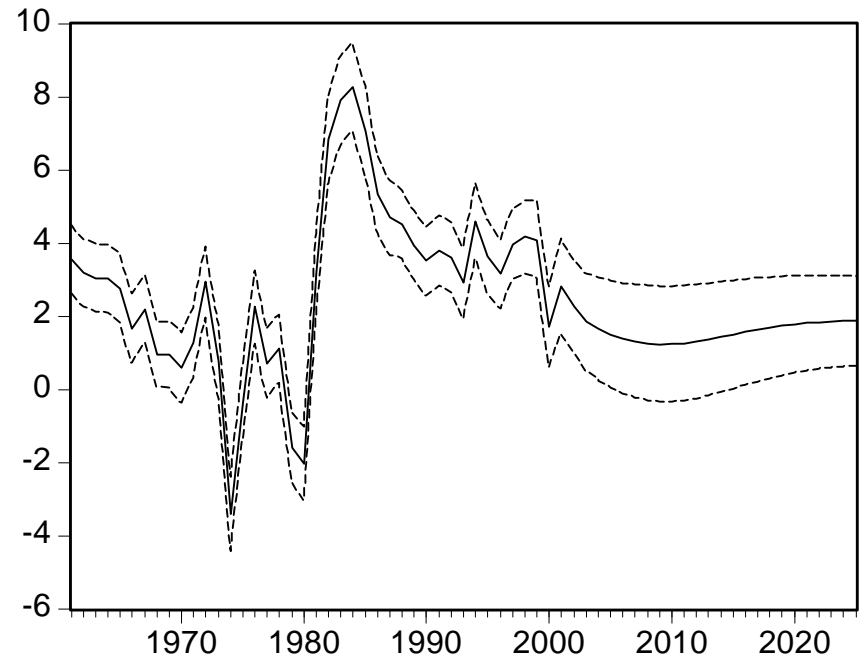
- Research with Christine Li on the relationship of demographic structure to share prices and bond yields
- Find over 1950-99 larger 40-64 generation boosts asset prices, 20-39 neutral, tentative evidence 65+ reduces prices (intuition of life cycle saving)
- Implies that in longer term, future asset prices could come under downward pressure as OECD population ages (affecting UK via integrated capital markets)
 - Lower saving (“baby bust”) affecting real interest rates or risk premium

- Other underlying factors
 - Lower real returns on capital as economic growth declines and capital/labour ratio rises
 - Switch from equities to bonds as time horizons shorten/annuitisation
- Some aspects already seen in Japan (where equation estimated to 1990 forecasts “well” to 1999)
- Chart shows projections for US equity prices and bond yields, varying only the demographics

Forecast of US asset prices excluding AGE65

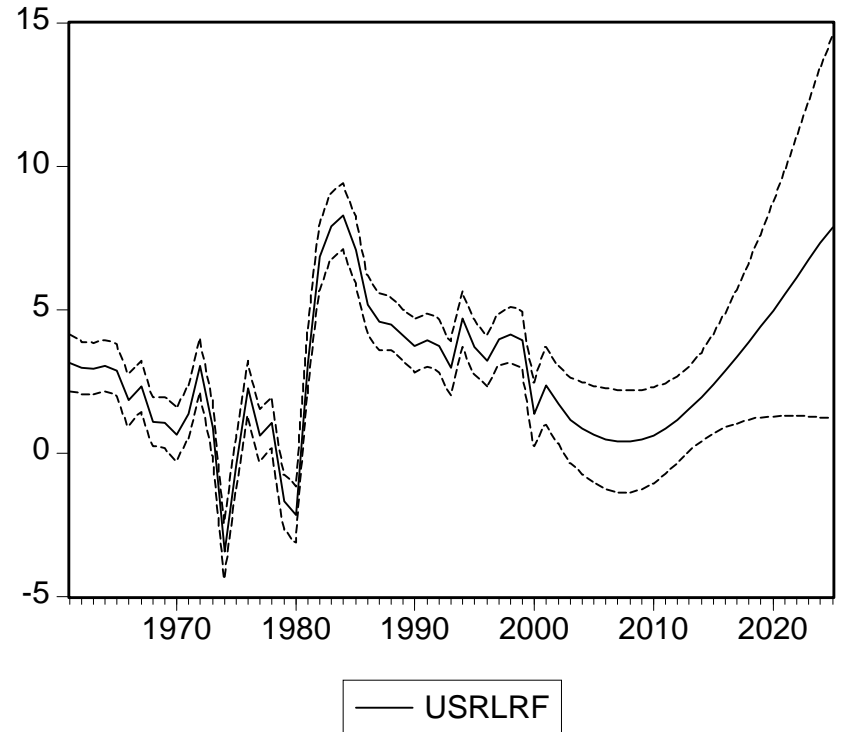
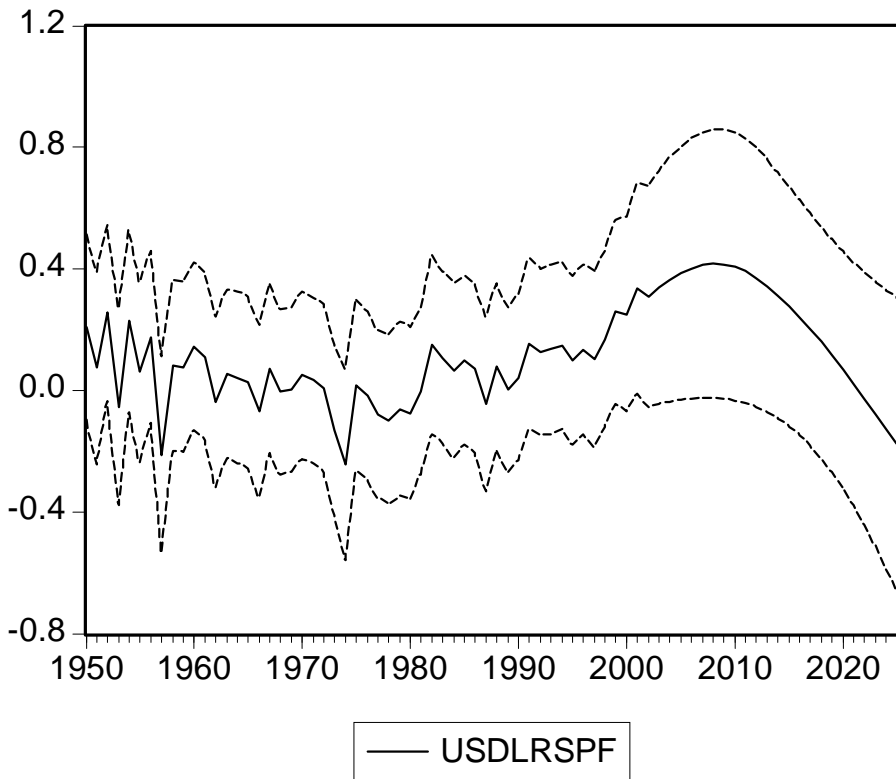


— USDLRSPF



— USRLRF

Forecast of US asset prices including AGE65



- Reasons why projections likely to be attenuated
 - Development of EMEs
 - Productivity, growth and other endogenous changes as population ages
 - Response of monetary policy to rising bond yields
 - Investor demand switches given relative returns
 - Pension reforms
 - Supply side – adjustment via equity issuance
- But still underscores market risks to full-funding of pensions, due to implied pressures
 - Implies best to keep element of pay-as-you-go as “insurance”
 - “Political risk of PAYG imperfectly correlated with market risks
 - Also financial stability risks highlighted

Conclusions

- Root of pension crisis is equity prices falling short of expectations, against background of MFR/market value accounting and increased accrued benefit obligation (driven by demographics and bond yields)
- Returns unlikely to repeat 1990s performance, hence need for more contributions, possibly shift in portfolios to allow for risk:
 - Possible resumption/recurrence of bear phase
 - Macroeconomic effects of share prices
 - Capital productivity most relevant for share prices
 - Demographic effects likely to become acute

References

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