

AGEING, THE PAYOUT PHASE AND FINANCIAL MARKETS

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Risks from asset accumulation during funding/decumulation

- Possible effects of institutional flows on equity market in 1990s
- Bubbles in debt and property feasible
- Vulnerability of EMEs to institutional flows
- Falls in asset prices during ageing if inter alia:
 - Lower real returns on capital due lower growth
 - Lower saving (“baby bust”) affecting real interest rates or risk premium
 - Switch from equities to bonds

Impact of ageing and pensions on financial markets

Impact of ageing and pensions is multidimensional:

- Demographics and growth – lower labour and capital
- Demographics and productivity
- Demographics and saving
- Demographics and financial structure
- The meltdown hypothesis

Demographics and productivity

- Ageing leads to decline in labour force, lowering growth
- Widespread view ageing lowers productivity – peak in manual worker productivity in mid-40s – human capital, flexibility.....but Cutler et al argue for boost to innovation when labour scarce
- Most panel regressions only use dependency ratio and population growth.....while macro model projections of ageing do not allow for a link of demography to productivity
- Davis 2006a: Annual data for up to 72 countries, 23 OECD, 36 EME and 13 transition over 1960-2002 - regress average TFP growth over 5-year period on initial conditions, urbanisation, GDP/capita, “catch-up” with US, 73 dummy.....and labour force composition 15-29, 39-49, 50-64 as share of population, pension assets/GDP and bank credit/GDP (financial development)

Estimates of pension fund and demographic effects on aggregate productivity (Dependent variable, five year average of TFP growth)

	ALL			EME			OECD		
GDPPC(-5)	-0.029 (2.4)	-0.059 (3.3)	-0.029 (1.8)	-0.16 (2.5)	-0.2 (2.6)	-0.11 (1.6)	-0.04 (2.9)	- 0.021 (1.3)	- 0.0013 (0.1)
USREL(-5)	-0.24 (5.1)	-0.204 (3.2)	-0.22 (3.5)	-0.11 (0.6)	-0.2 (1.0)	-0.26 (1.3)	-0.11 (2.8)	-0.15 (2.9)	-0.2 (2.3)
URBAN(-5)	-0.03 (4.5)	-0.038 (4.4)	-0.024 (4.0)	-0.029 (3.2)	-0.032 (2.2)	-0.023 (2.6)	- 0.0047 (0.5)	- 0.019 (2.8)	-0.015 (1.5)
15-29 (-5)	-0.0037 (2.1)	-0.003 (1.5)		-0.008 (2.9)	- 0.0062 (1.8)		0.0056 (2.8)	0.026 (1.2)	
30-49 (-5)	0.0056 (3.4)	0.0079 (3.5)		0.0076 (2.9)	0.008 (2.3)		0.011 (4.5)	0.067 (2.4)	
50-64 (-5)	0.00037 (0.1)	0.0095 (2.2)		0.011 (1.3)	0.018 (1.9)		- 0.0065 (0.2)	0.026 (0.7)	
D73	-0.098 (1.0)	- 0.0067 (0.1)	-0.022 (2.1)	0.017 (1.3)	0.014 (0.9)	-0.014 (1.0)	-0.068 (5.5)	- 0.059 (2.1)	-0.059 (4.4)
BANKGDP(-5)	-0.0081 (4.8)	- 0.0079 (3.7)	- 0.0076 (3.6)	- 0.0097 (3.7)	- 0.0091 (2.7)	- 0.0084 (2.5)	- 0.0057 (3.2)	-0.01 (4.8)	-0.01 (5.1)
PFAGDP(-5)		0.08 (1.9)	0.13 (3.2)		0.39 (2.8)	0.59 (4.7)		0.057 (2.0)	0.074 (2.8)
R2	0.49	0.45	0.44	0.45	0.44	0.43	0.47	0.37	0.37
COUNTRIES	70	68	68	47	47	47	23	21	21
OBS	1858	1578	1580	1177	1015	1019	647	554	557

Demographics and saving

- Main focus on ageing and asset accumulation by households, related to permanent income hypothesis and more directly life cycle
- Time series empirical evidence e.g. Fair-Dominguez 1991 etc. role of total dependency ratio in consumption function – average elasticity to private saving -0.75 , Higgins 1998 etc. – polynomial in age, peak effect on saving at 40-55 and negative effect of over 70s
- Cross section/time series contradiction – cross section rarely find negative saving by elderly - impact on predictions about ageing, e.g. Poterba-Samwick 2001 hump shape for net worth but not for net financial assets, which level off in old age – Bequests? Precautionary? Interaction between generations?
- Ageing and public sector saving
- Davis 2006b: Data for 72 countries 1960-2002 adding extra explanatory variables for financial development (inflation, per capita income, urbanisation, openness) reducing omitted variable bias

Davis 2006b: Demographics and Saving

	Private Saving/GDP			
	ALL1	ALL2	EME	OECD
GDPPC	0.0006 (0.8)	0.00075 (0.8)	0.0068 (3.8)	-0.00023 (0.5)
GROWTHPC	0.0008 (2.8)	0.0006 (2.0)	0.00031 (0.8)	0.0026 (6.9)
INFLATION	0.00043 (1.5)	0.0001 (0.3)	0.00046 (1.3)	0.063 (3.1)
URBAN	-0.00095 (2.4)	-0.00067 (1.3)	-0.0015 (2.6)	0.0005 (1.1)
OPEN	0.001 (4.4)	0.0019 (6.2)	0.00072 (2.3)	0.0015 (4.9)
20-39	0.0045 (5.5)	0.0023 (2.2)	0.0052 (3.5)	0.00064 (0.8)
40-64	0.0067 (4.9)	0.0048 (2.6)	0.0094 (3.7)	0.0019 (1.6)
65 +	-0.011 (5.3)	-0.0079 (3.3)	-0.022 (4.4)	-0.0046 (3.5)
PFAGDP (-1)		0.021 (0.9)		
BANKGDP (-1)		-0.031 (2.5)		
R2	0.6	0.62	0.53	0.76
COUNTRIES	59	53	35	22
OBS	1398	1103	830	560

Demographics and financial assets

- Lifecycle borrowing and repayment?
- Risk aversion shifting over life cycle?
 - Bergantino 1998 households switch at age 40 from taking to providing credit to markets; no bonds or stocks held till 35, over 55 holding of stocks falls more slowly than bonds
 - Goyal 2001 equity market inflows linked to size of 45-65 cohort, outflows to 65+
 - Poterba 1998, equities fall even allowing for age and cohort effects
 - Bodie and Crane 1997 overall rationality of holding pattern
- Davis 2006b: panel as above – shift from equities to bonds is apparent

Demographics and size – subsets of countries

	EME COUNTRIES					OECD COUNTRIES				
	Size	Loan	M3	Equity	Bond	Size	Loan	M3	Equity	Bond
GDPPC	0.11 (2.7)	0.021 (6.1)	0.012 (5.2)	0.041 (5.1)	-0.023 (3.1)	0.1 (5.2)	0.018 (8.8)	0.006 (3.2)	-0.014 (2.3)	- 0.00001 (0.1)
INFLATION	0.025 (2.6)	0.0028 (2.4)	0.00025 (0.3)	- 0.0023 (0.9)	- 0.0055 (3.0)	-0.036 (3.8)	0.05 (0.4)	-0.072 (1.0)	-1.7 (3.2)	-1.1 (4.1)
URBAN	0.07 (2.9)	0.00074 (0.7)	0.0021 (3.0)	0.0053 (1.6)	0.0092 (2.1)	0.036 (2.6)	- 0.0075 (3.6)	- 0.0015 (1.7)	- 0.0059 (1.1)	-0.009 (2.1)
OPEN	- 0.004 (0.9)	0.0067 (9.4)	0.0053 (11.5)	0.0095 (7.7)	0.0024 (2.8)	0.0065 (0.9)	0.0025 (1.9)	- 0.0011 (0.9)	0.011 (3.0)	-0.005 (2.5)
20-39	-0.08 (1.9)	0.019 (6.9)	0.0093 (5.1)	0.0018 (0.3)	-0.017 (2.2)	-0.17 (4.2)	0.002 (0.5)	-0.012 (4.3)	- 0.0012 (1.0)	-0.0027 (0.2)
40-64	-0.17 (2.8)	-0.0068 (1.8)	0.01 (4.1)	0.015 (1.8)	-0.004 (0.4)	-0.077 (1.1)	0.045 (8.5)	0.024 (7.1)	0.14 (8.6)	0.041 (2.1)
65 +	0.61 (3.8)	0.041 (4.9)	0.037 (6.6)	0.023 (0.9)	0.13 (4.4)	0.092 (2.8)	0.049 (8.0)	0.034 (6.8)	-0.018 (1.1)	0.069 (6.8)
R2	0.93	0.68	0.83	0.79	0.91	0.92	0.83	0.91	0.66	0.95
COUNTRIES	15	48	48	43	15	20	22	16	22	20
OBS	160	1560	1562	714	167	227	900	590	524	244

Demographics & financial asset prices

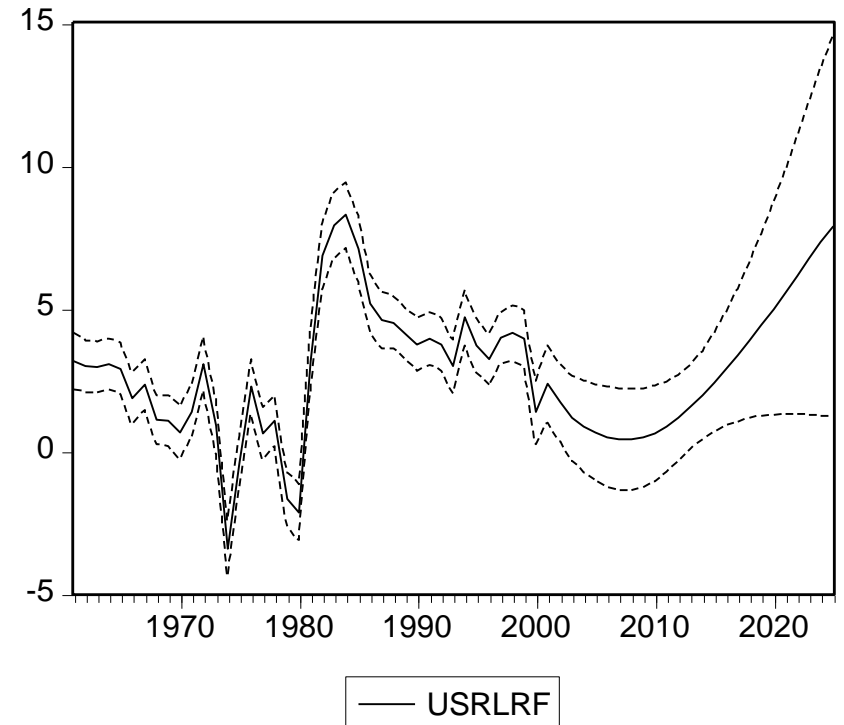
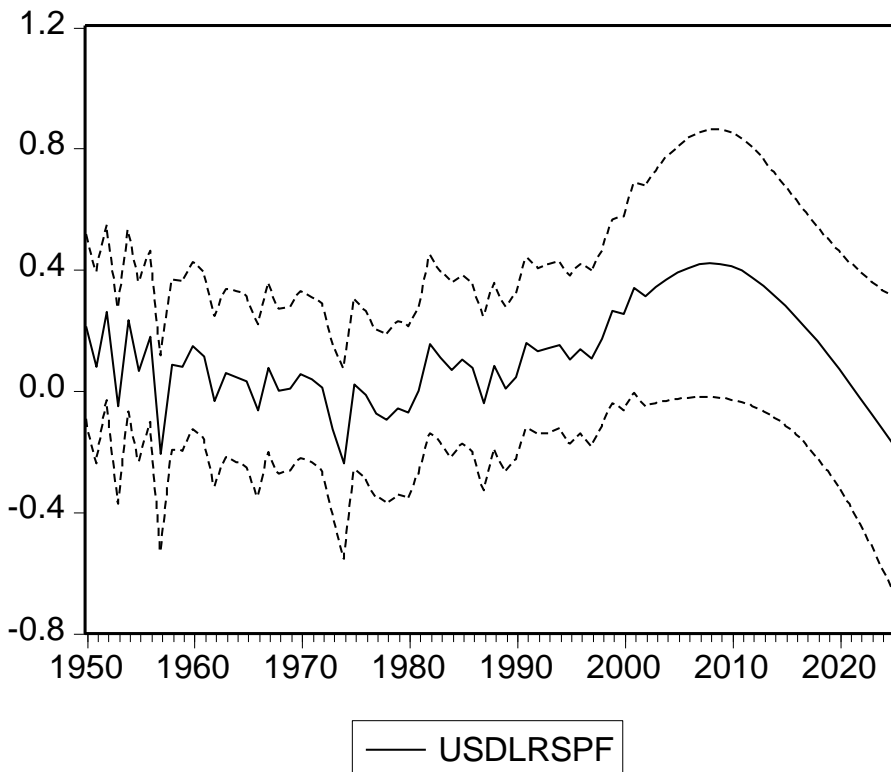
- Issue of impact of saving and portfolio shifts on prices
- Underlying issue, will demand affect prices or quantities – short and long term?
 - Schieber and Shoven 1994 and decumulation of defined benefit pension funds
 - Erb et al 1997, stock returns in US boosted by under 45s and over 65s, reduced by 45-65
 - Brooks 2000 excess demand for bonds and excess supply of equities
 - Poterba 2004 versus Abel 2001 on “meltdown” (retirement profile vs shifts in the supply of capital in response to changes in its price)
 - Davis and Li 2003 showing 40-64s have positive effect on asset prices
 - Neuberger 1999 – quantity effect will overcome price

Further econometric research on demographics and asset prices

- Davis and Li 2003 found over 1950-99 40-64 generation boosts asset prices for stocks and bonds, 20-39 neutral, tentative evidence 65+ reduces prices (intuition of life cycle saving)
- As noted by Poterba (2004), the Davis and Li study “moves beyond most of the previous work in including control variables for non-demographic factors that may affect asset prices, such as the rate of economic growth, the inflation rate, and the recent volatility of the equity market. The findings are robust to the inclusion of these control variables.”

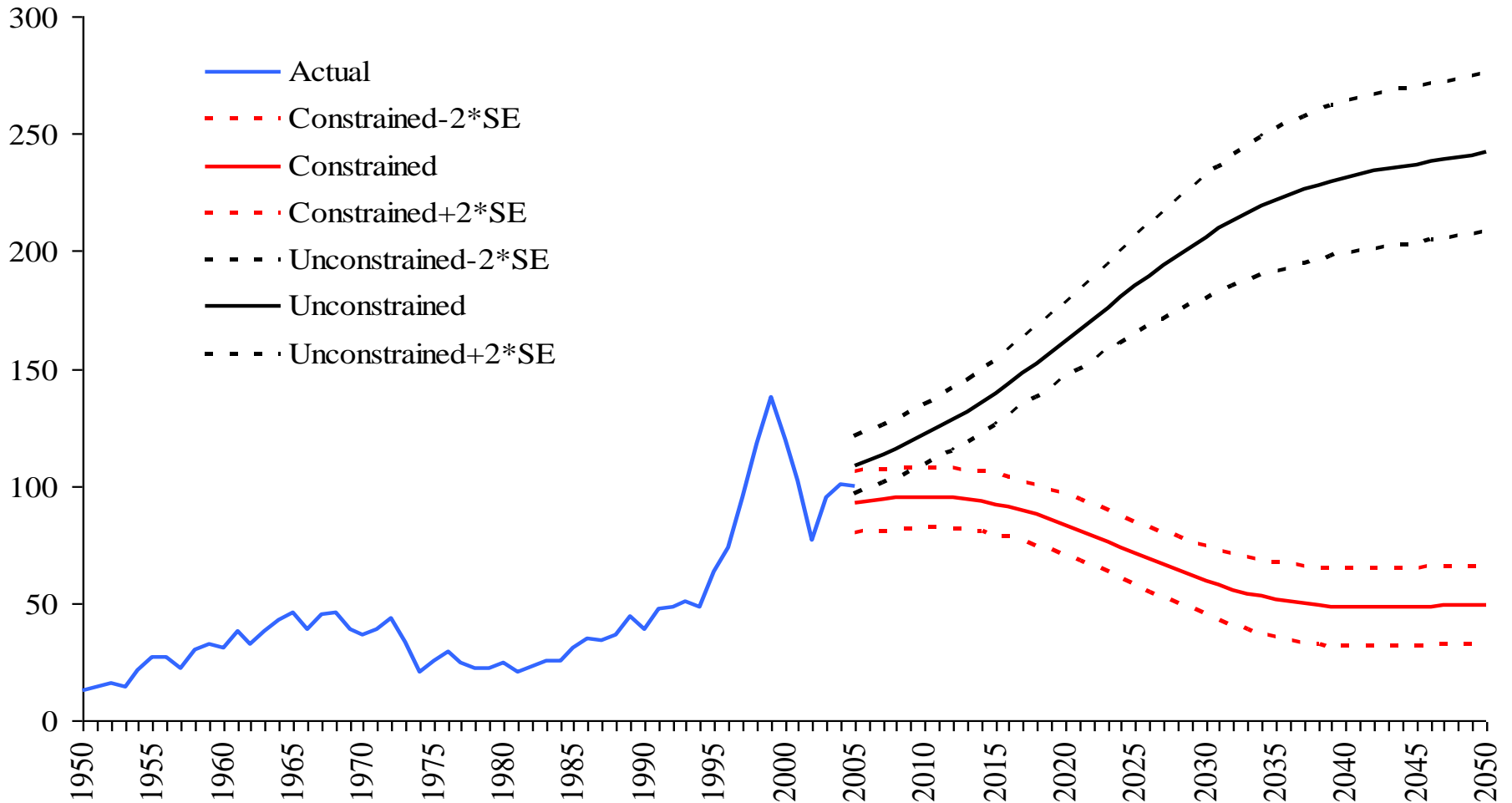
- Implies that in longer term, future asset prices could come under downward pressure as OECD population ages (affecting UK via integrated capital markets)
 - Lower saving (“baby bust”) affecting real interest rates or risk premium
 - Lower real returns on capital as economic growth declines and capital/labour 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)

Davis/Li 2003: Forecast of US asset prices including AGE65



Brookes 2006: What Market Meltdown?

Figure 14. Projected Real Stock Prices for the US



- Reasons why projections likely to be attenuated
 - Development of EMEs such as India (China?)
 - Productivity 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 – heightened 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

Development of annuities markets?

- Compulsion to eliminate adverse selection
- Indexed government bonds
- Use of global bond markets vs currency matching
- Continued development of credit default swaps to protect against credit risk on bonds?
- Risk of excessive competition among insurers – e.g. so underprice longevity risk, investment in commercial property
- Need protection against contagion from life insurance – or use explicitly to hedge?
- Ensure appropriate accounting (Japanese example - assets could be included with no liquidation value, future profits in net assets)

Recent market developments

- Those facing compulsory annuitisation in October 2008
- Did pension funds and life insurers hold CDOs?
- Implications of Lehmans' bankruptcy for pension funds and life insurers?
- Insurers' credit downgrades reduce ability to hedge (margin)
- Will there be more government bonds in issue thanks to fiscal expansion?
- Future inflation risk if monetary policy too loose?
- Will regulations hamper future risk management of pension funds, also by limiting banks' flexibility?
- Greater or lesser reliance on housing by pensioners?