AGEING AND FINANCIAL MARKETS

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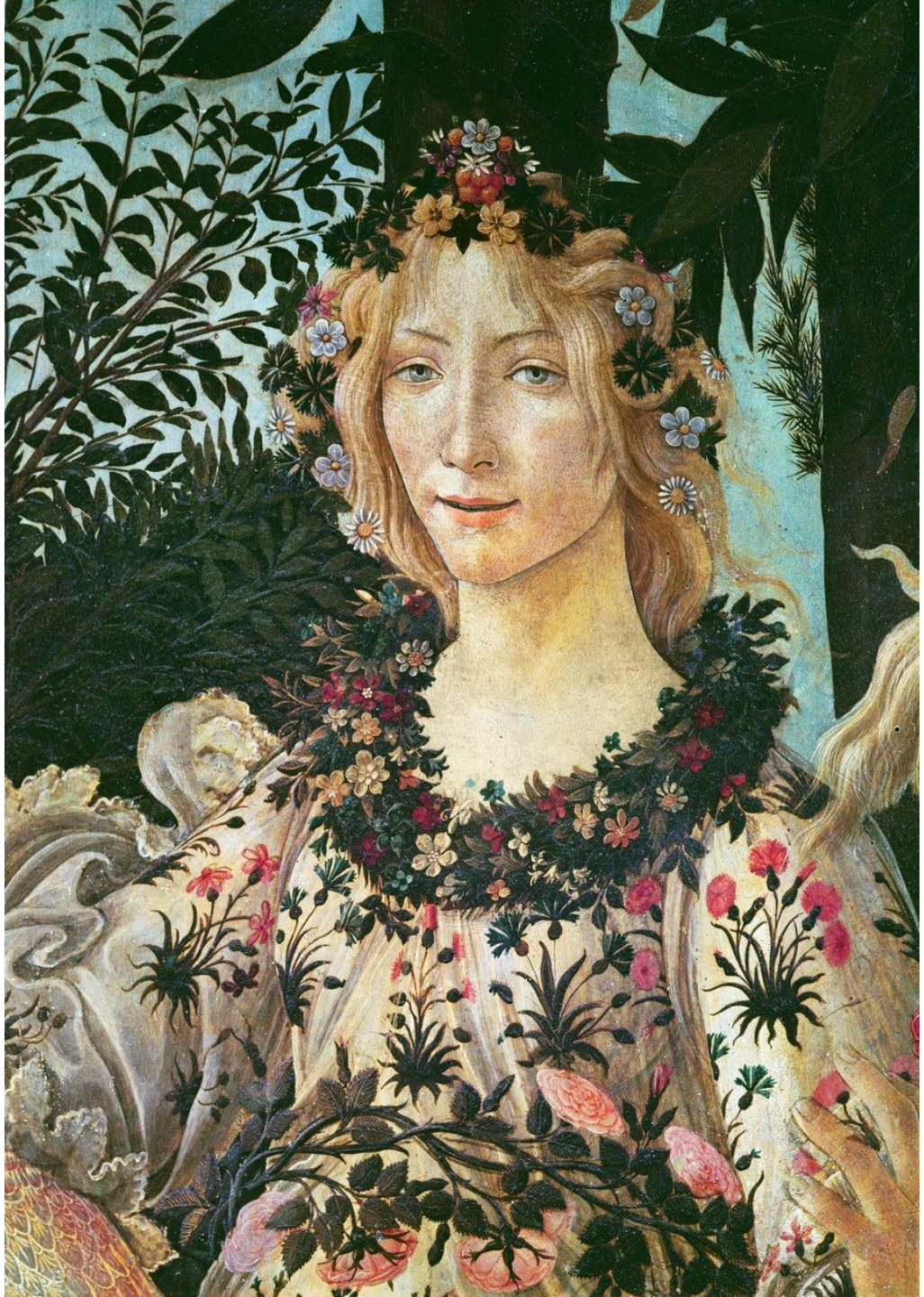
Abstract

- Ageing of the population, driven by declining fertility and rising longevity, an ineluctable process with major economic and financial implications.
- We seek to provide an overview of effects of ageing on financial markets, including:
  - household saving and wealth
  - pension provision
  - demand for individual financial assets
  - effects on asset prices and interest rates
  - consequences for housing
  - effects on banking and financial stability
  - international capital flows.

- The literature survey covers both the theoretical and empirical literature.
- Important underlying aspects are the life-cycle pattern of consumption and saving, and the pattern of risk preferences for older people, which may impact on all these areas.
- There are important policy implications, and further empirical work is warranted.
- Much of the work is US-based requiring consideration about application to other countries.
- For each topic, we summarise the **main results of the literature**, indicate some specific results/variants/complexities and *suggest some policy issues*
- We also provide an application of the literature to the issue of market resilience and some suggested areas of further work, several of which we plan to address
- The underlying work for this presentation was prepared at the request of the UK Financial Conduct Authority (Davis and Karim 2025); views expressed are those of the authors and not those of the FCA.



Most studies focus in depth on an individual detail

We seek to convey the entire picture

Patterns of ageing (UN data)

	1950	2023	2050
Fertility			
UK	2.22	1.56	1.55
High-income countries	3.04	1.47	1.55
World	4.85	2.25	2.1
Life expectancy at birth			
UK	68.6	81.3	85.1
High-income countries	61.8	81.4	85.2
World	46.4	73.2	77.0
Percent of population over 65			
UK	11	19	25
High-income countries	8	19	27
World	5	10	16

The likely impact of ageing on household sector saving

- **Saving follows a life-cycle pattern of being low or negative (involving borrowing) in young adulthood, followed by high saving up to retirement (reflecting expected longevity) and low or negative saving thereafter. This is the case for theory models, empirical work with macro data and some work with macro data. Ageing will increase the weight of the elderly, suggesting a decline in saving, ceteris paribus.**
- Other micro work however show that the elderly may not decumulate financial assets and may not have negative saving, which could reflect various reasons:
  - Imperfect annuity markets (Zhang, Zhang and Lee, 2003).
  - Positive wealth effect if real rates are positive (Bloom et al., 2007).
  - Social security structures which incentivise shorter working lives/patterns of saving less related to life cycle (Carvalho et al 2016).
  - “Compression of morbidity” affecting saving and retirement (Crimmins, 2004)
  - Horizon effect of longevity prompting early retirement but also higher saving (Kalemli-Ozcan and Weil, 2010)

- *Given the expected pattern of saving, how will financial institutions cope with a larger proportion of negative saving by retirees? Will it affect profits and hence give incentives for fee rises or risk taking?*
- *Will extended student loan repayments lead to inadequate retirement saving?*
- *How well do people understand longevity? If new medication (e.g. weight loss drugs) lead to an extension of longevity, how will it be ensured that saving is sufficient?*

Ageing and personal sector aggregate wealth

- **While total wealth follows a similar pattern to saving up to retirement, the elderly do not on average appear to decumulate financial assets in the way the life-cycle pattern would suggest. This may be due to planned or unanticipated bequests and from precautionary motives. Real assets may also be maintained as trading down/equity release is not so common as theory would suggest. Aggregate wealth may also be boosted by higher saving of working cohorts due to longevity increases.**
- Some studies mix cohort and age effects (Poterba 2001)
- UK/US differences in retention of housing (Poterba and Samwick (2001) and Blundell et al (2016)
- Many have no assets at retirement (Poterba et al 2011)
- Problematic life cycle assumption that agents homogeneously save for retirement in their younger years; transfers of wealth between spouses or generations are important factors that should be accommodated (Kotlikoff and Summers (1981), Nolan et al (2022))

- *Given the variability in wealth accumulation prior to retirement in what way do firms deal differently with those with large, medium and small wealth in retirement? Notably, can regulation ensure those with small savings are treated and advised appropriately?*
- *What issues of financial inclusion are raised by ageing?*
- *Concerning the growth in bequests, is there a need for specific regulation for advice and best practice in terms of customers in receipt of large bequests?*
- *Can housing be made more liquid for the elderly to aid their financial sustainability in retirement? Does it point to a need for re-examining regulation of equity release or reverse mortgages? What are the obstacles to trading down, equity release etc. and are they amenable to regulatory action?*

Ageing, saving and pension funds

- **Pension systems will affect financial markets during ageing whether they are pay-as-you-go or funded. Pay-as-you-go will tend to reduce public sector saving, with potential risks to fiscal sustainability, while funded pensions may raise household saving and may lead to greater investment in risky assets. There are major gaps in pension provision across society and also between men and women.**
- Pension funds are not homogeneous, affecting financial markets and individual risks. One key is whether annuity-style contracts are available for the bulk of pension income. (Complexity of defined contribution pension withdrawal when annuity purchase is not mandated.)
- Also whether appropriate minimum contribution levels are mandated
- Possible differences in outcomes arise when individuals as opposed to asset managers control investment. Issue of “reckless caution”.
- How much international investment? Tension of the risk-minimising global portfolio versus domestic desire for pension investment.

- *Is there a tension between(UK) government desire to raise availability of risky assets via pension funds and the need for the elderly/those near retirement to have lower risk portfolios?*
- *Rather, should best-practice recommend global rather than local investment, in light of the effects on risk?*
- *Can more risk-sharing between age groups be included in defined contribution funds?*
- *Is there heightened adverse selection when annuity purchase is voluntary? Are annuity providers put at risk by potential rises in longevity due to weight-loss drugs?*
- *Need for innovations if annuity-like pensions are limited or unavailable (Mitchell 2018)*
- *Pension gaps and risk taking*

- *How can individuals be helped to understand the trade-offs between immediate income and longevity in drawdown? Could AI play a role in advice? What view should be taken of the suggestion of "flex then fix" (Bee, Cribb and Emmerson 2025).*
- *How to handle issues of cognitive decline and the increasing need for individuals with powers of attorney to handle finance on behalf of individuals. Rather than considering over-65s as a homogeneous group, should firms have different regulatory guidance for "young elderly" (65-80) and "older elderly" (80+)*

The likely impact of ageing on demand for individual financial assets

- **Individuals tend to switch from higher-risk to lower-risk assets at the time of retirement. As the elderly cohort grows, this may have an impact on financial asset volumes and financial market structure more generally, with greater relative demand for lower-risk assets and wider economic implications.**
- Are older people more risk averse? If so why? (Merton 1971)
- Precise choices in retirement depend on health status (Yogo 2016)
- Location of a firm can affect capital structure via local demographics (Adhikari et al 2021)
- Effects of ageing arising from risk aversion on financial structure at macro level (Davis 2006)

- *In the context of the likely development of relative asset demands, to what extent do pension funds and asset managers prompt a shift to lower risk (e.g. in "lifestyle" funds) as retirement approaches? Is that something to be encouraged by regulators? Or should they highlight the volatility of bond markets seen in 2022 and potential fiscal deterioration in the future?*
- *Can bank deposits offer a safer source of low risk assets than gilts, and what would be the implications of reducing scope to invest ISAs in bank deposits?*
- *Given risk aversion of the elderly, will there be a shortage of risk capital as ageing proceeds?*

Impacts of ageing on financial asset prices

- **Equity and bond prices can be influenced by demographic patterns as well as volumes. While there is widespread evidence that a boost to prices can arise from a large middle-aged cohort, the evidence of negative effects on asset prices from an increase in the size of the elderly cohort (market meltdown) is much less clear. Global effects of ageing on securities prices are likely to exceed national ones for an open economy like the UK.**
- Are empirical studies flawed due to lack of consideration of cross-section interdependence? (Kim and Moon 2023)
- Rational expectations does not vitiate effects of demography, and potential influence of the MY ratio (40-49/20-29) (Geanakopoulos et al 2004)
- Age effects detectable in pattern of consumption good demand (Dellavigna and Pollet 2007)

- *Concerning asset prices, should a view be taken by regulators whether local equity and bond markets are driven partly by local demography or are they subject mainly to global influences?*
- *In that light, what are the implications for appropriate financial advice – should international investment be seen as the baseline?*

Ageing and interest rates

- **There is considerable evidence that ageing tends to put downward pressure on short term interest rates and many articles suggest this will continue. However, the effect is long-term and may not have been a prime cause of low rates in the 2010s; some counter-arguments can be adduced suggesting there will be higher short-term rates in the long-term.**
- Is the key determinant of these patterns longevity? (Carvalho et al 2016) or also variations in fertility? (Gagnon et al 2021)
- Are recent low interest and inflation rates due to ongoing shifts in local and global demographics or specific aspects of the one-off expansion of the labour force in China? Does the end of this shift (along with lower saving than investment) mean future short rates will rise? (Goodhart and Pradhan 2020).

- *If the literature suggesting permanently low interest rates is correct, how will banks cope with further prolonged periods of low short rates, which tends to narrow interest rate margins and may enhance risk taking? What will be the impact on fees and trading income?*

Ageing and the demand for housing assets

- **Demographic effects are detectable for housing as well as financial assets, with the working population tending to drive prices up while retired groups restrain it. National effects on house prices are likely to exceed global ones, since there is much less cross-border trading than for securities.**
- Most literature in terms of ageing ignores housing as an asset, which has unique features (also consumption good, limited cross border trade) (Cerny et al 2010)
- Longevity driving saving and desired wealth accumulation has raised house prices alongside lower interest rates (Lisack et al 2021)
- Considerable differences in demographic effects between countries (Arestis et al 2016)

- *In light of the analysis of ageing and housing, does regulation of mortgage lending warrant review, in case of issues such as age-discrimination in mortgages (which is forbidden in the US) and issues in trading down/equity release?*

Ageing, banking and financial stability

- **The literature on demographic effects on banking is scanty, but there is evidence that age patterns may have an important influence on risk, profitability and fraud. Financial-stability risks may arise inter alia from fiscal difficulties and shifts in asset demand from banks to institutional investors.**
- Why so little work on demographics and banking?
- Ageing may raise risk-taking at an individual bank level (Doerr et al 2024)
- A link of demographics to economic downturns? (Macunovitch 2010)
- *Do banks tend to exploit elderly customers, taking wider profit margins due to "loyalty"? Are there conduct-of-business issues if this is the case?*
- *Do demographic changes boost or reduce demand for banking services, on balance?*
- *Is there any systemic risk from the homogeneous elder population? Also, how does a financial crisis affect the living quality for the elderly population?*

Ageing and international capital flows

- **Analyses of ageing are often undertaken in a closed-economy framework, but considering global effects is more appropriate, implying balance of payments current accounts and capital flows are and will be deeply affected by differing demographic patterns across countries.**
- Will ageing raise global imbalances? (Auclert et al 2024)
- Is a “savings-investment” approach or an “international trade” approach superior methods of analysis? (Sposi 2022)
- *In light of likely deterioration of the current account, what are the implications for capital flows affecting financial institutions and the desirability of international investment by individuals and institutions?*
- *Will desirability of international investment be affected by current challenges to international trade from tariffs etc. and possible segmentation of international capital markets?*

Applications to financial market developments – resilience of markets, investors and institutions

- The literature can provide a helpful framework for considering potential future developments in financial markets. This includes trends in individual asset markets, resilience of markets and institutions and effects on the real economy arising from changes in financial markets driven by demographic trends. We highlight as an example issues related to effects of ageing on resilience of markets and institutions:
- Risk that markets and investors don't always perceive the effect of demographics, so abrupt shifts could occur in the future as markets "realise" the effect of ageing (also in light of overvaluation of equities and realisation of growing pressures on fiscal positions due to ageing)

- Ageing has been shown to raise bank risk (Doerr et al 2024) as deposits risk and credit demand falls in localities where there are more elderly, leading to risk taking
- Pressure on bank margins from low future interest rates that could lead to increased risk taking in lending
- Pressure to raise bank non-interest income for same reason may lead to risky portfolio trading (Davis et al 2024) as well as focus on fee income, while the latter may also be vulnerable to misselling of financial products.
- Could overall pressures on profitability be aggravated by declining demand for banking services, e.g. mortgages?
- Current account deterioration with ageing implies a risk of future currency crises.
- Need for vigilance in terms of the properties of innovations to protect elderly against risks since they have by definition not been tested in a range of market conditions.
- Market liquidity crises could become more common in the context of ageing as larger pension funds focus on debt instruments.

Three key papers

- **Fagereng et al, Journal of Finance 2017**
- (1) reference to Merton (1971) - human capital (discounted stream of future wage income) relative to accumulated wealth explains risk aversion changes. Younger households with low levels of financial wealth have a relatively large amount of future income from risk-free assets (vs. financial wealth) – they invest more aggressively in equities.
- (2) Test for risk preferences over the life-cycle and what factors could determine it. Uniquely comprehensive annual dataset on asset holdings available for the whole population in Norway (1995-2009). Able to capture age effects (the life-cycle), time effects (stock market conditions) and cohort specific patterns (which may make a cohort experiencing good market conditions at an early stage more ready to invest).
- Individuals rebalance portfolios away from equities as they approach retirement and exit the stock market completely after they retire. Standard model of the life-cycle requires that risk aversion be quite high, that there be small annual costs of participating in the equity market and that there be a positive probability of a major stock market crash, in line with historic experience.

- **Carvalho et al European Economic Review 2016**
- They note three channels for effects of ageing on interest rates, (i) longevity which increases saving, (ii) lower population growth which reduces rates due to lower marginal productivity of capital, (iii) higher old age dependency ratio which raises rates due to lower saving and higher consumption. Rise in longevity is the dominant factor, others cancel out.
- In countries where retirees are covered by post-retirement government transfers, they would have less need to save.
- For transfers in the case of public pensions to match the larger volume of retirees due to an ageing population, output would have to keep pace, and this is only possible via higher levels of saving and capital accumulation which further depresses interest rates. In cases where agents fear that their public pension payments will be reduced due to the state's inability to keep pace with the financial demands of an ageing population, they are more likely to accumulate private life-cycle savings which exacerbates downward pressure on interest rates. This could nevertheless engender a virtuous circle for growth.

- **Auclert et al. NBER paper 2024**:
- OLG approach for 25 countries shows for individual small country, no impact of ageing on asset returns in integrated global capital market. But overall, ageing will increase global wealth-GDP ratios, lower global asset returns and widen global imbalances over coming decades. Investment declines more than due ageing; wealth rises, since the old hold more than the young and do not decumulate.
- Due to differences in demographics, advanced countries (such as US and Germany) will face declining net foreign assets while India's will rise markedly up to 2100. Results unchanged when risk preferences of the elderly are varied, and bequests, individual saving and the tax-and-transfer system respond to ageing.

Conclusions

- The literature on ageing and financial markets reveals a range of shifts in financial structure that are linked to demographics
- These in turn will have consequences at a macroeconomic level and in terms of risks and returns faced by both individuals and financial institutions
- Given that we know future demographic trends these effects can be projected with a degree of authority
- That said, theory and empirical evidence suggest a degree of complexity in responses that mean confidence intervals need to be wide
- They may also be overlaid by other factors, which are at least partly exogenous to ageing, notably productivity trends and public finance developments
- There is also a question of whether responses may be delayed and hence abrupt rather than gradual as markets “realise” about demographic impacts
- These make the choice of policy response more complex, but neglect of the effects of ageing is not an option

- A number of areas warrant future research:
  - Estimating the relation of ageing to house prices, housing investment and mortgage lending.
  - The link of ageing to financial structure, to assess which types of financial institutions and markets are likely to expand or decline as ageing proceeds.
  - Evaluating ageing effects on bank performance – risk and profitability (using institution and sector data).
  - Demographic effects on systemic risk – probing the link of ageing to banking crises.
  - The effect of ageing, bond and equity prices using data from 1870-2023 as well as postwar (most existing studies use short and not so up to date datasets).
  - Testing of the saving/demographic effect which could involve estimation of an appropriate consumption function which incorporates effects of demographics as well as financial liberalisation
  - Assessing the impact of ageing on current accounts
  - A critical comparison of OLG models, Life Cycle models and empirical research in analysis of ageing effects

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