

REVISITING THE ASSET-MELTDOWN HYPOTHESIS

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Executive Summary

The present note is a companion note to “Challenges for Financial Intermediaries Offering Decumulation Products” and it focuses specifically on the so-called asset meltdown hypothesis.

Almost as a natural corollary to the developments during the 1990s, when pension funds benefitted from large inflows reflecting to a considerable extent savings by baby boomers for funding their retirement incomes, some observers have argued that when baby boomers start entering retirement they will become net sellers of financial assets to finance retirement consumption. As subsequent generations are smaller in numbers, other things equal, this would put downward pressure on financial asset prices (“asset meltdown hypothesis”).

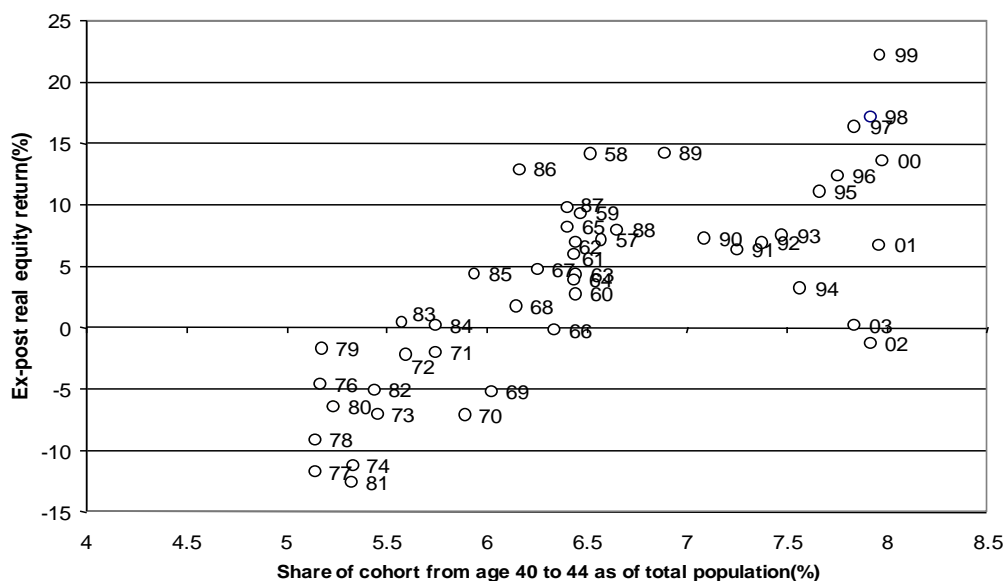
Revisiting this hypothesis, the following conclusion is drawn in the appendix to this note. Taking both theoretical arguments and empirical results together, there is some support for a link between demographics and financial asset prices, although the link may not be strong. Put simply, a number of mitigating factors exist, so that “other things” will not be equal. A major question in this context is to what extent demographic developments and their implications are already reflected in financial asset prices and how fast any additional pressures on financial asset prices will play themselves out. Demographic developments such as the ageing of baby boomers are slow moving and relatively easy to predict, so that one would expect forward-looking and efficient financial markets to price these developments well before they actually occur. The adjustment is likely to be gradual, while any rapid demographically-induced asset meltdown appears to be highly unlikely. As regards non-financial assets, perhaps more needs to be learned about the link between demographic and real estate assets before one could draw very firm lessons.

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The basic hypothesis

- As regards the influence of demographic developments on absolute and relative asset prices, considerable attention has focused on the so-called asset meltdown hypothesis. The asset meltdown hypothesis stipulates that when a large cohort retires and seeks to sell their assets to finance their consumption in retirement, they must sell their assets to subsequent cohorts that are smaller in numbers. As a result, there would be an adverse effect on the prices of these assets.
- The *theoretical* rationale for the suggested link between the age structure of the population, the demand for assets, and the prices of assets is fairly straightforward and can be illustrated somewhat more rigourously using a simple theoretical model with just a few elements (see for an example Poterba, 2004).
- A casual *empirical* case for the hypothesis of a close link between demographic developments and asset prices can easily be made. Simple bi-variate correlations between demographic variables and asset prices can be quite strong in the case of some countries, an example being the relationship between the real S&P 500 index and the proportion of the US middle-aged population during the second half of the 20th Century. Figure 1 illustrates this broadly positive link using a simple scatter plot showing ex post real equity returns on the vertical axis and the share of a subgroup of middle-aged people on the horizontal axis.
- Similar statistical patterns are less evident however for many other countries, as well as during the first half of the 20th Century for the United States.

Figure 1: Real equity returns and share of middle-aged cohort (United States)



* The number to the right of the symbol indicates the calendar year.

Source: OECD estimates based on United Nations, World Population Prospects and Thomson Financial datastream.

- More fundamentally, the observed bi-variate correlation could simply reflect the influence of omitted third factors driving the demand for assets, and these factors need to be taken into account in any meaningful discussion of the potential effects of demographics on asset prices.
- In this context, one approach to assessing the empirical magnitude of a possible demographically induced asset meltdown is to use a general equilibrium model and simulate the effects of a baby bust. This approach is helpful in capturing and illustrating the various channels through which demographic developments can affect asset prices, including through their effects on income growth and interest rates. The outcomes of such simulations need to be regarded with some caution however as they are dependent on the specific setup and associated parameter assumptions. For example, some studies illustrate that results regarding the effect of demographic on equity prices depend crucially on imposing life cycle-type behavior on such relations. Imposing the latter results in projections of substantial equity market declines, while unconstrained projections (using parameters estimated from historical relations) suggest that real equity prices may actually rise over the next decades as populations age.
- The asset meltdown hypothesis in its standard formulation is valid only to the extent that wealth is actually being decumulated. Thus, it requires that there exists wealth that can be decumulated. Consequently, the asset meltdown hypothesis is most relevant in the case of pension systems with advance funding, that is where capital is actually being accumulated, unlike in the situation of pay-as-you-go pension systems.
- That being said, a similar argument could however also be developed for the case of unfunded schemes. In this context, it has been argued that demographic developments may also lead to a likely reduction in the implicit rate of returns in unfunded retirement schemes that are linked with lower or even negative growth in labor force and or lower productivity growth per employed (see Holzmann, 2007, and references therein). While the effect of ageing populations on per capita productivity growth is uncertain, adverse effects are a possibility, and they could, together with falling labor force growth, imply lower *internal* rates of return of unfunded pension schemes.
 - Should there be a protracted period of low returns, even the most prudently managed collective investment scheme might find itself in difficulty, raising the question whether governments should intervene. The danger is that a considerable numbers of investors might find themselves deprived of adequate income on retirement, even though they allocated significant amounts of their incomes during working ages to retirement savings by investing in financial assets. This would be particularly worrying since the pension incomes that future retirees can expect to obtain from public PAYG schemes are shrinking. As a result, there may be pressures on governments to intervene and, in response to such pressures, governments may consider setting up or widening the scope of explicit systems of pension guarantees. However, this might

encourage excessive risk-taking and, in the case of defined benefit pension fund plans, inadequate funding by private pension sponsors.

- Yield pressures need not necessarily be precipitated, rather, they may take a long time to develop. In this context, it cannot be excluded that, similar to the long-drawn-out crisis in Japan that resulted from the aftermath of the bubble in asset prices in the late 1980s, the impact of ageing may develop over several years, so that there may be adverse effects even in the absence of any discontinuous change. Interestingly, Japan is one of the countries experiencing advanced demographic ageing.

Mitigating factors

- What emerges from the literature on the subject of the asset meltdown is that an abrupt asset price meltdown is highly unlikely, especially considering that an abrupt change in the key economic variables related to potential asset demand is unlikely and that a number of balancing forces are likely to come into play. The factors that are most often referred to in this context include the following:
 - A crucial assumption underlying the asset meltdown hypothesis is the *life-cycle hypothesis*, according to which consumers smooth consumption over time so as to maximise their lifetime utility, as a result of which (given typical income patterns) they have a hump-shaped saving pattern during their life. While empirical studies provide broad support in favour of the hump shape of saving over the life-cycle (see also Figure 2), they typically do not find evidence that retirees do actually dissave (see also Figure 3). If this pattern holds up in the future, the asset meltdown hypothesis becomes less relevant. The pattern is linked to uncertainty surrounding life expectancy and bequests.

Figure 2: Theoretical and empirical life-time saving profiles

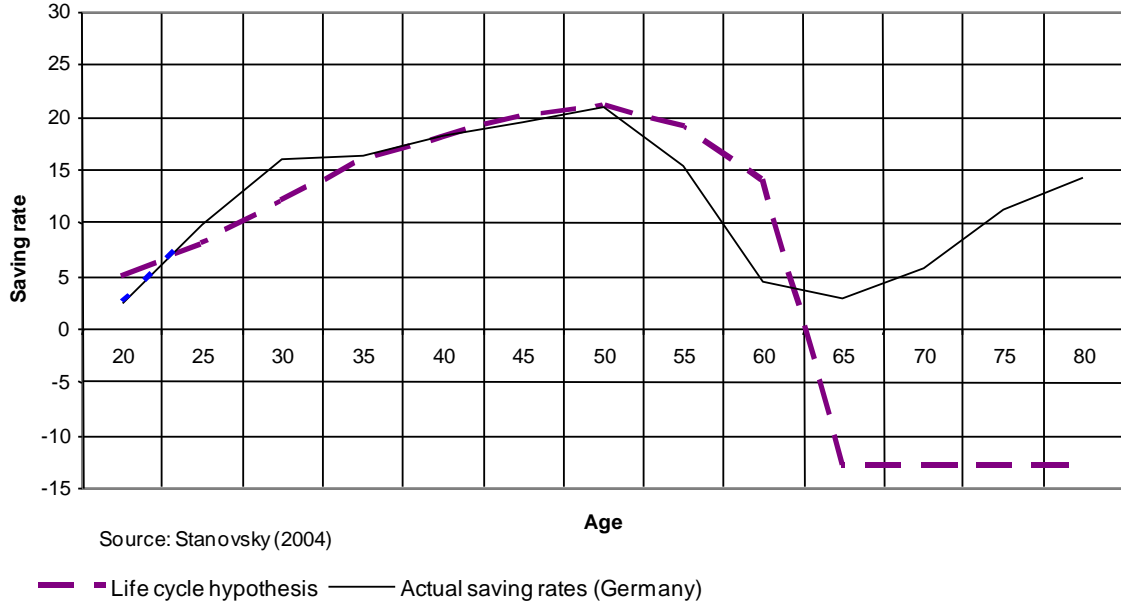
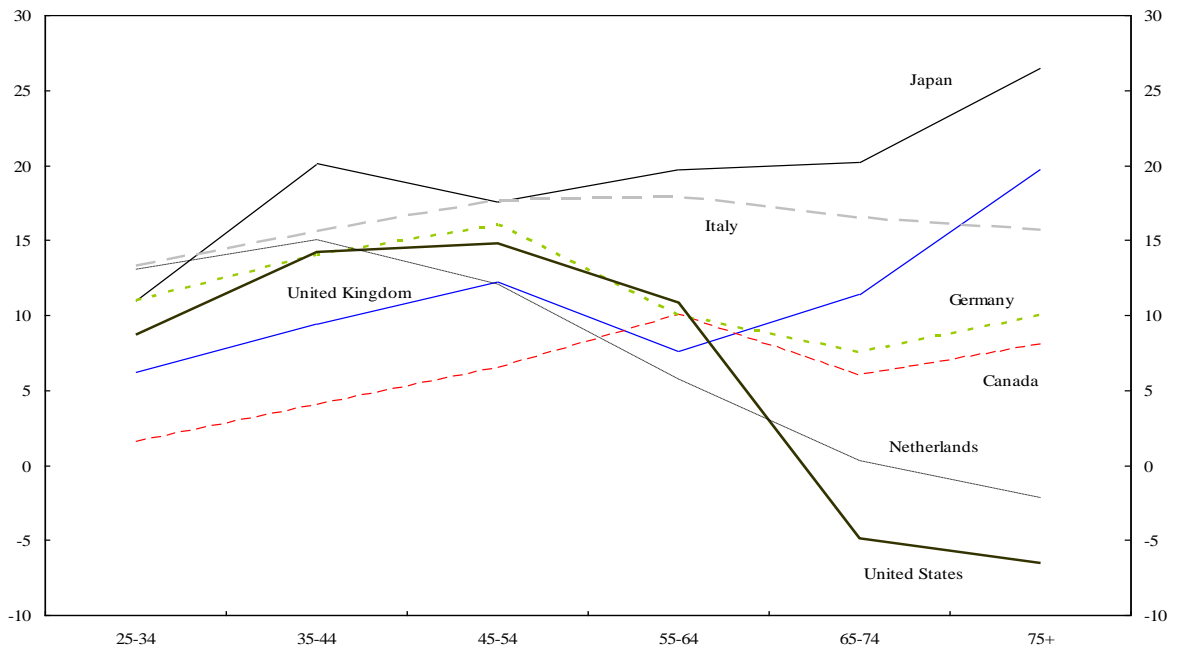


Figure 3: Estimated personal saving rates by age in selected countries



Source: IMF, Global Financial Stability Report (September, 2004)

- Given *life time uncertainty*, decumulation of assets may be slow and only start at a more advanced age, as retirees attempt to ensure that sufficient capital remains available for the entire uncertain lifetime. Moreover, such considerations may become even more important in the future. In particular, as longevity is expected to continue its trend increase by many forecasters, life-time uncertainty considerations may become even more compelling in discouraging rapid dissaving. Indeed, governments are raising retirement ages and providing incentives for later retirement in many OECD countries.
- There also may be intergenerational transfers out of the *bequest* motive, implying that households do not intend to completely decumulate their assets during their retirement period. Having said that the empirical evidence regarding the relevance of the bequest motive for saving by retirees is mixed, however. For example, while some researcher suggest that a substantial part of saving by retirees is driven by bequest motives, more recent work by tends to suggest that bequests are quantitatively of relatively limited importance. Moreover, looking ahead, there is growing evidence from surveys that current retirees are less inclined to bequest compared to their parent generation, as they have fewer children, or consider their children's wealth to be relatively high, and/or are increasingly concerned about their own living expenses. In some countries, these attitudes may have been reflected in relatively low saving and high indebtedness levels (see McKinsey&Company, 2008).
- Demographic developments are somewhat different across countries, providing some limited scope for *international capital flows* between countries with considerable different demographic structures to mitigate any impact of demographics on domestic financial markets. In this context, it has been suggested that middle-aged households may invest abroad some of their savings intended to provide an old-age pension especially in younger and fast-growing economies, with a view to transferring those funds back in the latter "consumption phase". Thus, the existence of such types of *international* capital flows could balance any *domestic* demographic pressures. Based on a series of simulations and econometric estimates, Börsch-Supan et al. (2002) and Börsch-Supan (2006) conclude that international capital flows due to population ageing will indeed be substantial and compensate to a large extent any pressure on rate of returns induced by domestic demographic developments.
- Increases in *migration* can mitigate the basic demographic trends in many OECD countries to some extent. Many commentators caution that there would have to be quite substantial increases in immigration to have any significant effect on these basic trends, and that such large migrations would actually run the risk of raising considerable social problems.

Degree of market imperfection?

- Perhaps even more fundamentally than many of the mitigating factors mentioned before, financial markets are forward-looking and demographic developments are actually slow moving. Thus, provided that the latter are predictable with some degree of accuracy, well-functioning asset markets would price financial assets so that their *current* market price would already take into account the effect of demographics on the expected returns on the asset.
- As a consequence, demographic developments and their impact on future earnings should be reflected in *current* prices once the information on demographics-induced developments becomes available. Accordingly, one would have expected to see financial asset prices adjust to the new demographic information when the size of the baby boom generation cohort became known in the 1960s or, somewhat later, when it became known that the subsequent cohort would be smaller in numbers. By contrast, one would not expect to see a financial market reaction only at the time when baby boom generations actually start to retire.
- To justify a link between the entry of baby boomers in retirement and asset prices, some kind of financial market imperfection needs to be assumed. One such imperfection could be that markets are not always as rational as is commonly assumed. For example, there is a branch of literature analysing the deviations of actual observed human behaviour from what would be predicted on the basis of standard rational expectations models in an attempt to explain these deviations by psychological factors. For sure, financial markets have greater arbitrage opportunities than other markets, so behavioural factors might be thought to be less important here, but it has been shown in some studies that even here anomalies exist that economic models cannot fully explain without resort to psychology. For example, it has been argued that the complex calculations required and large uncertainties involved in decisions the effects of which materialise only over long to very long-term horizons, makes it difficult to put much faith in the predictions of standard rational expectations models.
- Such imperfection may also reflect the fact that financial instruments that would allow market participants to “lock in” wealth well ahead of time may simply be unavailable or that there are other impediments to trade. For example, if contracts agreed upon are (at least partly) irreversible and non-renegotiable, decisions taken by existing cohorts may affect cohorts that will be borne subsequently, thus creating outcomes for the latter that are less efficient than those that could be achieved if costless renegotiation was possible.
- Even if such assessment regarding imperfections were accurate, looking ahead, it seems that there is still sufficient time for financial markets to adapt to demographic developments and provide instruments that would help to absorb the effects of such secular changes.

- Specifically, to the extent that suitable instruments to finance retirement incomes, *i.e.* investments that provide regular income streams (in nominal or, ideally, even real terms) are available in sufficient quantities, a rapid asset meltdown would be less likely than otherwise. The main reason is that retirement financing through asset decumulation would not involve any lumpy liquidation of assets.
- This argument points to the relevance of the issue of the supply of sufficient amounts of suitable instruments for any financial market discussion of issues related to accumulation and decumulation of retirement financing savings. While this issue is often discussed against the background of the policy aim of ensuring a high degree of retirement benefit security (which is part of the mandate of the Working Party of Private Pensions of the OECD's Insurance and Private Pensions Committee), it is also obviously relevant for any discussion of financial market implications of demographic changes.

Consensus assessment of the likelihood of an asset meltdown

- Many empirical studies suggest that there could be an adverse effect of the baby bust on the prices of equity and bonds, but that such effects would play out over rather long periods of time. The results regarding the quantitative importance of such an effect differ from one study to another, but a reasonable consensus analysis would suggest something like a 50-basis-point change in the rate of return available to savers in the baby boomer cohorts in the United States relative to those in more typical-size cohorts (Poterba, 2004; Holzmann, 2007).
- The general view is that such effects would take place gradually. A gradual effect would certainly be expected if financial markets behaved as rationally as is often presumed. But the recent financial turbulence has highlighted that financial systems are prone to occasional turmoil and that the triggering events are difficult if not impossible to foresee before the event. For example, developments in the sub-prime market, which is rather small by the standards of US not to speak of global financial markets, were not expected to have such outsized effects of the global financial system as they have had recently.
- In any case, as there has been no previous demographic shift of the magnitude that many OECD countries and or soon will be experiencing, all predictions regarding the effect of demographic changes on financial markets are of necessity "out-of-sample" forecasts and remain largely speculative.

Non-financial assets: A real estate asset meltdown?

- Most studies focus on financial markets and financial assets when discussing the asset meltdown hypothesis. A considerable part of household wealth is accumulated in form of real estate assets however, and the quantitative importance of residential real estate has actually increased trendwise in many OECD countries' household portfolios over the past

decade or so. In the United States, for example, home ownership stands now at close to 70 per cent, while in Europe homeownership rates vary between around 40 per cent in Germany and more than 70 per cent in Belgium. As a consequence of the considerable exposure to real estate assets, household portfolios are exposed to a considerable real estate price risk. The relevance of this observation is underscored by recent developments, which included decelerations and even falls of residential house prices in several jurisdictions during the period of the recent financial turbulence, including most notably in the United States.

- In this context, it has been argued that there are a number of reasons why one might expect demographic effects to have a greater and more readily identifiable impact on real estate than on financial assets (De Leus, 2007). They include that housing markets are less efficient than financial markets and that supply adjusts rather slow in relation to changes in demand, reflecting the existence of substantial transactions costs. Also, the home country bias is much bigger in real estate as compared to other assets. Thus, the sort of international diversification whereby saving and dissaving in countries with more mature populations might be offset by investing and saving in countries with younger populations, is less feasible in the case of real estate as compared to financial assets.
- Less empirical work on the link between ageing and real estate prices has been conducted however as compared to that between demographic developments and financial asset prices.
- A spectacular fall in house prices as a result of demographic change was predicted, however, about two decades ago by Mankiw and Weil (1989). These authors used cross-sectional data to estimate an age-profile of the demand for property, which, they assumed, remained constant over time. Based on estimates for the size and age structure of the US population for the period 1990 to 2010, they estimated that housing demand would grow rather slowly, thus putting downward pressure on the US residential housing market. The point estimate by Mankiw and Weil implied a 47 per cent price fall within 20 years.
- Subsequent studies cast considerable doubt on these forecasts and many of them concluded that the earlier studies greatly exaggerate a possible asset-price meltdown effect. Indeed, actual housing market developments in the United States since the publication of that study differed from the predictions by these authors. While house prices did exhibit a (local) peak in 1989 as predicted by the authors, there was no large permanent fall in real house prices from that point onwards, which stands in marked contrast with the authors' predictions. There was even an extraordinary run-up in house prices from 2000 to 2005 in that country (although 2007 and 2008 were characterized by significant house price declines). It has been suggested that Mankiw and Weil did not predict that upturn in house prices because they neglected the effect of interest rates on house prices and of demographic changes on interest rates. While progress has been made by the more recent literature in this respect, little cross-country evidence is available regarding the link between demographic developments and real estate prices, taking these other factors into account.

- This observation reflects that housing assets are different from financial assets in that they serve both as investment and consumption goods, and that related transactions are typically lumpy and involve relatively high costs. In this context, it should be noted that many households consider their housing assets as an insurance against the financial risks that they are exposed to during retirement. Conceptually, this view is valid, but in practice the financial flexibility provided by wealth accumulated in form of real estate assets is often limited. For example, reverse mortgages allow homeowners to receive a lump sum or a monthly payment as long as they are living in their homes and foresee that the bank recovers their capital when the house is sold. Such practices are not used widely however in most OECD countries, although they exist in several countries, including most notably the United States, the United Kingdom, and Japan. Clearly, the more developed reverse mortgage markets are, the more gradual might be any decumulation of housing assets.

Concluding remarks

- Taking both theoretical arguments and empirical results together, there is some support for a link between demographics and financial asset prices, although the link may not be strong. A major question is to what extent demographic developments and their implications are already reflected in financial asset prices and how fast any additional pressures on financial asset prices will play themselves out. Demographic developments such as the ageing of baby boomers are slow moving and relatively easy to predict, so that one would expect forward-looking and efficient financial markets to price these developments well before they actually occur. Thus, under these circumstances, any rapid demographically-induced financial asset meltdown appears to be highly unlikely.
- As regards non-financial assets, however, the situation may be somewhat different. Existing frictions in these markets may imply that asset price developments in reaction to ‘news’ about demographics are less gradual. More needs to be learned about the link between demographic and real estate assets before one could draw very firm lessons, however.
- In any case, financial markets are characterised by a number of other imperfections and, in particular, they tend to overreact to changes in fundamentals. The current financial crisis testifies to the relevance of this assessment. Actually, it suggests that even changes in fundamentals that initially appeared not very significant as measured by the size of global financial markets, such as the deterioration in the US housing and sub-prime mortgage market, can be the trigger for disproportionate effects in financial markets worldwide.
- Thus, while a rapid asset meltdown is highly unlikely, such an outcome cannot be completely ruled out. It is difficult at this point in time to conceive of any specific developments related to demographics that may have the potential to trigger strong financial market reactions. But the recent financial turbulence has highlighted that financial systems are prone to occasional turmoil and that triggering events are difficult if not impossible to foresee beforehand.

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