



The Coming Demographic Deficit: How Aging Populations Will Reduce Global Savings



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The Coming Demographic Deficit: How Aging Populations Will Reduce Global Savings

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Preface

"The Coming Demographic Deficit: How Aging Populations Will Reduce Global Savings" is the outcome of a year-long project by the McKinsey Global Institute (MGI), working in collaboration with our colleagues in McKinsey offices and practice groups around the world. This project is the latest in a decade-long series of MGI research efforts on the global capital market, which have produced a best-selling book, *Market Unbound*, by Lowell Bryan and Diana Farrell (1996), several widely discussed articles and reports, and ongoing dialogues with governments, financial institutions, and opinion leaders.

Ongoing research on the global capital market is an integral part of MGI's overall research agenda focused on informing the transition to a global economy. Of the three most important markets – those for capital, products, and labor – the capital market is the farthest along the road to true global integration (marked by the operation of an international law of one price) and the one of the three that could best stake a claim to being an independent, motive force. The global capital market is thus a critical driver of global economic integration, growth, and wealth creation, and is a continuing priority for MGI research.

Tim Shavers, a senior expert with MGI and McKinsey's Strategy Practice, worked closely with me to provide leadership to this project and to MGI's other research efforts on the global capital market. Sacha Ghai, an engagement manager in our Global Financial Institutions Practice based in Toronto, managed a diverse and talented group of team members, each of whom made invaluable contributions to the work: Ezra Greenberg, a senior knowledge professional and

leader in the Firm's North America Knowledge Center; Piotr Kulczakowicz, a senior knowledge professional in McKinsey's Strategy Practice based in Washington, D.C.; Carlos Ocampo, a knowledge professional in McKinsey's Strategy Practice based in the Firm's Benelux Knowledge Center; and Yoav Zeif, a senior associate from the Tel Aviv office. In addition, a number of colleagues made essential contributions to important workstreams during the course of the project: Akiko Karaki, Yuko Kawamoto, Haruko Nishida, and Fusayo Umezawa from the Tokyo office and Maria Levin, William Miller, and Vivien Singer from the North American Knowledge Center.

The team also benefited greatly from collaboration with MGI fellows conducting research on related issues in the global capital market: Ravi Arulanantham, a senior associate from the Cleveland office; Aneta Marcheva Key, an engagement manager from the San Francisco office; Maria McClay, a business analyst from the New York office; and Luka Repansek, a fellow associate from the Zagreb office. Research support was provided by Tim Beacom, MGI's dedicated research and information specialist. Terry Gatto, my executive assistant, and Denise Augenblick, our team assistant, provided critical administrative support.

We have benefited enormously from extensive and thoughtful input from our Academic Advisory Board members. Our board included Martin Baily, senior advisor to MGI, senior fellow at the Institute for International Economics and former chief economic advisor to President Clinton; Richard Cooper, professor of international economics at Harvard University; and Ken Rogoff, professor of economics and public policy at Harvard University and former chief economist at the International Monetary Fund. While building upon the methodologies and findings developed by MGI over the past decade, this project tackled new approaches and issues as well. We are heavily indebted to our advisors for their excellent contributions in helping develop our approach and conclusions.

The project was conducted under my direction, working closely with McKinsey colleagues around the world. As always, the findings and conclusions draw from the unique perspectives that our colleagues bring to bear on the issues and countries researched here. These perspectives are a product of intensive client work with the world's leading firms and financial system players, and offer a powerful window on the evolution of the global capital market. As with all MGI projects, this work is independent and was neither commissioned nor

sponsored in any way by any business, government or other institution. Our aspiration is to contribute to the public debate and inform better decision making on the evolution of the global capital market, its role in global economic integration, and its implications for business leaders, investors, and policymakers.

Diana Farrell
Director, McKinsey Global Institute
December 2004

Executive Summary

The world is aging. Across the globe – and especially in the United States, Japan, and Western Europe, the triad where most of the world's wealth is created and held – falling birth rates and lengthening lifespans are causing populations to age rapidly. Over the next two decades, the median age will rise from 43 to 50 in Japan and from 42 to 51 in Italy. Across the triad, the working population will stagnate or shrink, while the number of retirees will explode.

Aging and its implications are emerging as major social, political, and economic issues. Social Security reform is making headlines in the United States, and the long-term solvency of pension plans – both public and private – is a growing concern across the triad countries. Policy-makers are wrestling with the fiscal consequences of aging and seeking solutions. Business leaders and investors are seeking to understand how aging will affect global markets for goods, capital and labor.

In this report, we seek to shed light on an important and difficult question around aging: *How will aging affect future levels of household wealth and economic well-being?* To address this question, we focus on five triad countries – the United States, Japan, the United Kingdom, Germany, and Italy – which together account for two-thirds of global financial assets.¹ For each country, we leverage microeconomic data and insights on household financial behavior to project aging's impact on future levels of household wealth – particularly the liquid financial wealth that fuels global investment and growth. Our "micro-to-macro"

¹ Data from McKinsey Global Institute's Global Financial Stock Database.

approach, combined with our global coverage, offers a distinctive new window onto the impact of aging on global wealth, and what can be done to counteract this impact.

Our key finding is that over the next two decades, in the absence of dramatic changes in population trends, saving behavior, or returns on financial assets:

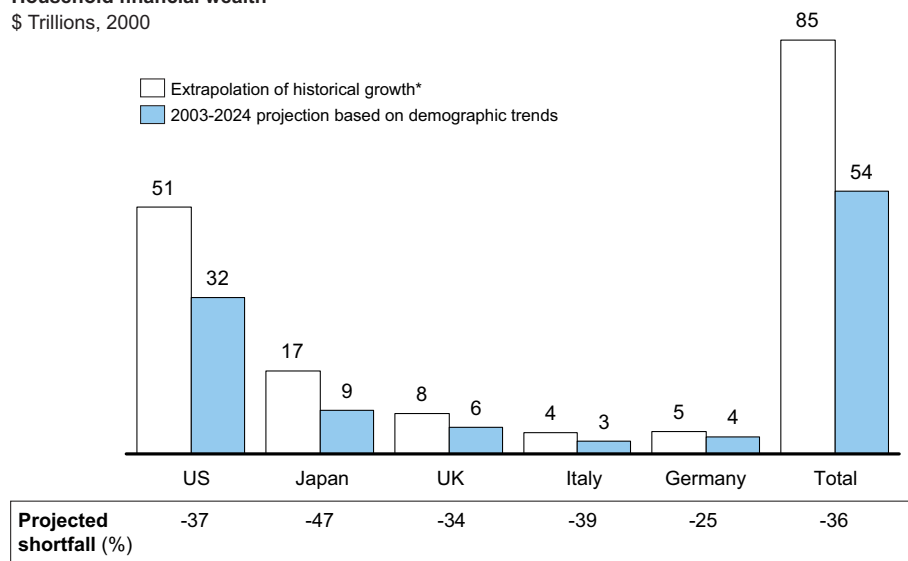
- Growth in household financial wealth will slow by more than two-thirds, from 4.5 percent historically to 1.3 percent.
- This slowing growth will cause the level of household financial wealth to fall some 36 percent, or by approximately \$31 trillion,² below what it would have been had the higher historical growth rates persisted. (Exhibit 1).

Exhibit 1

AGING WILL CAUSE A GLOBAL WEALTH SHORTFALL

Household financial wealth

\$ Trillions, 2000



* US, 1975-2003; Japan, 1989-2003; UK, 1975-2003; Italy, 1986-2003; Germany, 1991-2003
 Source: McKinsey Global Institute Household Financial Wealth Model; xe.com exchange rates

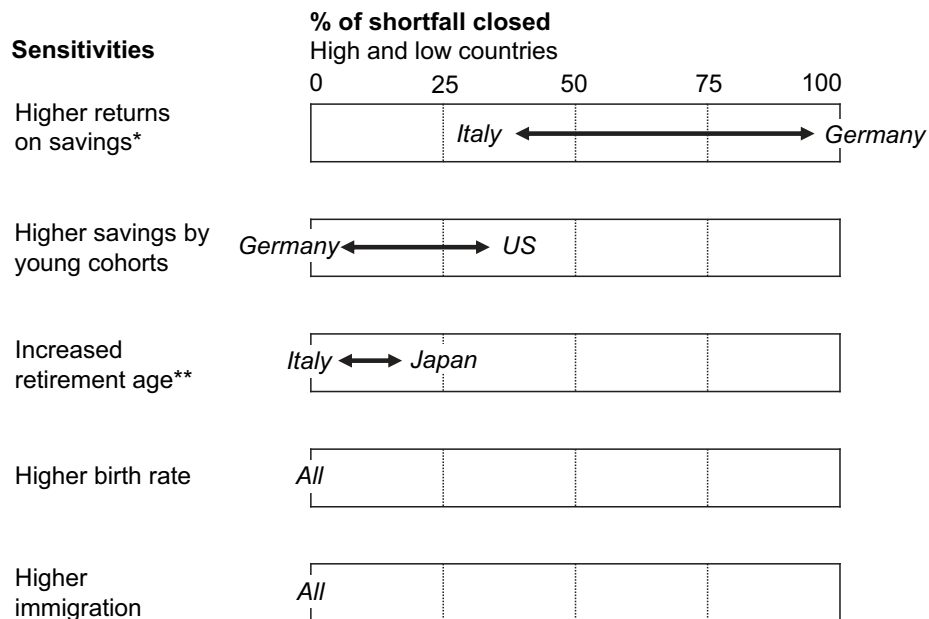
This shortfall, left unchecked, could significantly reduce future economic well-being and exacerbate the challenge of funding the retirement and health care needs of an aging population.

² Unless otherwise noted, all growth rates and rates of asset appreciation/depreciation are expressed in real terms. All values are expressed in 2000 US dollars.

Our analysis suggests no easy answers. In order meaningfully to counterbalance this demographic impact, households and governments must increase savings and seek higher returns on those savings. These goals will be difficult to achieve. We also find that many measures commonly discussed as "solutions," such as raising birth rates or increasing immigration in fact do little or nothing to counteract the financial wealth shortfall we project (Exhibit 2).

Exhibit 2

ADDRESSING THE WEALTH SHORTFALL



* Impact of a 1% increase in rate of financial asset appreciation
 ** Estimated by prolonging peak saving years by 5-10 years
 Source: McKinsey Global Institute Household Financial Wealth Model; MGI analysis

We outline additional findings below. Readers interested in our detailed findings and analysis at the national level are directed to the chapters dedicated to each of the five countries. Those interested in our analytic approach and sources are directed to the technical note, glossary and bibliography at the end of this report.

* * *

AGING WILL EXERT SEVERE DOWNWARD PRESSURE ON GLOBAL FINANCIAL WEALTH

- Aging will cause growth in household financial wealth to slow by more than two-thirds across the countries we studied, from 4.5 percent historically to 1.3 percent going forward. This slowing growth will cause the level of household financial wealth in 2024 to fall some 36 percent, or by approximately \$31 trillion, below what it would have been had the higher historical growth rates persisted. Like all projections, these numbers must be treated with caution, but they strongly suggest that global aging will exert severe downward pressure on global financial wealth over the next two decades – with important implications for the sustainability of investment, economic growth, and living standards going forward.
- Across the triad, the United States is by far the largest source of the global shortfall (\$19 trillion), because of the US's dominant share of global financial wealth (Exhibit 3). After the US, Japan stands out as the second-largest source (\$8 trillion) of the global shortfall, because its demographic trends are so severe. We project that Japan's household financial wealth *will stop growing and enter an absolute decline* over the next two decades, driving a 47 percent wealth shortfall – by far the largest among the countries we studied (Exhibit 4).

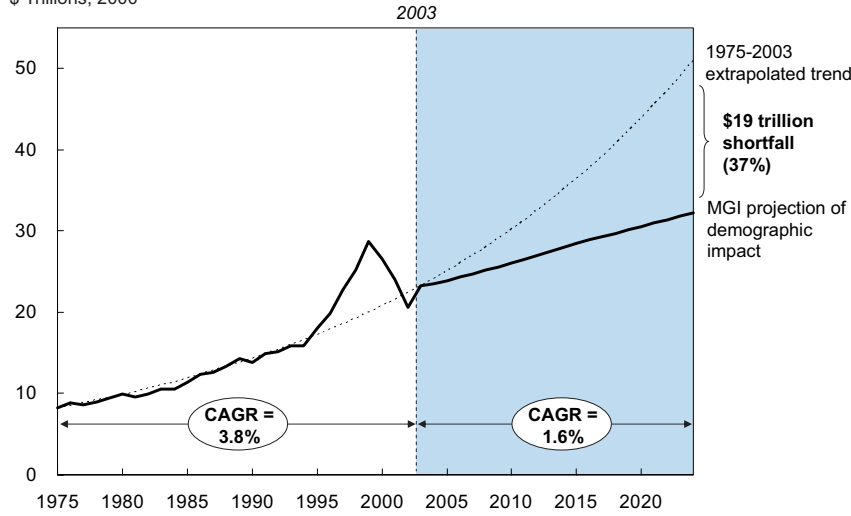
TRIAD NATIONS CANNOT RELY UPON CROSS-BORDER SAVINGS FLOWS TO MAKE UP DOMESTIC SHORTFALLS

- The *prime saver ratio* – the ratio of households in their peak earning and saving years to those who are entering retirement and therefore saving less - will be low or falling over the next two decades in every country where we studied this trend. This synchronization is new and significant. Until 2000, the US prime saver ratio moved upward, counteracting the downward trend in Japan and Europe. The year 2000, however, represented an important inflection point: in 2000, the US prime saver ratio peaked, and for the next two decades the prime saver ratio will be low or falling across the triad (Exhibit 5).

Exhibit 3

IN THE US, AGING WILL DRIVE A \$19 TRILLION (37%) WEALTH SHORTFALL BY 2024

Household financial wealth
\$ Trillions, 2000

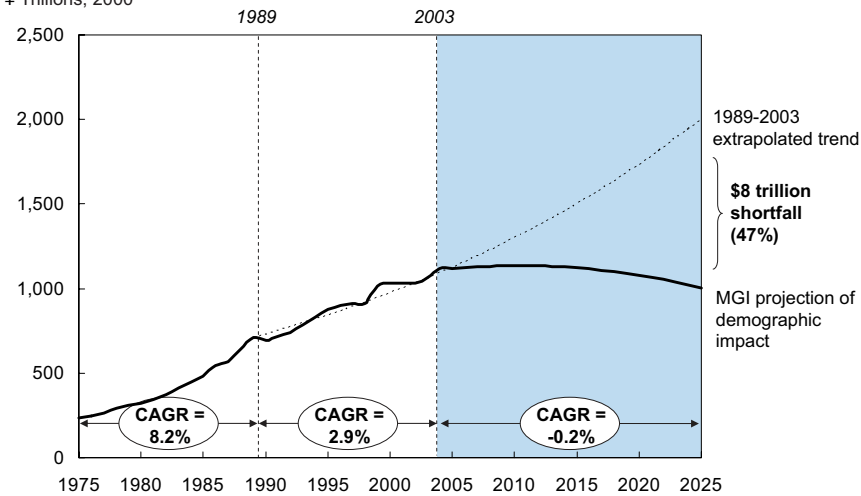


Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Financial Wealth Model

Exhibit 4

IN JAPAN, AGING WILL CAUSE A \$8 TRILLION (47%) WEALTH SHORTFALL BY 2024

Household financial wealth
¥ Trillions, 2000

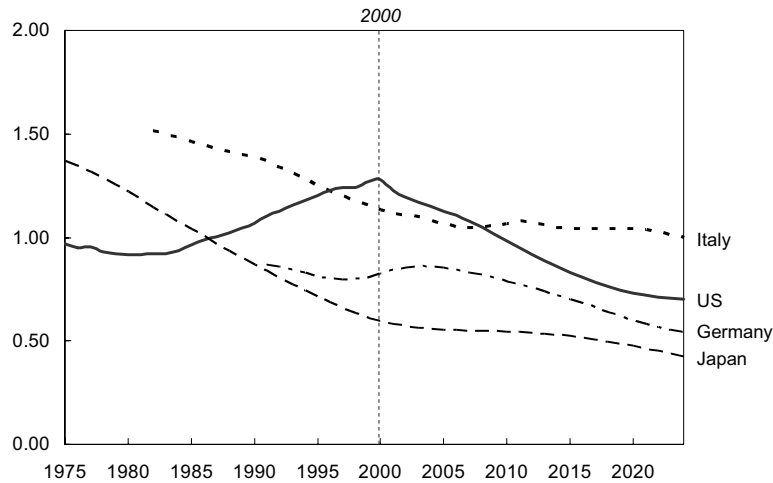


Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan, Family Expenditure Survey, Japan; McKinsey Global Institute Household Financial Wealth Model

Exhibit 5

FROM 2000 ON, PRIME SAVER RATIOS ARE FALLING ACROSS THE TRIAD

Ratio of prime saver households* to elderly households 1975-2024



Note: Prime savers defined as the 20-year age band with maximum savings (35-54 in US, 45-64 in Italy, 35-54 in Germany; 30-50 in Japan)
Source: McKinsey Global Institute Household Wealth Model

- There is no country outside the aging triad that can generate enough new financial wealth over the next two decades to meaningfully address the global wealth shortfall we project. China's stock of financial assets has been growing at a remarkable 14.5 percent compounded annual rate over the past decade, but its share of global financial assets remains just 4 percent – less than one-third that of Japan. Other fast-growing economies have yet to accumulate enough financial assets to make a difference: India's financial assets have grown at 11.9 percent per annum over the past decade but account for less than 1 percent of the global total. Similarly, Eastern Europe's financial assets have grown at 19.3 percent per annum since 1993 but remain less than 1 percent of the global total.³
- Given the global scenario, the triad countries will find it increasingly difficult to rely on cross-border saving flows to make up domestic shortfalls in financial capital. This presents a particular challenge for the US, which has in recent years absorbed more than half of the world's cross-border savings flows while running a current account

³ Data from McKinsey Global Institute's Global Financial Stock Database.

deficit expected to exceed 6 percent of GDP in 2004. Most of this cross-border savings has come from Japan and Europe, where, as we've seen, aging will exert increasing downward pressure on financial wealth – and thus pressure on the US to reduce its current account deficit. The need for action is all the more urgent because the current account deficit will be hard to reduce: recent MGI research⁴ has shown, for instance, that the cross-border activities of US-based multinationals, while creating enormous new wealth, tend to increase the US current account deficit – and are likely to have an increasing impact going forward.

HIGHER RETURNS ON SAVINGS CAN HELP ADDRESS THE WEALTH SHORTFALL BUT WILL BE HARD TO ACHIEVE

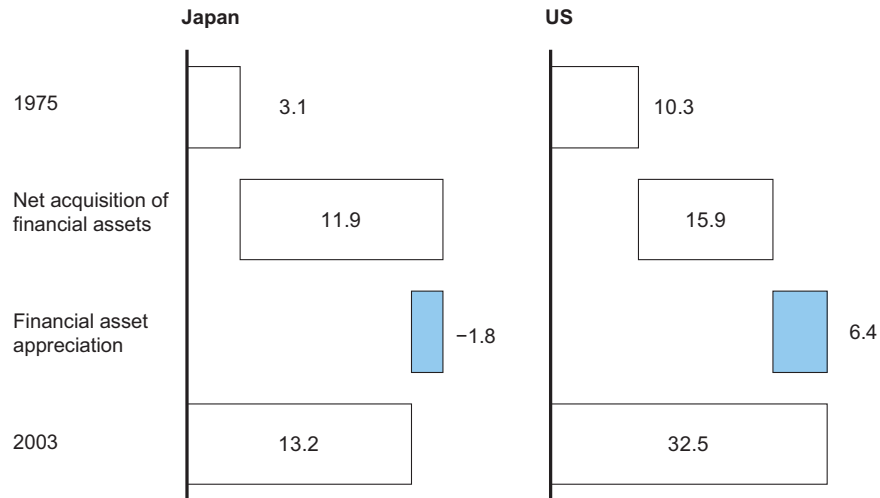
- Returns on savings vary widely across the countries we studied: US and UK assets have returned nearly 1 percent per annum since 1975, while the other countries we studied have experienced negative real returns. This variation is an important driver of differential outcomes across triad countries: the US and UK leverage high returns to accumulate wealth despite low savings, while Japan and continental Europe save at higher rates but accumulate less wealth because of low returns on savings.
- Returns are a critical driver of household wealth in some countries, but not in others. From 1975 to 2003, asset appreciation was responsible for almost 30 percent of the increase in the value of household financial assets in the U.S. – but was actually a net negative for Japan (Exhibit 6). European countries fall between the US and Japanese cases: both returns and savings are important drivers of wealth accumulation.
- Returns are also becoming an increasingly important driver of savings, through "wealth effects." When households experience increases in their wealth – when their equity or home values rise – they respond by consuming more and therefore saving less. In the US, for instance, these

⁴ A New Look at the U.S. Current Account Deficit: The Role of Multinational Companies, McKinsey Global Institute, December 2004.

Exhibit 6

**JAPANESE HOUSEHOLDS BUILD WEALTH THROUGH SAVING,
WHILE US HOUSEHOLDS RELY MORE ON CAPITAL GAINS**

Change in household financial assets in the US and Japan 1975-2003



Source: Bank of Japan; Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan; Federal Reserve Flow of Funds

"wealth effects" are estimated to increase spending by 3 to 5 cents for every dollar increase in financial asset values, and by 5 to 8 cents for every dollar increase in home values. These effects can be significant; the \$2.7 trillion rise in home values from 1995 to 2002, for example, implies a decline in savings of between \$135 billion and \$243 billion.

- Higher returns can help address the wealth shortfall. In Germany, for instance, an increase in unrealized capital gains of approximately one percentage point, above the historical average of -1.1 percent to 0 percent over the next two decades, would fully address the wealth shortfall. Returns would need to more than double to eliminate the US' wealth shortfall. Japan and Italy would require an even larger shift in returns to achieve the same results.
- However, higher returns will be difficult to achieve, requiring a broad, sustained effort by the public and private sector. Raising returns will require progress in three challenging arenas: 1) economy-wide capital efficiency, 2) the efficiency of financial intermediation, and 3) household asset allocation.

HIGHER SAVING IS A PARTIAL SOLUTION

- Younger generations are earning far more but saving far less than their elders across many triad countries. Our research shows that this dissaving by the young is an important source of the wealth shortfall in both the US and, more surprisingly, in Japan. What if younger generations could be made to save at the same rate as their elders, through policies to encourage saving and discourage consumption? We find that such a dramatic change would at best be a partial solution to the wealth shortfall. In Japan, for instance, this change would increase the growth rate of financial wealth from -0.2 percent to 0.8 percent, closing one-quarter of the 2024 wealth shortfall. In the US, the impact would be more meaningful, increasing growth in household financial wealth from 1.6 percent to 2.4 percent, thereby closing nearly a third of the wealth shortfall.
- Life spans have lengthened, but the average retirement age has not increased correspondingly: workers who could continue to earn and save for several more years are instead retiring earlier. What if this trend could be reversed, and workers delayed retirement, prolonging their peak savings for an additional 5 years? We find that this change would help address the wealth shortfall in some countries but not in others – the impact is greatest in those countries where saving falls off sharply in retirement. In Japan, for instance, we find that this change would raise the growth of household financial wealth from -0.2 percent to 0.7 percent – a substantial improvement that would close one quarter of the wealth shortfall we project. In Italy, by contrast, because saving behavior changes little in retirement, this change would have a negligible impact.
- Household liabilities are growing faster than assets across the countries we studied: since 1982 liabilities have grown 5.5 percent per annum, versus 4.8 percent for assets. At least three interrelated factors are at work: 1) real estate markets have appreciated dramatically in many countries, causing home owners to borrow more; 2) credit markets have developed, widening access to credit; and 3) younger cohorts are more comfortable with debt than their elders. What if liability growth could be held to the same

rate as asset growth going forward? We find that this change would make only a modest impact, increasing household wealth by \$2.3 trillion in 2024 and closing just 7.5 percent of the total wealth shortfall across the countries we studied.

OTHER MUCH-DISCUSSED SOLUTIONS OFFER LITTLE OR NO RELIEF

- Raising fertility rates in the triad countries will not help address the wealth shortfall over the next two decades, because 30 years are needed for new babies to become prime savers. Indeed, in the near term, a new baby boom would probably *reduce* saving by increasing household spending on children.
- Similarly, increasing immigration will do little to address the wealth shortfall over the next two decades. In Germany we found that even if immigration were 50 percent higher than the government's "base case" projection, 2024 household wealth would thereby increase by only 0.7 percent over the base case. Immigration's impact is negligible for two main reasons: 1) even under aggressive immigration scenarios, immigration adds only a modest increment to overall household growth; demographic trends within the nonimmigrant population therefore remain the dominant force shaping the rate of household growth; and 2) immigrant households tend to start with lower levels of household assets, so their contribution to the country's total household wealth is relatively modest.
- Finally, our analysis shows that the triad countries cannot grow their way out of the problem by simply boosting the overall rate of economic growth. As incomes rise, consumption tends to follow. As a result, higher growth – without an accompanying increase in the saving rate – will do little to address the coming global wealth shortfall.

Introduction

What is the impact of aging on the global capital market? One of the most significant trends in the next 20 years will be the aging of the developed world. Lower birth rates, longer life expectancies and aging of the postwar baby-boom cohort will drive this trend towards an older population. Understanding the impact of this trend on household financial wealth accumulation will provide unique insight into how these shifts will impact the global capital market and household economic well-being.

OBJECTIVE OF STUDY

To examine this issue, the McKinsey Global Institute undertook a research project to examine the impact of changing demographics on the accumulation of household net financial wealth. Specifically, the research effort examined three basic issues:

1. How are demographic changes expected to impact the flow of household savings and the rate of financial asset accumulation globally and within key countries? What will be the size of the impact, when will it occur, and which countries will be most affected?
2. If left unchecked, what would be the implications of these changes? What do these implications suggest about changing patterns of cross-border flows going forward?
3. What actions need to be taken in order to mitigate the impact of demographic pressures?

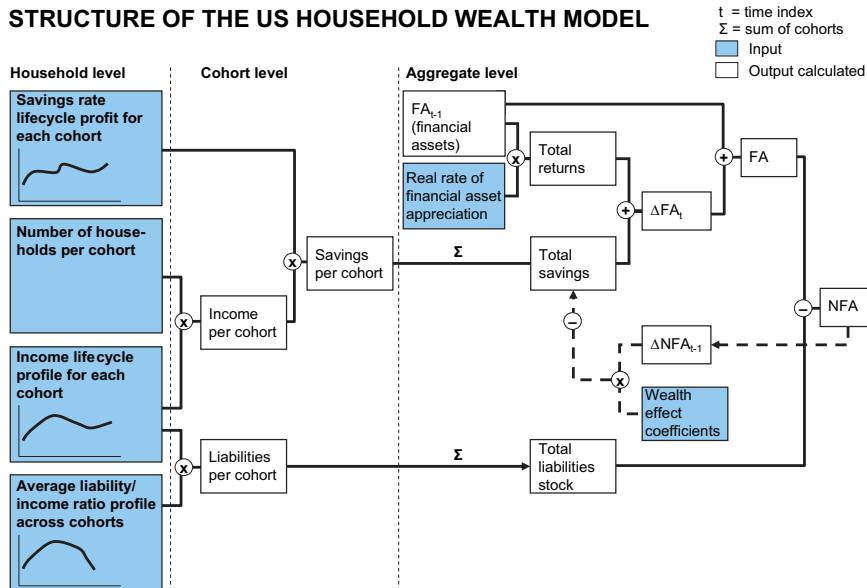
DISTINCTIVE APPROACH

This project seeks to add to the literature on the impact of demographic change in 4 key ways:

- 1. Global perspective:** In order to develop a genuinely global perspective on the impact of these discontinuities, models were constructed for five countries (the US, Japan, Germany, Italy, and the UK). Together, these countries account for approximately 70 percent of global financial stock, the vast majority of the world's household savings, and provide a broad geographic coverage and range of demographic outcomes. This approach allows the possibility to understand implications globally, such as the effects of aging on capital flows.
- 2. Focus on financial wealth accumulation:** We focus our analysis on understanding the impact of aging on household net financial wealth. This provides insight on how demographic change will affect the global capital market, since financial wealth is a measure of the liquid transferable wealth intermediated through the global capital market, as well as household economic well being, since financial wealth is a good proxy for household's claims on future consumption.
- 3. Key drivers:** We use sensitivity analysis to test the drivers behind the demographic impact, thereby identifying the important mitigating drivers while shedding light on the inadequacy of others. These results are used to inform potential policy objectives to counteract the impact of aging.
- 4. Micro-to-macro approach:** MGI's microeconomic approach differs from traditional "macro forecasts" in that it constructs simulations based on individual demographic micro-drivers, such as age and cohort effects (Exhibit 1). These results are then calibrated to align with macroeconomic measures. This "hybrid" approach allows us to project wealth accumulation leveraging trends in household micro behavior but express it in results that are meaningful at the aggregate level.

Exhibit 1

STRUCTURE OF THE US HOUSEHOLD WEALTH MODEL



Note: Italy and Japan models constructed differently in response to different data sources and data granularity
 Source: Orazio Attanasio lifecycle profile estimations; MGI analysis

ROAD MAP TO THE COUNTRY CASES

The country cases are organized in a consistent structure. Each case consists of five parts:

- 1. Summary of findings:** Provides a high-level concise overview of the key findings.
- 2. Historical evolution of household net financial wealth:** Provides a historical analysis of the country's balance sheets, highlighting key trends.
- 3. Demographic drivers of change in household net financial wealth:** Provides an overview of the key demographic forces-at-work affecting household accumulation of financial wealth.
- 4. Demographic impact on household financial wealth:** Describes the key findings of the analysis.
- 5. Navigating the demographic transition:** Outlines key levers and describes their potential impact based on scenario analysis.

1. The Demographic Impact on Savings and Wealth: *The Future Global Capital Shortfall*

SUMMARY OF FINDINGS

Over the next two decades, demographic trends will create significant downward pressure on household savings and financial wealth accumulation. These demographic forces – in the absence of changes in household age structure, savings behavior, or rates of financial asset appreciation – will drive a decline in the global growth of net financial wealth (NFW) from the historical rate of 4.5 percent to 1.3 percent.^{1,2} By 2024, this slowing growth will cause NFW to fall some 36 percent, or by \$31 trillion, below what it would have been had the higher historical growth rates persisted.³

The demographic transition is occurring throughout the developed world, albeit with different timing and severity across countries. "Prime savers" are households in their peak income and saving years, while elderly households save less or dissave. Over the past 20 years, Italy and Japan have experienced steep declines in the ratio of prime saver to elderly households, while at the

1 The global results have been derived from our studies of the United States, Japan, Germany, Italy, and the United Kingdom, which together account for approximately 70 percent of world household savings and financial wealth.

2 Unless otherwise noted, all growth rates expressed in real terms. Values are expressed in 2000 US dollars.

3 This study assesses the direction, timing and magnitude of the demographic pressure on household savings and financial wealth accumulation, using country-specific demographic forecasts, empirical observations of historical life cycle and cohort saving behavior, and historical rates of financial asset appreciation (see "Technical Notes" for more details). Our findings should not be interpreted as point forecasts because we do not capture the feedback that will occur as households, markets, and other forces adjust to these demographic changes. For ease of exposition, we use "will" (e.g., savings "will" fall) throughout this document to describe our demographics-driven projections.

same time, the baby boomers in the US were in their peak income-earning and saving years. However, soon after 2000 and leading up to 2024, the US and Germany will join Italy and Japan with a declining proportion of prime saving households.⁴ Amplifying the impact of this aging trend is the reduction in the growth rate of household formation and the behavioral differences in savings patterns between generations. To fully understand the implications of the demographic transition for NFW accumulation, the impact of all these microeconomic forces must be considered and translated into results meaningful for the overall economy.

To provide insight on the implications of demographic change on the global capital market, the McKinsey Global Institute modeled the impact of demographics on household savings and NFW accumulation for five OECD countries that together account for approximately 70 percent of global financial stock.⁵ This approach is designed to yield distinctive results by focusing on NFW accumulation to inform the impact on the global capital market and household economic well-being; adopting a global view to shed light on potential shifts in cross-border capital flows; using sensitivity analysis to identify mitigating drivers; and using a "hybrid" modeling approach which leverages trends in microeconomic behavior to derive results that are meaningful at the aggregate level.

At the regional and country level, the magnitude and timing of the decline in NFW accumulation differ sharply, mostly in line with country-specific demographic drivers and lifecycle savings behavior. Japan, for instance, will experience an absolute decline in household NFW. In Europe, the outcomes range from relatively mild in the UK to more severe in Italy. Finally, the US will experience a moderate decline in the growth rate of its household NFW. Each of these countries will need to grapple with the domestic challenges of lower savings to support a fast-growing retiree population while maintaining investment to sustain economic growth. Given the simultaneously occurring global downward pressure on savings, these countries will find it increasingly difficult to rely on international capital flows to close domestic savings shortfalls. This is a particular challenge for the US, which has been running massive current account

⁴ We use country-specific official government statistics (and definitions) when projecting the number of households.

⁵ See MGI Global Financial Stock report, 2005.

deficits to counterbalance low domestic savings (e.g., in 2003, the US current account deficit topped \$530 billion, while Japan's current account surplus reached \$136 billion).

If developed economies are to navigate smoothly through this demographic transition, they will need to take immediate action to increase savings, reduce borrowing, and further improve the returns that households obtain on their financial assets. Our analysis suggests that such changes, while difficult, can meaningfully counteract the demographic pressures. Fiscal discipline today can yield healthier balance sheets tomorrow.

In the rest of this chapter, we explore these four major topics:

- **The historical evolution of household net financial wealth**, which has been predominantly driven by savings in some countries and financial asset appreciation in others.
- **Emerging demographic pressures** on household net financial wealth, namely changes in the number of households and lifecycle and cohort effects on savings, which vary significantly in timing and severity across countries.
- **The impact of demographic pressures** over the next 20 years, which will slow savings and net financial wealth accumulation across the developed world.
- **Potential changes that would mitigate the impact** of demographic forces, suggesting the direction of potential solutions.

Basic facts on demographic effects on savings

Demographic change can affect savings in three ways:

- **Changing number of households.** Changes in birth rates impact the rate of household formation. Changes in the number of households will impact the aggregate level of savings from households.*
- **"Lifecycle effect."** Household income rises with age and experience before declining in retirement. Concomitantly, the rate of saving out of income generally is low for the young, rises with income gains, and then declines near retirement. These two effects combine to yield a distinct age-based level of savings, often referred to as the "lifecycle effect" on savings. Therefore, as the age distribution of the population changes, the level of savings from the population will also change.
- **"Cohort effects."** Younger birth cohorts will earn different levels of income and choose to save at different rates than their predecessors did at the same age. For example, 30-year-olds in the 1990s earn different levels of income and choose to save at different rates than 30-year-olds in the 1970s. These behavioral shifts, often called "cohort effects" on savings, affect the level of household savings in the future.

Since savings is an important driver of household wealth accumulation, understanding the demographic impact on savings provides a necessary foundation to assessing the demographic impact on overall financial wealth accumulation (see next box).

* In addition to the growth rate of household formation, declining birth rates have also had an impact on household size. For our analysis, we use official government statistics on projected household formation, which take into account changes in household size, and thus make no independent assessment of future household size.

Basic facts on savings and wealth accumulation

The appropriate measure of household saving is a topic of frequent debate within the literature, with arguments for and against alternative treatments of income, taxes and outlays. Measures of wealth accumulation are also frequently put forward as more comprehensive assessments of households' ability to maintain future consumption levels. This box provides a brief overview of the differences between savings and wealth accumulation, and explains the rationale for our focus on net financial wealth accumulation.

- **Personal savings:** National accounts, such as the National Income and Product Accounts (NIPA) in the US or the SNA93 in Japan, are focused on measuring the economic value of current production, and thus measures income arising from current production. Personal saving is derived by deducting consumption, interest payments on consumer debt, and current transfer payments from personal disposable income. Because it is derived from current production, it is well suited to informing the domestic savings-domestic investment balance. In addition to the national accounts definition of savings, alternative definitions exist that provide different views of saving (see Reinsdorf, 2004, for an overview of alternative saving measures in the US).
- **Changes in Wealth:** Savings is an important component of changes in household wealth. Wealth held by households can change in two ways: households can purchase new assets with savings and existing assets can be revalued because of changing market prices. Because wealth is a measure of households' ability to finance future consumption, changes in the wealth of households thus provide a comprehensive view of changes in household economic well being – a fact noted by various authors (Bosworth, 2004 and Reinsdorf, 2004).

This project's objective is to understand the impact of demographic change on the global capital market and household economic well being. We therefore focus on the *financial* component of household wealth (*net financial wealth*) because 1) it represents the liquid and transferable financial wealth that is intermediated through the global capital market to fuel global investment and growth, and 2) it represents a good proxy for overall household economic well being because the majority of household assets are financial (in the US, consistently between 60 and 70 percent since 1950).

Recognizing that changes in financial and real estate wealth can affect household spending behavior, we have incorporated estimates of financial and real estate wealth effects on spending in the US analysis. While consumer durables represent important assets for some households, we have also adhered to the National Accounts classification of durables as consumption, since durables are not liquid and investable in the same way as financial assets.

HISTORICAL EVOLUTION OF HOUSEHOLD NET FINANCIAL WEALTH

Households accumulate financial wealth by purchasing new assets⁶ using savings out of current income or through the revaluation of existing assets. At the same time, households assume financial liabilities mainly through mortgages and revolving credit. Net financial wealth (NFW) is the difference between financial assets and liabilities. Real estate can affect net financial wealth through the so-called real estate "wealth effect" whereby an increase in real estate wealth induces higher spending and reduces savings.

The global aggregate NFW of households increased at a 4.5 percent annual rate between 1982 and 2003. For most of this period, net financial wealth grew fairly consistently, closely following a historical trend line. In the late 1990s, the technology, media and telecommunications bubble produced a massive surge in the growth rate (Exhibit 1).⁷

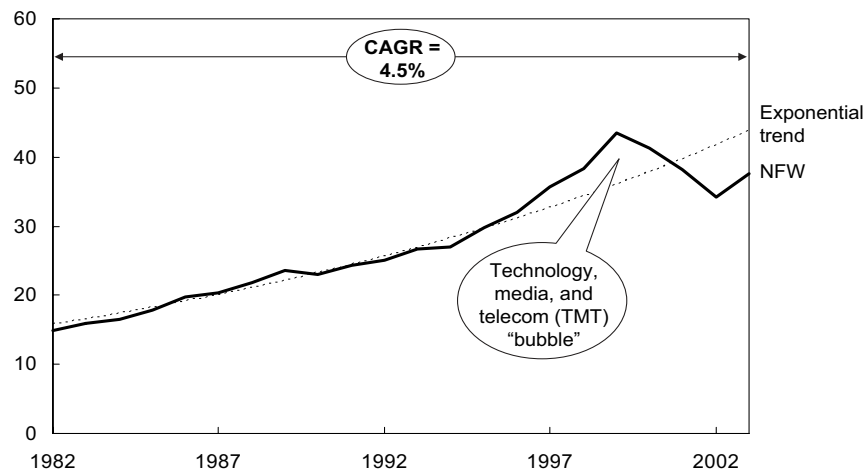
⁶ We have used a broad definition of financial assets including deposits, stocks, life insurance and pension fund reserves, etc.

⁷ While these numbers aggregate four countries (Germany excluded due to data limitations), the US and Japan account for approximately 85 percent of the figure.

Exhibit 1

**HOUSEHOLD NET FINANCIAL WEALTH (NFW) FOR
SELECTED COUNTRIES* 1982-2003**

\$ Trillions, 2000



* Includes US, Italy, Japan, UK (Germany excluded due to limited historical data)
Source: McKinsey Global Institute Household Financial Wealth Model

This section documents the key historical trends of NFW accumulation at the global level by considering the evolution of financial assets and liabilities. For financial assets, we point to the equity market bubble of the late 1990s as a significant discontinuity, and to the importance of differences in asset allocation across countries as a driver of appreciation. Correspondingly, we observe the rapid growth rate of liabilities and the link between growth in liabilities and the growth in mortgage debt.

Household financial assets

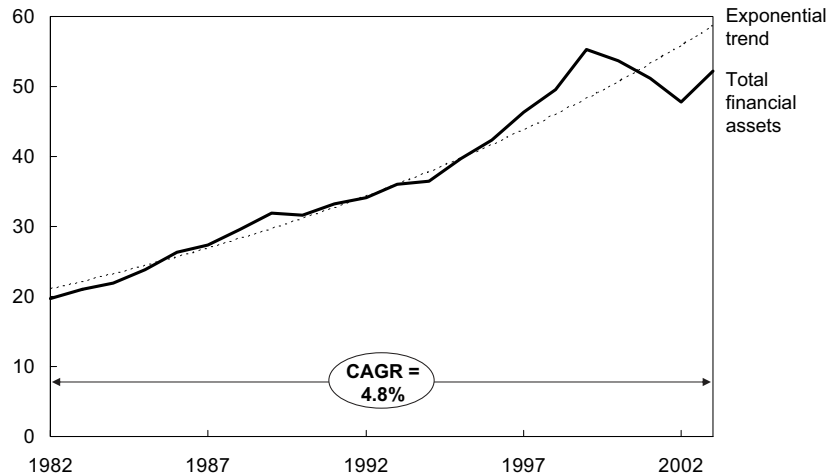
Household financial assets grew at 4.8 percent annually over the 1982-2003 period (Exhibit 2). Financial asset growth was relatively stable prior to the late 1990s, when extraordinary equity market gains and subsequent declines caused an increase in volatility.

We observe differences across countries in four dimensions of household financial wealth: drivers of accumulation, asset allocation patterns, appreciation rates, and wealth effects on savings behavior.

Exhibit 2

HOUSEHOLD FINANCIAL ASSETS FOR SELECTED COUNTRIES* 1982-2003

\$ Trillions, 2000



* Includes US, Italy, Japan, UK (Germany excluded due to limited historical data)
Source: McKinsey Global Institute Household Financial Wealth Model

Drivers of asset accumulation differ across countries. The stock of financial assets held by households can change in two ways: households can purchase new assets and existing asset holdings can be revalued because of changing market prices.⁸ Our discussion of wealth accumulation includes changes in both (see box, "Basic facts on savings and wealth accumulation," for details).

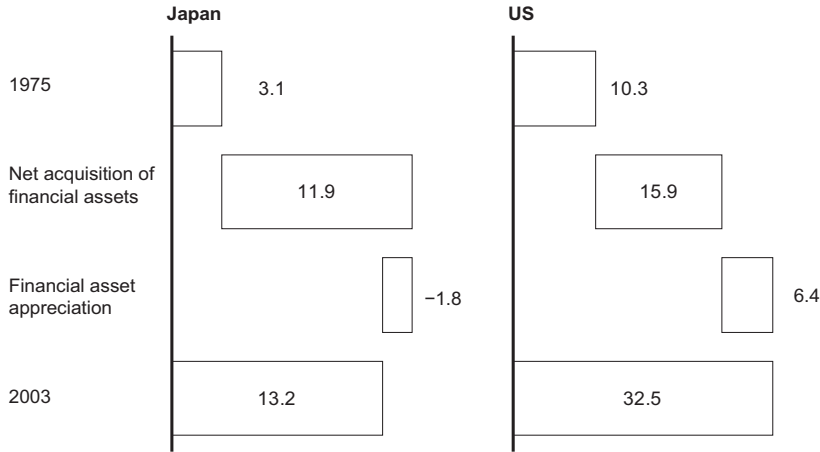
Japan and the US present contrasting examples of how households accumulate assets. In Japan, where asset appreciation was a net negative, purchases of new assets are the sole driver of financial asset accumulation. In the US, the situation is much different. From 1975 to 2003, almost 30 percent of the change in US household financial assets results from asset appreciation (Exhibit 3). From an overall household wealth perspective, in the US, the traditional notion of asset accumulation through "savings out of income" is being displaced by financial and real estate asset appreciation as the channel of wealth accumulation (Exhibit 4).

⁸ See "Technical Notes" for a definition of the relationship between saving out of income as defined in the national accounts, and the net acquisition of financial assets as defined in the flow of funds accounts.

Exhibit 3

DRIVERS OF FINANCIAL ASSET GROWTH IN THE US AND JAPAN

Change in households financial assets 1975-2003
\$Trillions, 2000; percent

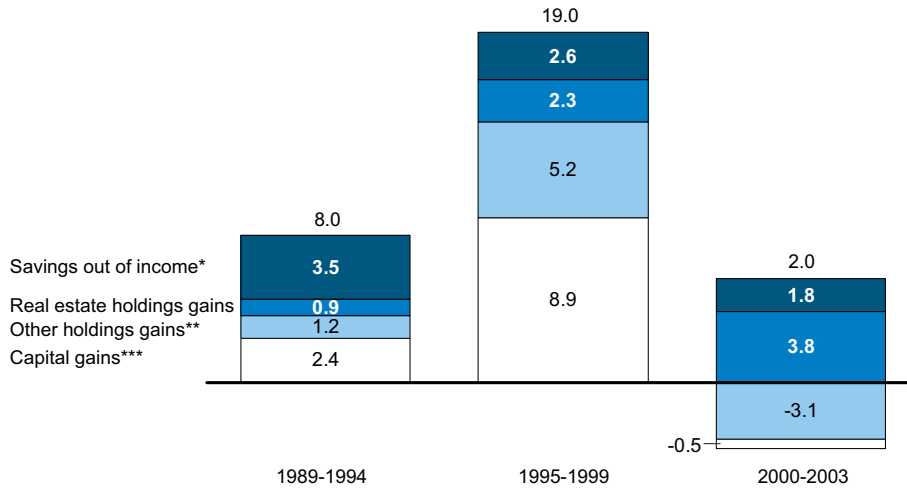


Source: Bank of Japan; Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan; Federal Reserve Flow of Funds

Exhibit 4

CONTRIBUTION TO CHANGE IN US HOUSEHOLD NET WORTH BY ASSET CATEGORY

\$ Trillions, 2000



* Tangible and financial net investment (equivalent to savings from income)

** Includes holding gains from equity in noncorporate business, life insurance/pension fund reserves, bank personal trusts, consumer durable goods, equipment/software, and a statistical discrepancy

*** On equities and mutual funds

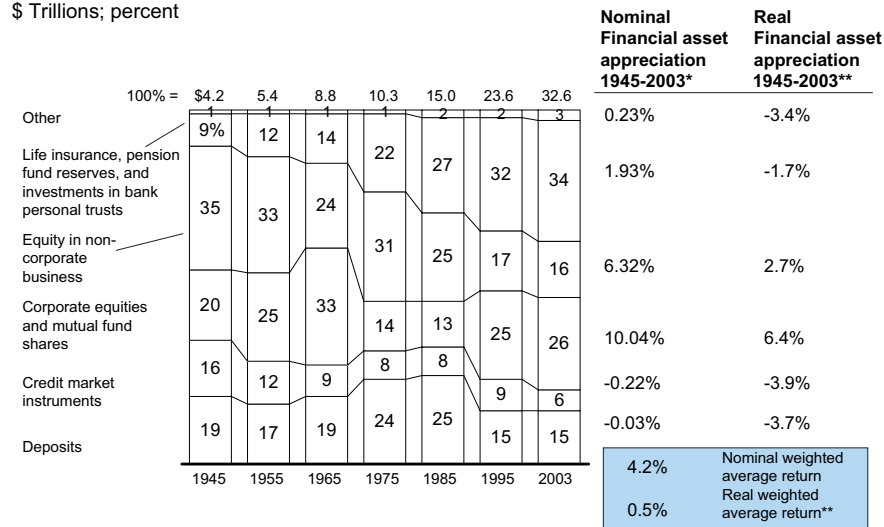
Source: Federal Reserve Flow of Funds; MGI analysis

Household asset allocation differs across countries. The ways households allocate their financial assets is an important driver of overall asset accumulation, because the mix of instruments held by households determines the rate of return they receive. Across countries, households are making different asset allocation decisions. In the US, for example, only 15 percent of household assets remained in deposits in 2003 (down from 25 percent in 1975; Exhibit 5), while that figure in Japan was 52 percent (marginally down from 54 percent in 1975; Exhibit 6).

Exhibit 5

US HOUSEHOLD FINANCIAL ASSET DISTRIBUTION 1945-2003

\$ Trillions; percent



* Computed from the flow of funds as the residual of the annual change in asset value and annual net acquisition of this asset

** Based on Personal Consumption Expenditures Price Deflator, average inflation (1945-2003) of 3.7%

Source: Team analysis, Flow of Funds

Rates of financial asset appreciation differ across countries.⁹ Household asset allocation, rates of inflation, and equity market performance largely explain differing real rates of financial asset appreciation seen across countries. Japan, Germany and Italy have all experienced negative rates over the past 30 years, while the UK and US have enjoyed positive rates (Exhibit 7).

9 Total returns on financial assets, as commonly understood, are a combination of realized capital income and unrealized asset appreciation. Realized capital income, including interest and dividends, is by convention counted as personal income, a portion of which is saved. The revaluation of asset holdings therefore only captures unrealized asset appreciation (or depreciation). All references to *financial asset appreciation (FAA)* constitute these unrealized gains, and are adjusted for inflation. Realized capital gains are not counted in the national accounts as savings, see Reinsdorf, 2004. We capture the impact of realized capital gains on purchases of new assets because asset accumulation is driven by the net acquisition of financial assets as measured by the flow of funds accounts (see "Technical Notes" for details).

Exhibit 6

JAPANESE HOUSEHOLD FINANCIAL ASSET DISTRIBUTION 1975-2003*

¥ Trillions; percent

	1975	1980	1985	1990	1995	2000	2003	Nominal*** avg. rate of return 1975-2001	Real**** avg. rate of return 1975-2001
100%=	¥342	480	691	1,041	1,260	1,430	1,467	0.69%	-1.87%
Others**	9%	8	7	6	6	5	6	-0.56%	-3.12%
Trust funds	6	5	6	5	5	2	1	-0.29%	-2.85%
Insurance and pension reserves	13	14	17	21	26	28	28	0.00%	-2.56%
Bonds	4	5	4	3	2	2	2	0.25%	-2.30%
Equities	14	13	15	20	14	12	11	5.78%	3.22%
Transferable deposits	10	7	5	5	6	9	13	-0.11%	-2.66%
Time deposits	44	48	46	40	41	42	39	-0.01%	-2.57%

* Since only asset stocks are available for 2002 and 2003, asset distribution is available up to 2003 but returns are only available up to 2001

** Refers to the regrouped section of the new SNA (includes assets such as investment trusts and derivatives)

*** Applying the flow of funds portfolio distribution and implied financial asset appreciation

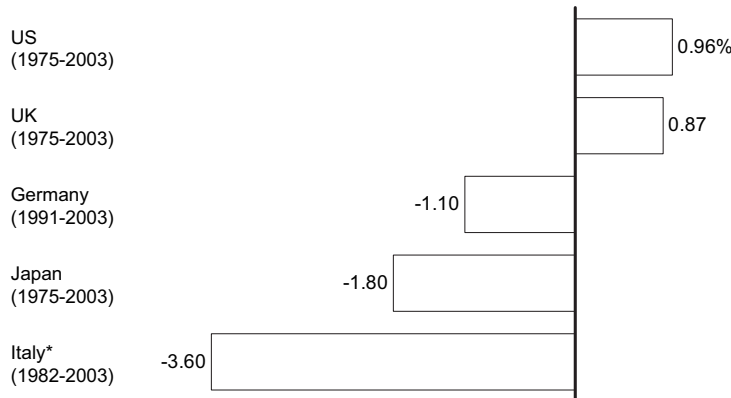
**** Based on Personal Consumption Expenditures Price Deflator, average inflation 1975-2001 of 2.56%

Source: Team Analysis, Japanese Flow of Funds, Bank of Japan

Exhibit 7

**REAL RATE OF FINANCIAL ASSET APPRECIATION
IN THE DEVELOPED WORLD**

Percent, adjusted for inflation



* Data inconsistency in 1986 necessitated an assumption (used 1985 value)

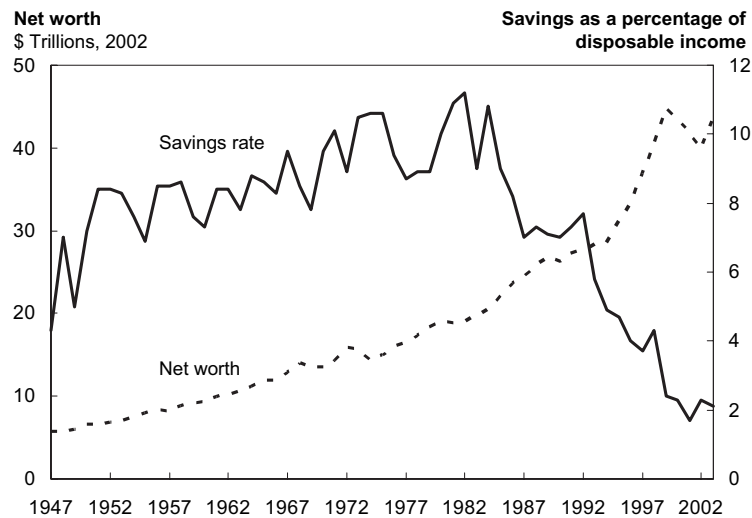
Source: McKinsey Global Institute Household Financial Wealth Model

In Japan, the relatively low rate of financial asset appreciation is related to households' overwhelmingly allocating to lower-yielding assets, such as transferable deposits (which from 1975 to 2001 yielded an average real return -2.7 percent) and time deposits (with an average real return of -2.6 percent over the period).

Wealth effects on savings behavior are rising in importance. When households experience gains on financial and real estate assets, they tend to consume more. This is collectively known as "wealth effects" on consumption (and, by extension, savings). Empirical research in the US has estimated that for every \$1 increase in real estate and financial wealth, consumption is increased by 5 to 8 cents and 3 to 5 cents, respectively.¹⁰ Therefore, fluctuating equity and housing markets impact household savings behavior. As the stock of assets rise, so too does the importance of wealth effects on savings (see Exhibit 8 for the US example). Similar trends are observed in Germany, Italy, and UK.

Exhibit 8

US HOUSEHOLD SAVINGS RATE AND NET WORTH 1947-2002



Source: Federal Reserve Flow of Funds; BEA

¹⁰ For more information on wealth effects, see Davis and Palumbo (2001) and Case, Quigley and Shiller (2000).

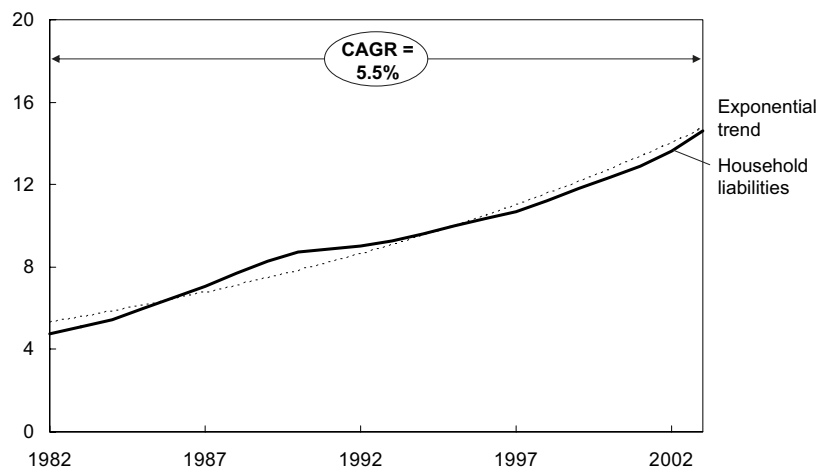
Household liabilities

Household liabilities have grown at a faster pace than household *financial* assets, with a 5.5 percent compound annual growth rate since 1982 (Exhibit 9).

Exhibit 9

HOUSEHOLD LIABILITIES FOR SELECTED COUNTRIES* 1982-2002

\$ Trillions, 2000



* Includes US, Italy, Japan, Korea, UK (Germany excluded due to limited historical data)
Source: McKinsey Global Institute Household Financial Wealth Model

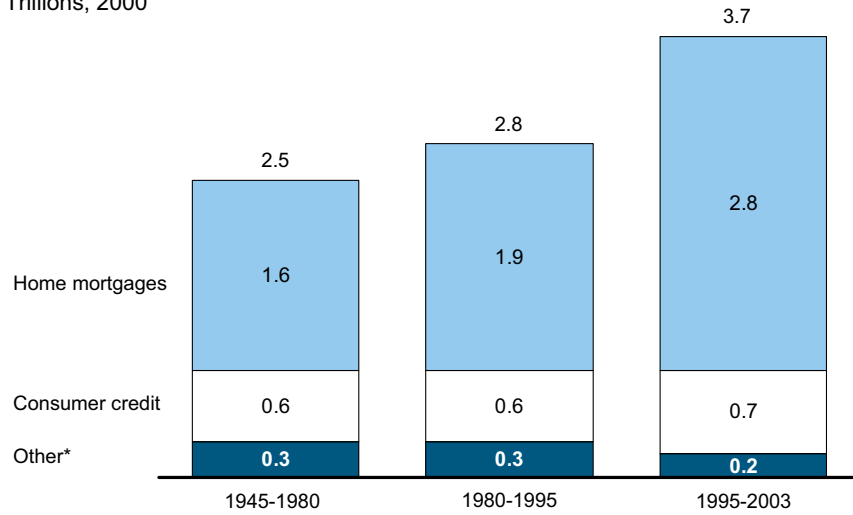
Real estate appreciation driving growth in mortgages. Markets such as the US and UK are experiencing a strong appreciation in real estate values. In these countries, growing mortgage debt has been driving increases in liability accumulation (in the US and UK, home mortgages have seen annual growth of 6.5 percent and 7.5 percent, respectively, since 1982; see Exhibit 10 for the US example and Exhibit 11 for the UK example).

Increased access to liabilities driving liability overall accumulation. Other countries with less developed banking sectors, such as Italy, have witnessed very large increases in liabilities (e.g., 7.5 percent annual growth since 1982) as borrowing restrictions have gradually decreased (with, for example, the level of down payment required to purchase housing falling from approximately 50 percent to 10 percent).

Exhibit 10

PERIOD CHANGE IN US HOUSEHOLD LIABILITIES BY TYPE

\$ Trillions, 2000

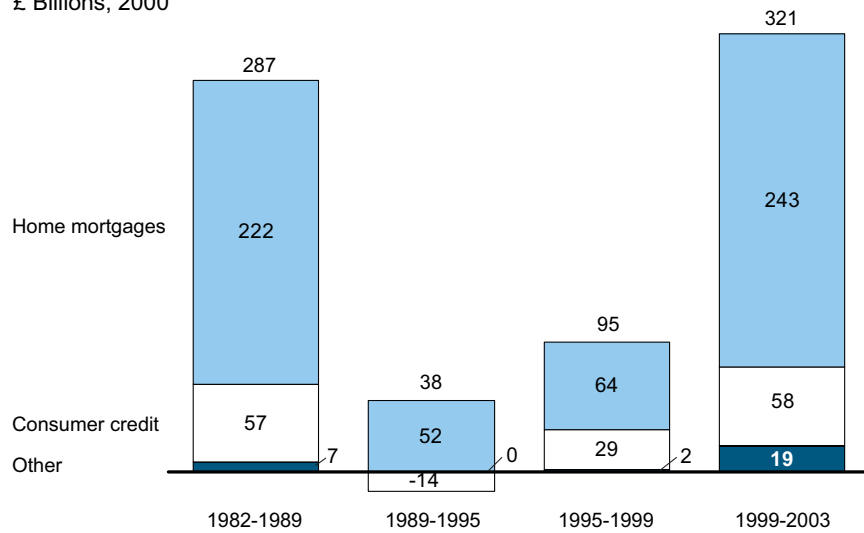


* Includes municipal securities, bank loans, commercial mortgages, security debt, trade payables, and unpaid insurance premiums
 Source: Federal Reserve Flow of Funds; MGI analysis

Exhibit 11

PERIOD CHANGE IN UK HOUSEHOLD LIABILITIES BY TYPE

£ Billions, 2000



Source: ONS (Blue Book, UK StatBase)

Younger cohorts borrowing more. Across countries, younger cohorts are generally more willing to take on higher levels of debt. For example, cohort analysis in Japan shows higher levels of liability accumulation by younger cohorts.

DEMOGRAPHIC DRIVERS OF CHANGE IN HOUSEHOLD NET FINANCIAL WEALTH

The accumulation of household net financial wealth is closely linked to the demographic profile of a country's households. The developed world is going through a major demographic transition. Some countries, such as Japan and Italy, are already experiencing significant change, while others, such as the US, will soon experience significant aging as the large baby boomer cohort retires over the next decade:

- **Households available to create wealth will be limited** by slowing population growth and reduced household formation.
- **Financial asset accumulation will slow** because falling prime saver ratios and cohort-specific behavioral changes will lower average saving per household.
- **Liability growth will slow or remain on trend** as higher borrowing by younger cohorts mitigates positive impact of older households' reducing liabilities.

This section discusses in detail these sources of change and outlines the key differences across countries.

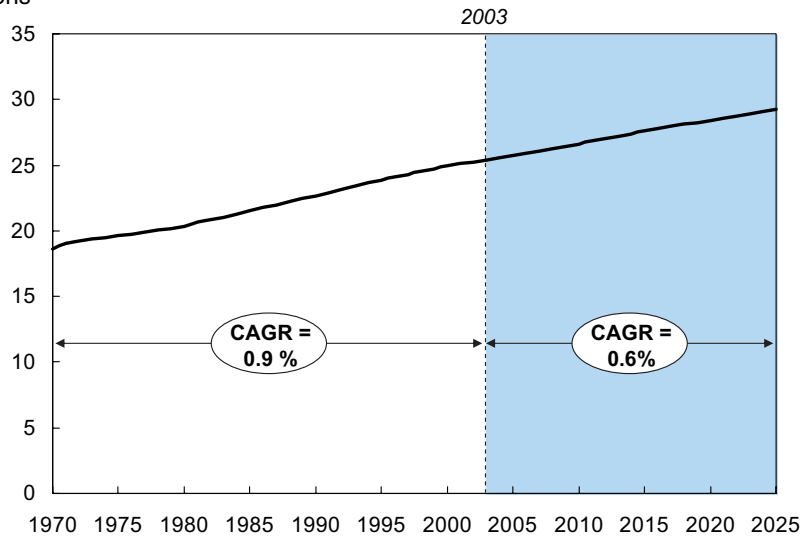
Slowing population growth will reduce household formation

Lower birth rates in the developed world are driving a sustained slowdown in the growth rate of household formation. The rate of deceleration varies sharply across countries. The UK, for example, is experiencing relatively moderate declines (from 0.9 percent historically to 0.6 percent in the next 20 years; Exhibit 12). In Japan, low birth rates and immigration flows will combine to cause a relatively severe and abrupt deceleration in the number of households in the next 20 years (from 1.6 to 0.2 percent; Exhibit 13).

Exhibit 12

NUMBER OF UK HOUSEHOLDS 1970-2025

Millions

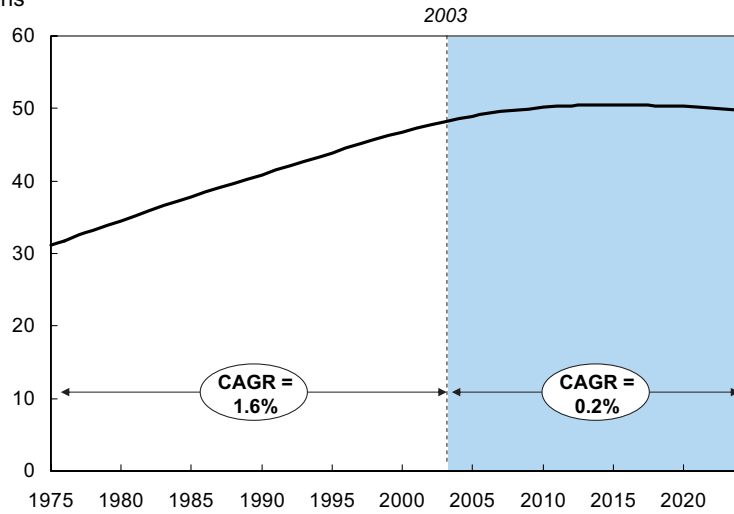


Source: ONS; Government Actuary, Office of the Deputy Prime Minister (ODPM); Scottish Executive; MGI estimates

Exhibit 13

NUMBER OF HOUSEHOLDS IN JAPAN 1975-2024

Millions



Source: National Institute of Population and Social Security Research, Japan

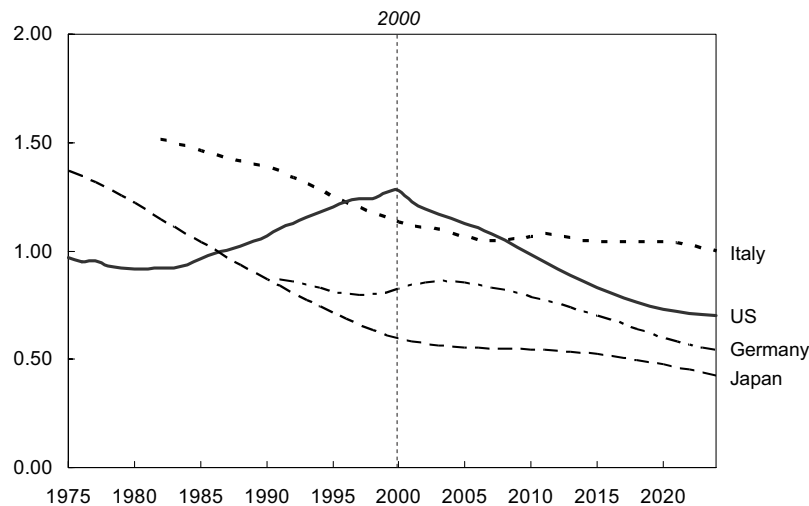
Financial asset accumulation will be slowed by lower average savings per household

Average household savings will be lower because there will be fewer households in their prime saving years; moreover, in the US and Japan, prime saver households that consume more and save less (relative to prime saver households in the past) will become increasingly dominant.

Prime saver ratio is declining. The prime saver ratio measures the number of households in their prime saving years relative to the number of elderly households who save at lower rates or dissave. Comparing prime saver ratios across major developed economies reveals an important inflection point around 2000 (Exhibit 14).

Exhibit 14

RATIO OF HOUSEHOLD PRIME SAVERS* TO ELDERLY IN 4 MAJOR ECONOMIES 1975-2024



* Prime Savers defined as the 20-year age band with maximum savings (35-54 in US, 45-64 in Italy, 35-54 in Germany; 30-50 in Japan)
Source: McKinsey Global Institute Household Financial Wealth Model

Prior to 2000, Japan and Italy were experiencing systematic declines in their prime saver ratios, as their populations passed through major demographic transitions, while Germany was relatively flat and the US was experiencing a very robust increase its prime saver ratio. However, after 2000, the US entered a new phase of systematic declines in its prime saver ratio, which Germany will join 5 years later, while Japan and Italy stabilize at very low levels.

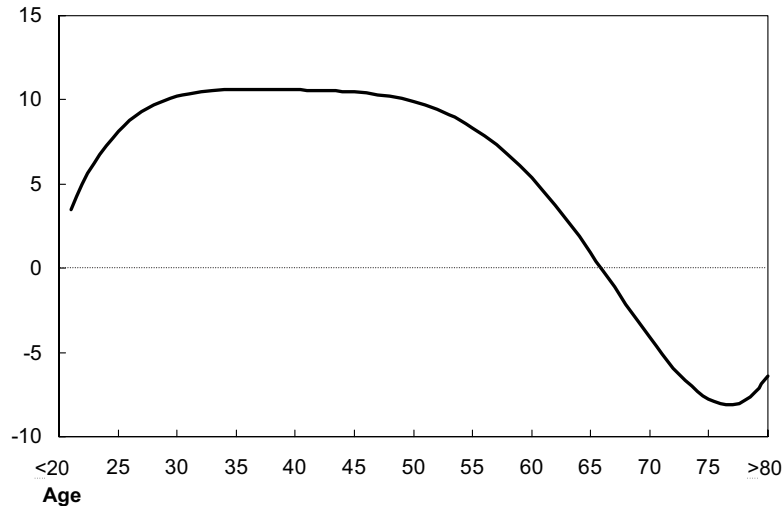
The declining prime saver ratio will moderate asset accumulation because aging households are moving into the low saving and dissaving parts of their life cycle.

- **Age-based lifecycle savings behavior impacts savings and wealth accumulation.** Country-specific research reveals a wide range of age-based lifecycle savings patterns. The US, Japan, and Germany exhibit the traditional "hump-shaped" lifecycle behavior, with savings levels high between, roughly, ages 30 and 50, then falling off in older age (exhibits 15-17); Italy demonstrates a flatter lifecycle savings curve (Exhibit 18); and the UK (Exhibit 19) demonstrates a counter-intuitive profile, with increased savings in older age.

Exhibit 15

US LIFECYCLE SAVINGS CURVE

Annual savings per household – cohort 1945-54
\$ Thousands, 2000

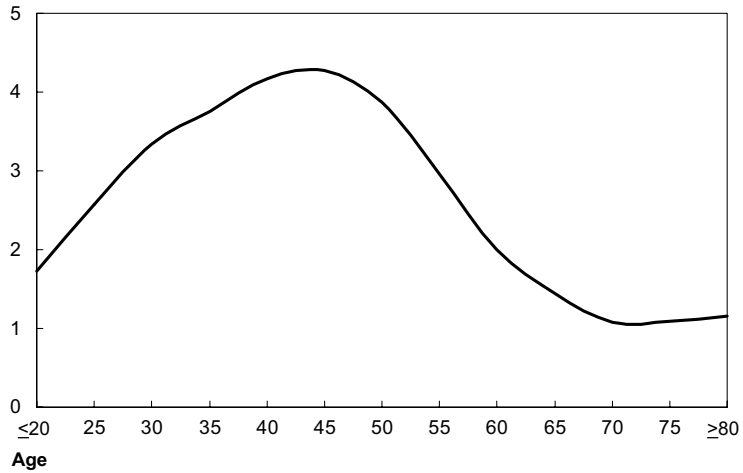


Source: Bureau of Labor Statistics (BLS) Consumer Expenditure Survey; MGI estimates

There are a number of explanations for these differences. One is that many countries have tight constraints on borrowing. In Italy, for example, home buyers needed to supply a 50 percent down payment, which has historically led to high savings rates among households in their 20s and 30s. This picture contrasts sharply with that in the US, where a down payment of 10 percent is usually sufficient and thus the desire to own a home does less to encourage higher savings.

Exhibit 16
LIFECYCLE SAVINGS CURVE FOR GERMANY

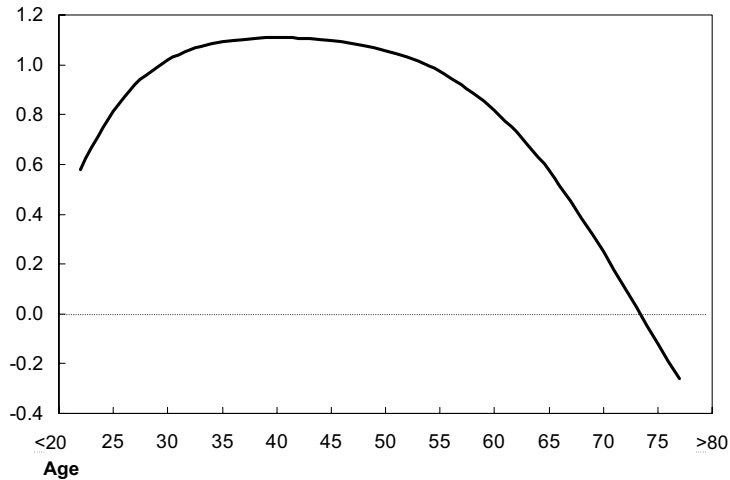
Annual savings per household – representative cohort*
€ Thousands, 2000



* Not calibrated to the national account levels
Source: Börsch-Supan; McKinsey Global Institute Household Financial Wealth Model

Exhibit 17
LIFECYCLE SAVINGS CURVE FOR JAPAN

Annual savings per household – 1945-49 cohort
¥ Millions, 2000

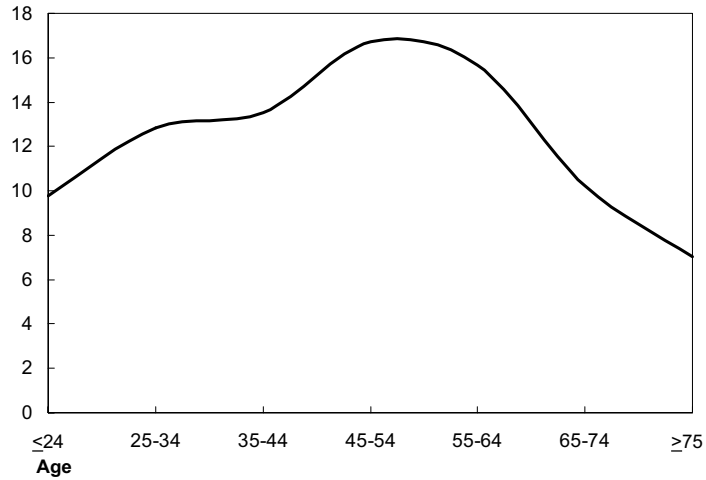


Source: Family Expenditure Survey, Japan; MGI estimates

Exhibit 18

LIFECYCLE SAVINGS CURVE FOR ITALY

Annual savings per household – representative cohort*
€ Thousands, 2000

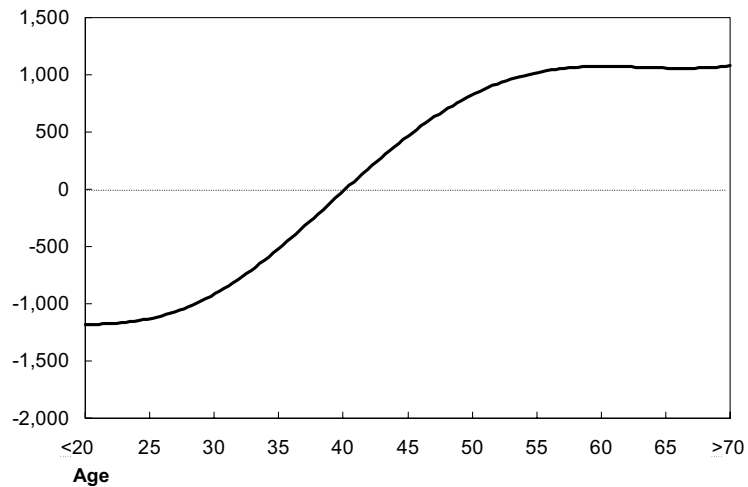


* Not calibrated to the national account levels
Source: Baldini, Mazafferro (2003); McKinsey Global Institute Household Financial Wealth Model

Exhibit 19

UK LIFECYCLE SAVINGS CURVE

Annual savings per household – 1936-40 cohort*
£, 2000



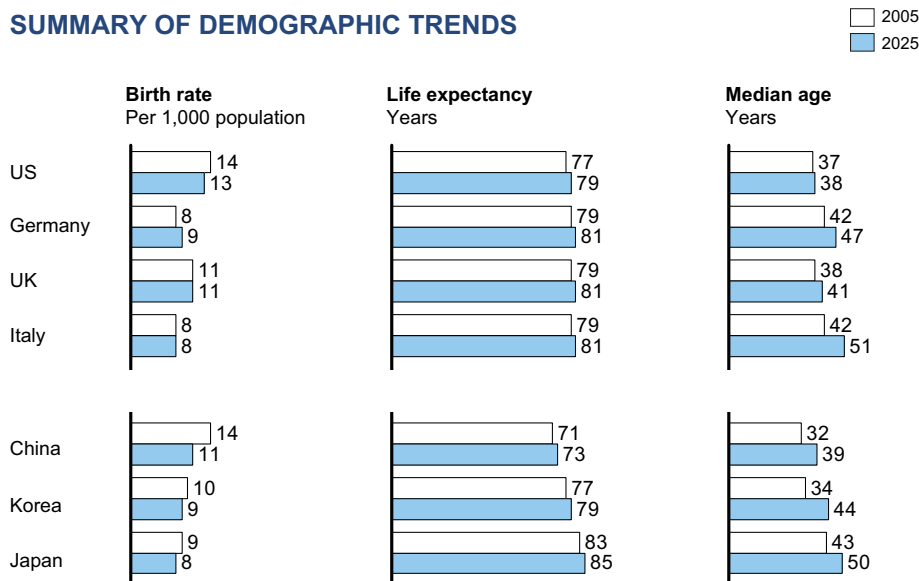
* Not calibrated to national account level
Source: Banks and Rohwedder (2003), MGI analysis

Also, as Orazio Attanasio (2004) has commented, the discontinuities affecting household composition can affect lifecycle savings behavior – female participation in the labor force by itself would be expected to influence age effects on savings. Cultural attitudes and approaches to savings and risk tolerance also help explain the different savings profile around the world.

- **The population of the developed world is shifting towards the lower saving and dissaving parts of their lifecycle.** The pace of aging of the developed world's population differs sharply across countries, due to a range of factors including the size of the baby boom cohort, changes in birth rates, increases in life expectancy. For example, in the next 20 years the median age will increase by 7 years in Japan but only 1 year in the US. Overall, the US and UK will experience the most mild demographic changes while Italy and Japan will have the most severe (Exhibit 20 summarizes all demographic trends).

Exhibit 20

SUMMARY OF DEMOGRAPHIC TRENDS



Source: UN World Population Prospects, 2002 revision (official government statistics may differ slightly)

Lower saving by younger cohorts. A second driver of lower savings per household is the presence of cohort effects – that is, differences in the savings behavior across generations. In both the US and Japan, where we were able to

leverage cohort-level data, younger cohorts were observed to be saving less than previous cohorts. (Exhibit 21 for the US and Exhibit 22 for Japan). As these younger cohorts move up the age band, they will continue to save less than previous cohorts as they follow the expected lifecycle pattern. This will exacerbate the problem of the declining prime saver ratio, as the prime savers will be saving less on average than comparable prime savers in the past.¹¹

Aging population will slow upward trend in household debt

Changes in household liabilities are driven by lifecycle borrowing behavior and the increasing ability and willingness of households to take on debt. Liability to income ratios have been increasing throughout the developed world, as the reduction in borrowing constraints and the creation of new liability products has combined with the increasing willingness of younger generations to assume higher levels of indebtedness.

Going forward, there are two opposing forces which will determine liabilities accumulation: increasing willingness of younger households to take on debt versus the paydown of debt as households age. These trends differ across countries but in general liabilities growth slows or remains on historical trend (see country stories for details). If all else is equal, weaker liability growth will boost NFW accumulation.

DEMOGRAPHIC IMPACT ON HOUSEHOLD NET FINANCIAL WEALTH GOING FORWARD

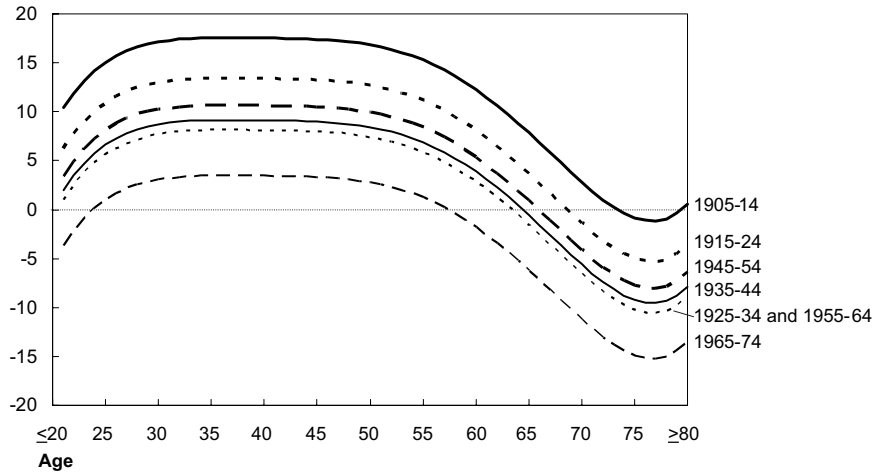
What do these demographic changes mean for the global economy? How does household growth and aging impact financial balance sheets? Our analysis suggests that, in the absence of significant shifts in demographics, in rates of financial asset appreciation, or in savings behavior by households, there will be significant downward pressures on household savings and NFW accumulation globally. The timing and magnitude of the pressure varies across countries, consistent with each country's demographic profile and the nuances of household saving behavior.

¹¹ Cohort effects may be caused by a number of factors, including generational attitudes towards savings, availability of savings opportunities, and household construction. See "Technical Notes" for further discussion.

Exhibit 21

LIFECYCLE SAVINGS CURVES FOR 7 US COHORTS

Annual savings per household
\$ Thousands, 2000

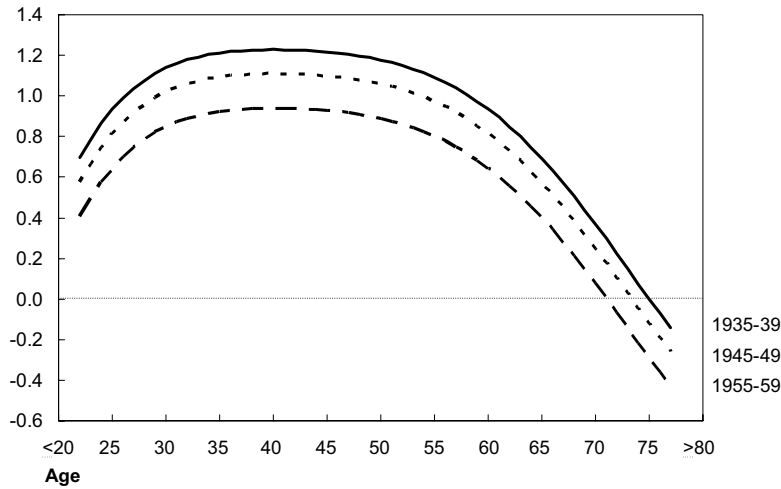


Source: BLS Consumer Expenditure Survey; MGI estimates

Exhibit 22

LIFECYCLE SAVINGS CURVES FOR 3 JAPANESE COHORTS

Average savings per household
¥ Millions, 2000



Source: Family Expenditure Survey, Japan; MGI estimates

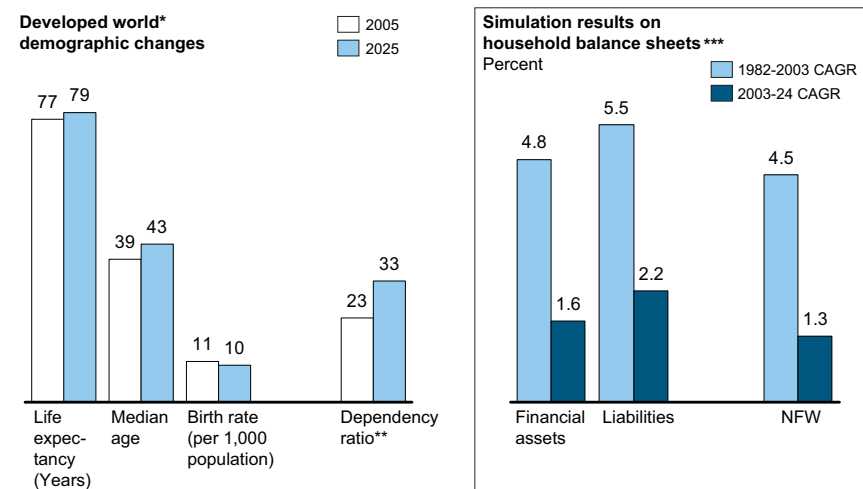
This section describes the aggregate global projection of the demographic impact, and provides an overview of results by individual country.

Aggregate results show a strong demographic impact

Overall, our simulation projects a decline in growth of household NFW across the developed world. By 2024 NFW will fall some 36 percent, or by \$31 trillion, below what it would have been had the higher historical growth rates persisted. The slowdown in savings flows contribute significantly to a drop in the growth rate of household financial assets, from 4.8 to 1.6 percent; at the same time, growth in financial liabilities will fall from 5.5 to 2.2 percent. When netting out the financial assets and liabilities, the growth rate of NFW will decline from 4.5 to 1.3 percent (exhibits 23-27).

Exhibit 23

DEMOGRAPHIC TRENDS AND DECLINING GROWTH RATE IN FINANCIAL ASSETS, LIABILITIES, AND NET FINANCIAL WEALTH



* As defined by the UN to include all regions of Europe plus Northern America, Australia/New Zealand and Japan
 ** Defined as the ratio of the population aged 65 years or over to the population aged 15-64
 *** Combined results for US, UK, Japan, Italy (Germany excluded due to lack of historical data)
 Source: UN World Population Prospects (2002 revision); McKinsey Global Institute Household Financial Wealth Model

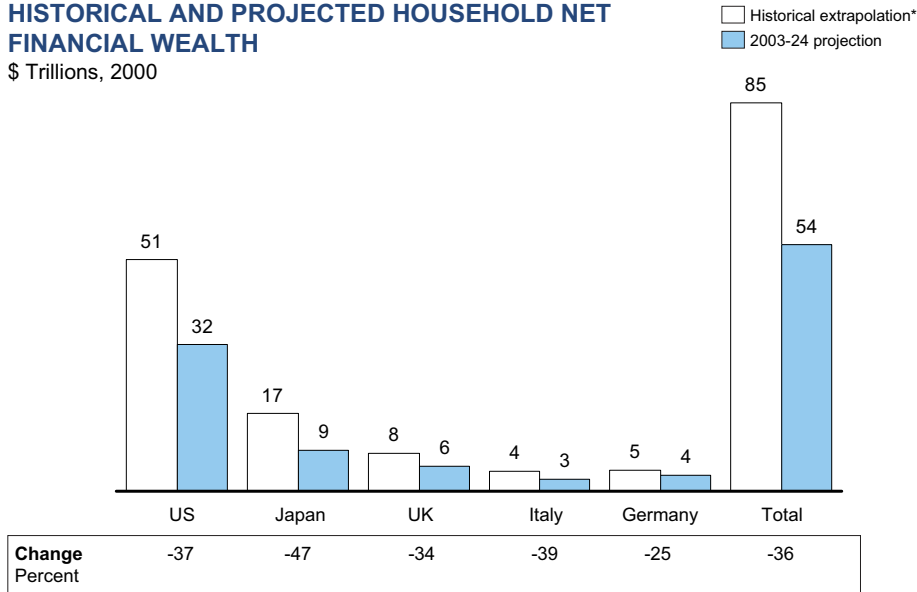
Country results vary in severity

While all the countries we have analyzed will experience a decline in the growth rate of household wealth accumulation, the magnitude and timing of the decline differs dramatically. Overall, Japan and Italy have the most severe declines, while the US and UK have the most moderate declines.

Exhibit 24

HISTORICAL AND PROJECTED HOUSEHOLD NET FINANCIAL WEALTH

\$ Trillions, 2000

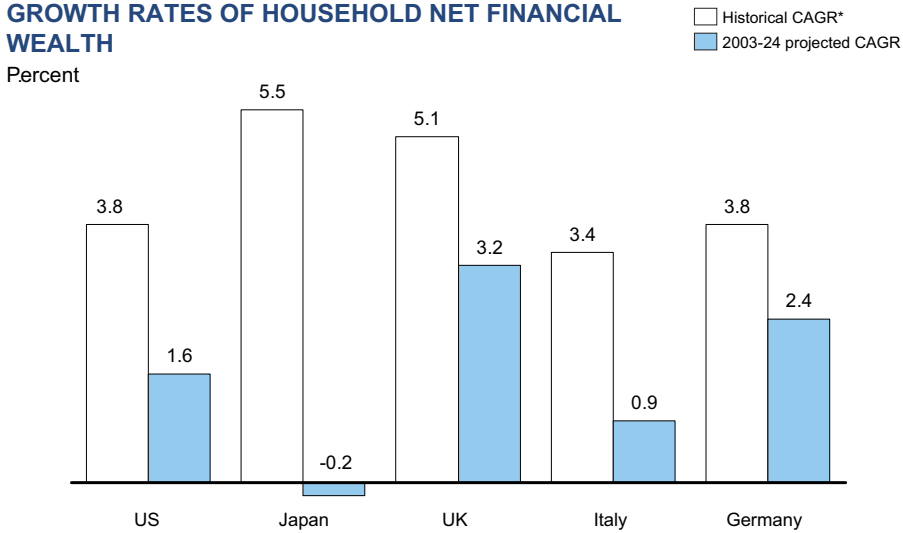


* US, 1975-2003; Japan, 1989-2003; UK, 1975-2003; Italy, 1986-2003; Germany, 1991-2003
 Source: McKinsey Global Institute Household Financial Wealth Model; xe.com exchange rates

Exhibit 25

GROWTH RATES OF HOUSEHOLD NET FINANCIAL WEALTH

Percent



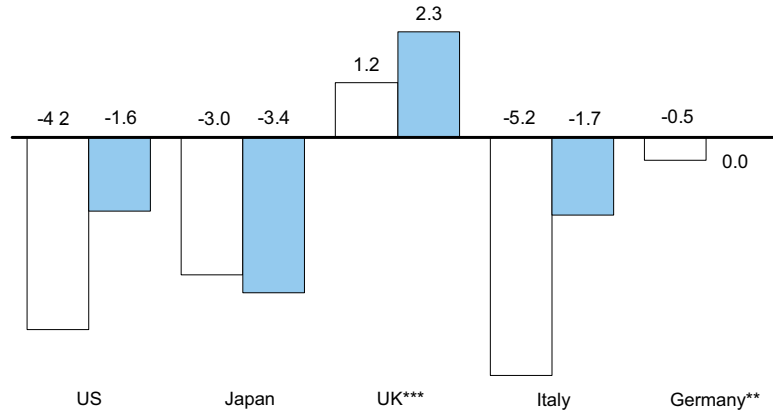
* US, 1975-2003; Japan, 1975-2003; UK, 1975-2003; Italy, 1986-2003; Germany, 1991-2003
 Source: McKinsey Global Institute Household Financial Wealth Model

Exhibit 26

SAVINGS FLOWS GROWTH RATES

Percent

□ Historical CAGR*
 ■ 2003-24 projected CAGR



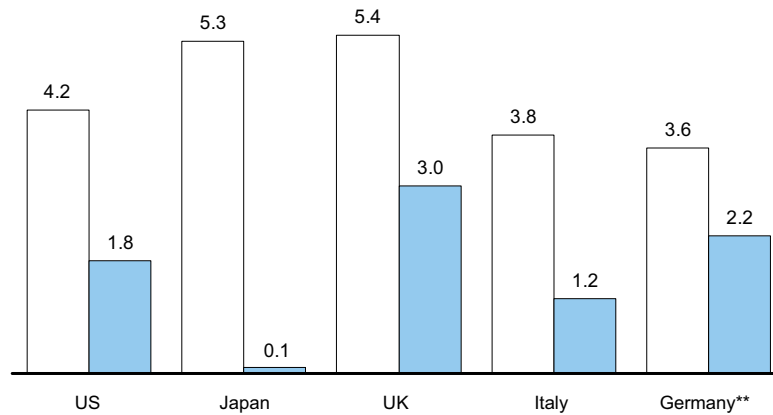
* US, 1975-2003; Japan, 1975-2003; UK, 1975-2003; Italy, 1986-2003; Germany, 1991-2003
 ** Limited historical data for Germany due to reunification
 *** Due to unique UK lifecycle saving curve where older households save more
 Source: McKinsey Global Institute Household Financial Wealth Model

Exhibit 27

GROWTH RATES OF HOUSEHOLD FINANCIAL ASSET ACCUMULATION

Percent

□ Historical CAGR*
 ■ 2003-24 projected CAGR



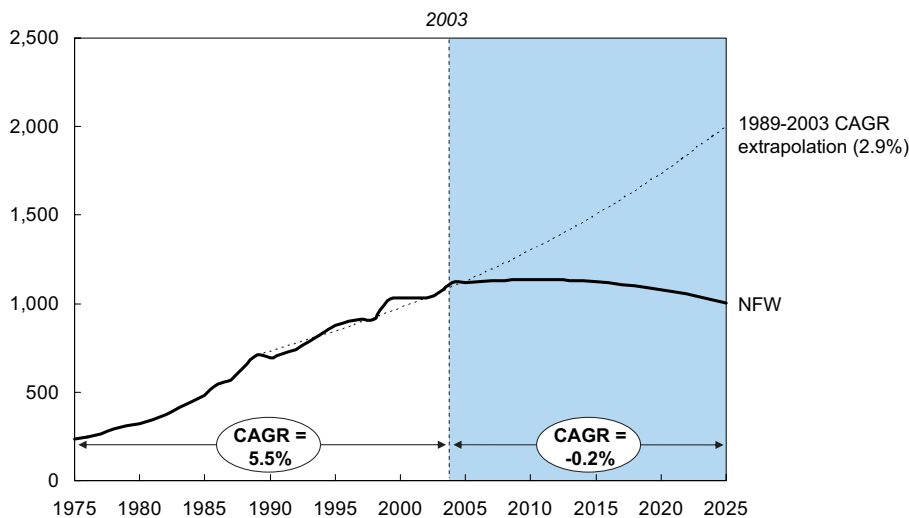
* US, 1975-2003; Japan, 1975-2003; UK, 1975-2003; Italy, 1986-2003; Germany, 1991-2003
 ** Limited historical data for Germany due to reunification
 Source: McKinsey Global Institute Household Financial Wealth Model

- Japan.** The most dramatic decline in household financial wealth will be Japan's, where the growth rate will drop by 3.1 percentage points from the extrapolated historical trend line to -0.2 percent annually. A combination of a rapidly aging population, very low birth rates, low returns on financial assets, a steep lifecycle savings curve, and negative cohort effects result in a strong demographic pressure, reducing overall household wealth accumulation (Exhibit 28).

Exhibit 28

**TOTAL NET FINANCIAL WEALTH – JAPANESE HOUSEHOLDS
1975-2024**

¥ Trillions, 2000



Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan, Family Expenditure Survey, Japan; McKinsey Global Institute Household Financial Wealth Model

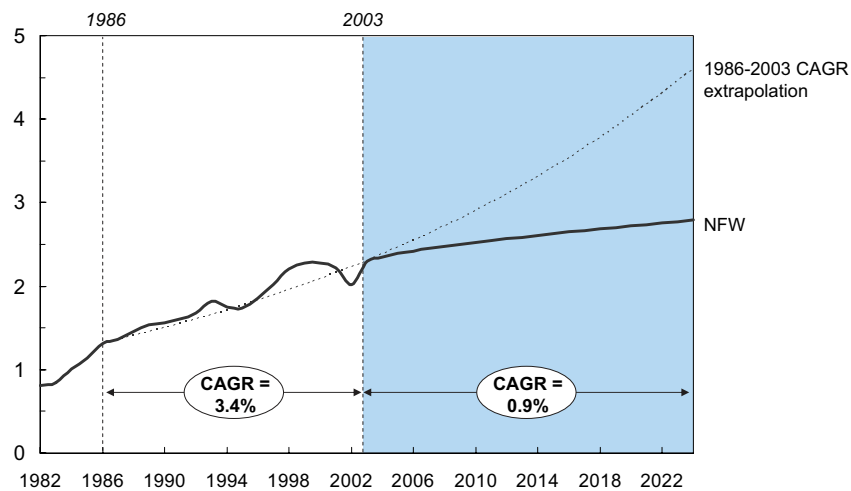
- Europe.**¹² Europe presents a broad spectrum of results. Italy will experience a relatively large decline in its wealth accumulation growth rate, falling 2.5 percentage points to a projected growth rate of 0.9 percent, due to its significantly aging population. However, these results are muted due to the relatively flat lifecycle savings curve.

12 As Europe integrates and grows to encompass fast-growing and younger developing economies, individual country findings will be increasingly subject to a broader range of forces – the EU picture as a whole may improve from a demographic and financial asset appreciation perspective and individual countries, such as Italy, may benefit from higher returns and easier access to regional savings pools.

The declines are less marked in Germany and the UK (growth rates declining by 1.4 percentage points to a projected growth rate of 2.4 percent and 1.9 percentage points to a projected growth rate of 3.2 percent, respectively), due to Germany's higher savings rates and the UK's healthier demographics (exhibits 29-31). However, for these countries cohort effects were not explicitly modeled (see “Technical Notes” for details).

Exhibit 29

TOTAL NET FINANCIAL WEALTH – ITALIAN HOUSEHOLDS 1982-2024
 € Trillions, 2000



Source: PFA database (Italian EFIC); Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

- **US.** The US will experience a moderate decline in the growth rate of household net financial wealth (declining 2.2 percentage points to a projected growth rate of 1.6 percent). Reduced saving among younger cohorts is responsible for a large part of the US decline, while the strong historical rate of financial asset appreciation and relatively mild demographics work to mitigate the decline (Exhibit 32).

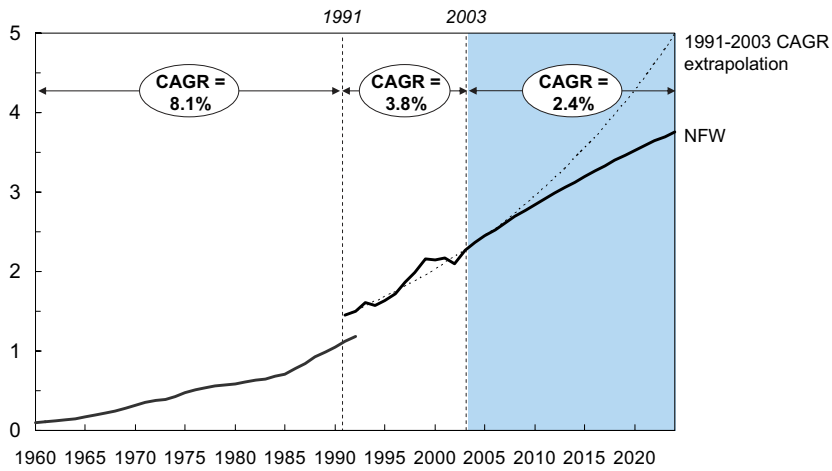
Impact on financial asset appreciation is ambiguous

The impact of the demographically driven decline in savings on financial asset appreciation is unclear. An important determinant is whether demographic

Exhibit 30

TOTAL NET FINANCIAL WEALTH – GERMAN HOUSEHOLDS 1960-2024

€ Trillions, 2000

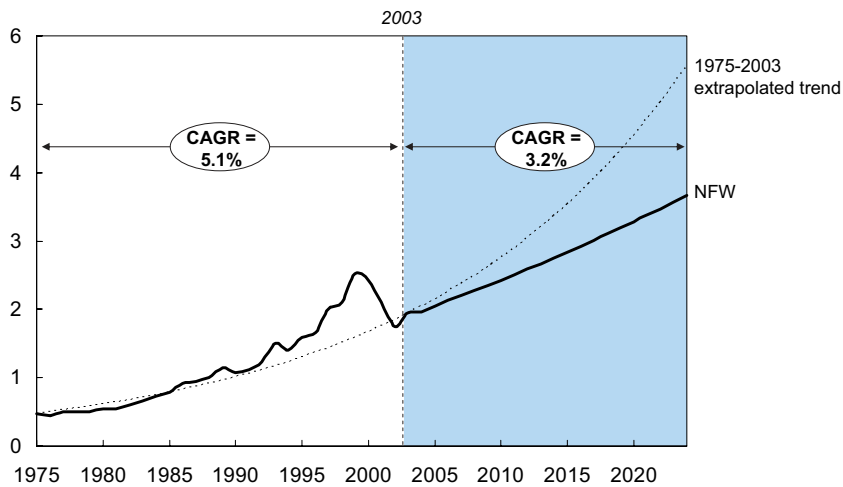


Note: Estimated for the former West Germany between 1960 and 1991
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

Exhibit 31

TOTAL NET FINANCIAL WEALTH – UK HOUSEHOLDS 1975-2024

£ Trillions, 2000

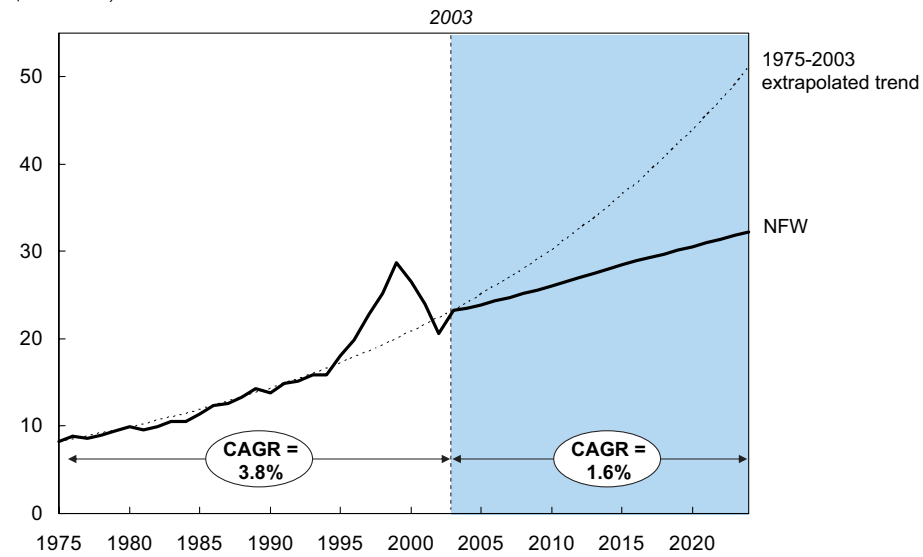


Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Wealth Model

Exhibit 32

TOTAL NET FINANCIAL WEALTH – US HOUSEHOLDS

\$ Trillions, 2000



Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Wealth Model

forces will reduce the rate of domestic investment by more than it reduces saving. For example, if investment falls faster than savings because of reduced capital requirements to support a slower-growing labor force, then, all else equal, rates of return on domestic capital will likely fall. Moreover, it is unclear to what extent demographic change is factored into today's prices. Empirical analysis is inconclusive on the relative impacts of demographics on savings and investment, as is direct empirical analysis on the impact of demographic change on rates of financial asset appreciation (see Bosworth, 2004, for a review of existing research on this topic).

Cross-border capital flows unlikely to make up domestic shortfalls

Reductions in global savings suggest implications for the balance of international capital flows. Historically, Japan has been an important net supplier of capital to countries with low domestic savings, such as the US. Foreign countries have been willing to lend to the US and other deficit countries the funds necessary to finance their domestic demand. For example, the US has run current account deficits for the last 20 years (excluding the small Gulf

War-related surplus in 1991), while Japan has run large surpluses over the same period. Japan's current and projected demographically driven savings decline, however, calls into question the sustainability of such a paradigm. To the extent that reductions in household savings are reflected in national savings, Japan will no longer have the savings to continue such lending.¹³ Factoring in Europe's demographic situation, which is also pointing to declines in savings, an adjustment in global flows and prices will need to occur.

The nature of this adjustment is open to debate. Some believe that other foreign sources of capital will emerge, particularly China. A closer look at China reveals, however, that, even with a set of aggressive assumptions (about growth and savings levels), the Chinese economy will not be large enough to supply meaningful levels of capital to the developed world in the next two decades. Chinese urban households are currently far less wealthy than their Japanese and US counterparts (Exhibit 33) and, even if China maintained its string of unprecedented growth, it would still take over three decades to reach Japanese levels of GDP per capita (Exhibit 34). More importantly, for the world to tap into China's pool of savings, the Chinese government would need to liberalize capital controls. Finally, China would have to have enough savings left over after financing massive internal investment needs. The absence of a new large capital supplier will force countries to make difficult choices – such as to raise interest rates to attract scarce capital, to reduce borrowing, or to enact structural reform to achieve higher productivity growth.

NAVIGATING THE DEMOGRAPHIC TRANSITION

The findings discussed above point to a significant demographic pressure on financial wealth accumulation, which, if left unchecked, could have serious consequences for households, domestic economies, and the global economy.¹⁴ What can be done today to preempt such a situation? We have performed sensitivity analyses on key drivers of the country models and discuss the results in this section. Our analysis suggests that demographic pressures on wealth accumulation can be counteracted by other changes, but it will not be easy. Achieving higher rates of asset appreciation is the most effective change across

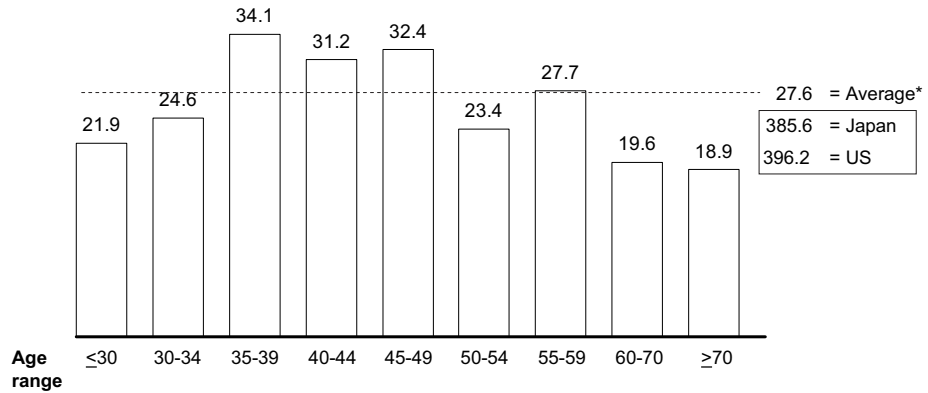
¹³ See in "Technical Notes, "Projections of the Japanese Current Account."

¹⁴ See country chapters for discussion on household and domestic economy implications.

Exhibit 33

AVERAGE AGE GROUP DISTRIBUTION OF ASSETS FOR URBAN HOUSEHOLDS IN CHINA 2002

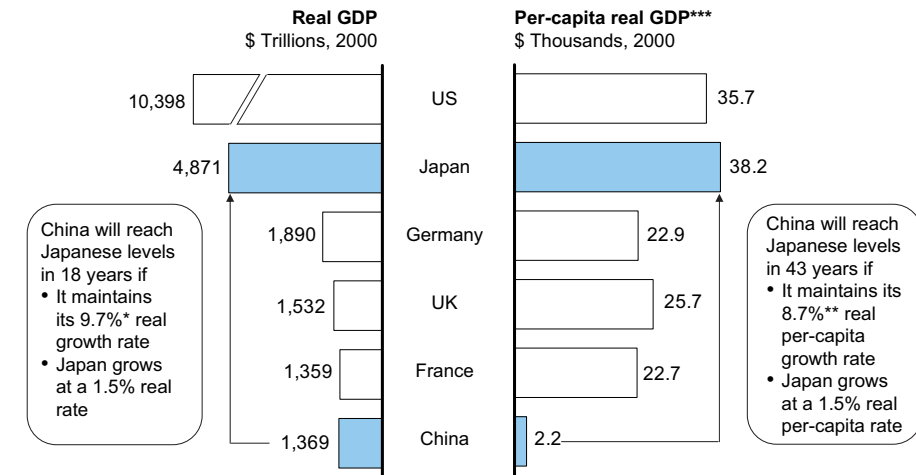
\$ Thousands



* Sample weighted; US and Japan are for 2001
 Source: China Statistics Bureau; Survey of Consumer Finance, US; Family Expenditure Survey, Japan

Exhibit 34

REAL GDP AND REAL PER-CAPITA GDP OF MAJOR WORLD ECONOMIES 2003

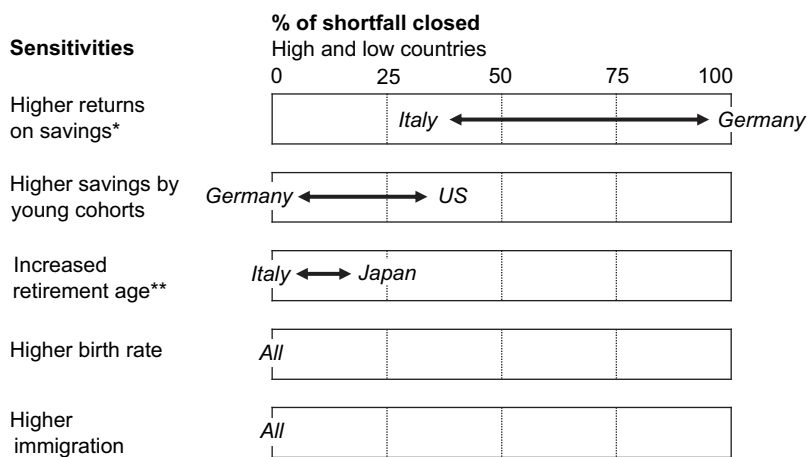


* Equals CAGR for real GDP in China, 1990 and 2003
 ** Equals CAGR for real per-capita GDP in China, 1990-2003; per-capita real GDP in 2003 for China is urban per-capita GDP, based on an estimate of the GDP for the top 660 cities in China
 *** Not at PPP
 Source: Chinese Statistical Abstract, 2004; Global Insight; MGI analysis

all countries, followed by increasing household saving. Directly changing demographics through changes in birth rates or immigration do not materially affect wealth accumulation over the 20-year period (Exhibit 35). These findings indicate the direction of appropriate policy and individual objectives to respond to the demographic challenge.

Exhibit 35

ADDRESSING THE WEALTH SHORTFALL



* Impact of a 1% increase in rate of financial asset appreciation
 ** Estimated by prolonging peak saving years by 5-10 years
 Source: McKinsey Global Institute Household Wealth Model; MGI analysis

Higher rates of asset appreciation is the most effective change. A key finding from the analysis is that the impact of demographics can be significantly mitigated by material increases in the rate of financial asset appreciation (FAA). For example, in Germany, if the rate of FAA increased from the historical average of -1.1 to 0 percent on average over the next two decades, household net financial wealth would remain on the historical trend line. In the US, the rate of return would need to be more than doubled to have a similar impact. In other countries with negative rates of financial asset appreciation, bringing the rate to 0 percent would significantly increase the NFW projections.

The high sensitivity to the rate of FAA comes from the fact that the rate impacts the stock of total financial assets in contrast to the flow of savings. Given that the stock of financial assets is so large in these developed economies, changes that have an impact on the stock are much more important than changes affecting the flow of savings.

Governments can encourage higher rates of financial asset appreciation by taking various steps including increasing economywide capital efficiency, encouraging more efficient intermediation within the financial sector, and supporting more diverse asset allocation decisions by households. Households can take a more proactive approach to achieving higher returns.

- **Increasing capital efficiency.** Making better use of resources is a key ingredient to higher FAA. Higher productivity leads to efficiency gains and earnings growth, which ultimately lead to higher FAA. Previous MGI research has articulated the key drivers of productivity improvement.¹⁵ Among the most important drivers are:
 - Increasing competition, particularly for protected and/or state-owned enterprises;
 - Encouraging innovation, protecting intellectual property, and the successful adoption of new technologies.
- **More efficient intermediation.** More efficient intermediation encourages higher returns by reducing the share of returns captured by the financial system and increasing the share captured by investors (e.g. reducing spreads between what financial intermediaries earn on their assets and pay on their liabilities). Furthermore, more transparent and liquid systems encourage managers to earn higher returns by exposing lower performers and facilitating quick and decisive investor reaction. Policymakers can improve financial sector efficiency by taking steps to
 - Encourage competition within the financial sector while maintaining appropriate checks and balances to create healthier balance sheets (e.g., in limiting non-performing loans);
 - Enhance legal protections and regulatory transparency (e.g., investor rights, dispute resolution and bankruptcy rules);
 - Reorganize inefficient sectors and institutions (e.g. postal systems).

¹⁵ See "The Economic Growth Potential," McKinsey Global Institute, 2000.

-
- **More diversified asset allocation.** Our research has shown that countries with more diverse asset allocation profiles experience higher rates of FAA. The US and UK had the highest percentage of assets in tradable securities, which carries with it higher risk and volatility but also higher rates of FAA. Increased diversification can be encouraged through
 - Increasing investor access to global opportunities by removing capital controls and other restrictions such as "foreign content restrictions" on retirement savings plans;
 - Creating programs to improve investor education;
 - Creating tax incentives to encourage a more diversified portfolio (e.g., tax breaks for investments in certain investment vehicles).

Changing saving behavior can partially mitigate demographic pressures.

Changes in household saving behavior can affect wealth accumulation, but the magnitude of changes in behavior has to be significant. We tested two potential approaches to changing saving behavior – prolonging peak savings and raising younger generations' savings.

- **Prolonging peak savings years has varying impact, but limited in most countries.** Higher household savings through extending peak income can impact the downward demographic pressure on savings. However, a key challenge to this change is determining the impact on consumption of increases in income. For the purposes of testing the impact, we kept income and consumption constant and prolonged the peak of the lifecycle savings curve by 5 years. A variety of policies could potentially lead to higher savings, such as increases in retirement age.

The impact of this change varies across countries consistent with the shape of the lifecycle savings curve. In Italy, for example, a relatively flat curve limits the impact, with the net financial wealth projection increasing from 0.9 to 1.0 percent, and the shortfall off trend decreasing by 2 percent. Japan, with its steep curve, experiences the most significant benefit, as its net financial wealth projection increases from -0.2 to 0.7 percent and its shortfall decreases by 24

percent. Therefore, the impact of policies that prolong peak savings is highly country-specific.

- **Raising younger generations' savings can have significant impact.**

As discussed earlier, younger generations are saving less. To test the impact of changes in this trend, in the US and Japan, we eliminated the consumption cohort effect for younger households, while allowing the income cohort effect to continue. This results in increased saving by younger cohorts. This type of behavior could be encouraged by policies designed to discourage or postpone consumption, such as encouraging higher proportions of non-cash or deferred compensation, "baby bond" initiatives such as those in the UK, and even imposing mandatory savings programs.

This scenario led to higher savings in both the US and Japan. In Japan, it led to an increase in the growth rate of net financial wealth from -0.2 to 0.8 percent, and closed the shortfall by 26 percent, while in the US, the impact was more dramatic, with an increase in growth rate from 1.6 to 2.4 percent and the shortfall closing by 30 percent. The conclusion from this analysis is that, while very difficult to implement, policies to reduce consumption can be a powerful driver in some countries to mitigate part of the impact from the demographic transition.

Changing demographics, through higher immigration and birth rates, does not materially affect net financial wealth accumulation in the short or medium term. Increasing birth rates is not effective in increasing net financial wealth over the next 20 years because higher birth rates do not produce prime savers for several decades. Increasing immigration, even at the highest levels projected by government statistics, is not large enough to change overall demographic structure, and thus does not materially impact net financial wealth accumulation.

- **Immigration has limited impact on the demographic pressure.**

While immigration is much discussed as a potential solution to aging, even the most aggressive immigration scenarios do not materially change a country's demographic structure over 20 years. In

Germany, household projections by age group were obtained by the Bundesbank, incorporating the most aggressive immigration scenarios (300,000 new immigrants per year, as opposed to 200,000 immigrants per year in the base case).

When the new immigration scenarios were added to the model, however, the results were insignificant, as they increased 2024 total net financial assets by 0.7 percent. The impact was negligible because the most aggressive immigration scenario added only 0.7 million households by 2024, an increase of only 2 percent. It is also worth noting that the weighted average age of the new immigrants is 33, and therefore the opportunity to increase the impact of immigration by adding even younger immigrants is limited. This process to test immigration was replicated in the other countries with similar results. The conclusion from this analysis is that while immigration does improve overall wealth accumulation, the size of the most aggressive policy estimates is not nearly large enough to impact the declining growth rate in household wealth accumulation.

- **Increasing birth rates is ineffective for raising 20-year financial wealth accumulation.** Adopting policies to increase birth rates is another frequently discussed solution to aging. However, given households typically reach their prime saving years between the ages of 30 to 50, the impact of higher birth rates on increasing savings (through more prime savers) will be delayed by several decades. Thus, while higher birth rates is clearly a strong long-term solution, it should not be viewed as an option to counteract the aging of the baby boomers.

2. US: *From Boom to Bust?*

SUMMARY OF FINDINGS

Over the next two decades, demographic trends will create significant downward pressure on US household savings and net financial wealth accumulation, with potentially significant implications for economic growth in the US and globally. Our analysis suggests that – in the absence of changes in population trends, savings behavior, or returns on financial assets – the net financial wealth (NFW) of US households will increase 1.6 percent annually between 2003 and 2024, after increasing 3.8 percent per year between 1975 and 2003.¹ By 2024, this slowing growth will cause NFW to fall some 37 percent, or by \$18.8 trillion, below what it would have been had the 1975 to 2003 growth rates persisted.²

The US is now passing through an important demographic transition. Public discussion about the impact of this transition focuses primarily on how the aging population and, in particular, the imminent retirement of the sizable baby boomer generation, will lower national savings. This discussion often ignores additional important and potent demographic forces, including, the behavioral differences in savings patterns between baby boomers and subsequent

1 Unless otherwise noted, all growth rates are quoted in real terms. Values are quoted in 2000 US dollars.

2 This study assesses the direction, timing, and magnitude of the demographic pressure on household savings and net financial wealth accumulation, using country specific demographic forecasts, empirical observations of historical lifecycle and cohort saving behavior, and historical rates of financial asset appreciation (see "Technical Note" for more details). Our findings should not be interpreted as point forecasts because we do not capture the feedback that will occur as households, markets, and other forces adjust to these demographic changes. For ease of exposition, we use "will" (e.g., savings "will" fall) throughout this document to describe our demographics-driven projections.

generations, the reduction in the growth rate of household formation, and the impact of the demographic transition already under way in many of the world's most important economies. To fully understand the implications of the demographic transition for net financial wealth accumulation, the impact of all these microeconomic forces must be considered and translated into results meaningful for the overall economy.

In this study, we show that the US is passing through an important inflection point. In the past, aging baby boomers supported wealth accumulation as they moved through their peak income and saving years, but the aging factor was overwhelmed by strong behavioral trends to save less. In the next 20 years, however, the baby boomers will enter retirement and will reinforce these behavioral trends to create a significant "headwind" consisting of baby boomers dissaving, younger generations saving less, and a slow down in the growth rate of households. All of this results in a decline in the growth rate of NFW accumulation which is important for households and the overall economy. For households, NFW accumulation is a good proxy for economic well-being because it represents the wealth that can be used to support future living standards. For the economy, there will be less household savings to support a fast-growing retiree population and it will become more difficult to support domestic investment and sustain strong economic growth.

If the US is to navigate smoothly through this demographic transition, US households and their government will need to take actions to increase saving, reduce borrowing, and work to further improve the returns that households obtain on their portfolios. These objectives will be difficult to achieve and will require sustained coordinated efforts by the public and private sector. Moreover, our work in Japan and Western Europe suggests that the US may no longer be able to count on cross-border capital flows to make up for the domestic savings shortfall. Japan and Western Europe are aging more rapidly than the US and are facing even stronger downward pressure on savings and net financial wealth accumulation, potentially limiting their ability to be net exporters of capital.

In the rest of this chapter, we explore these issues in further detail, with a particular focus on these dimensions:

-
- The historical evolution of household net financial wealth accumulation in the US.
 - The slowdown in household formation and changes in household behavior which will drive changes in household net financial wealth.
 - The impact of demographic changes on household net financial wealth accumulation over the next 20 years.
 - Identifying changes that could mitigate the impact of demographic forces, and suggest potential policy directions.

HISTORICAL EVOLUTION OF HOUSEHOLD NET FINANCIAL WEALTH

The NFW of US households has increased steadily since 1975, growing at 3.8 percent annually. After 1995, the stock market boom and subsequent bust introduced unprecedented volatility into the growth of household net financial wealth. This volatility highlights both the risks and the rewards of US households' increasing reliance on asset appreciation, rather than savings out of income, as the primary driver of wealth accumulation.

This section looks at the evolution of US household NFW. For assets, we point to appreciation rather than savings as the most important driver of asset accumulation. We then discuss the "wealth effect," which describes the impact of changes in wealth on household spending, as an important driver of declining savings. For liabilities, rapid growth in mortgage lending is the key drivers of historical growth.

Basic facts on net financial wealth accumulation

The stock of financial assets held by households can change in two ways: households can purchase new assets and existing asset holdings can be revalued because of changing market prices.

The *net acquisition of financial assets* – purchases less sales – is largely driven by contemporaneous savings out of income.³ Total returns on financial assets, as commonly understood, are a combination of realized capital income and unrealized asset appreciation. Realized capital income, including interest and dividends, is by convention counted as personal income, a portion of which is saved.⁴ The revaluation of asset holdings therefore only captures unrealized asset appreciation (or depreciation). All references to *financial asset appreciation (FAA)* constitute these unrealized gains, and are adjusted for inflation.

The stock of financial assets less outstanding liabilities equals the net financial wealth of households (NFW). We focus on measuring the demographic impact on NFW because this metric enables us to build our understanding of the demographic impact on the global capital market. It also helps us understand the impact on households because NFW is a good proxy for overall economic well being (see the previous chapter for discussion).

Household financial assets

Total financial assets held by US households more than tripled since 1975, and more than doubled on a per-household basis (Exhibit 1). This growth has been primarily powered by strong rates of financial asset appreciation (FAA). Financial assets comprise approximately two-thirds of total household assets, while real estate's share has remained near 30 percent over the last 30 years. Consumer

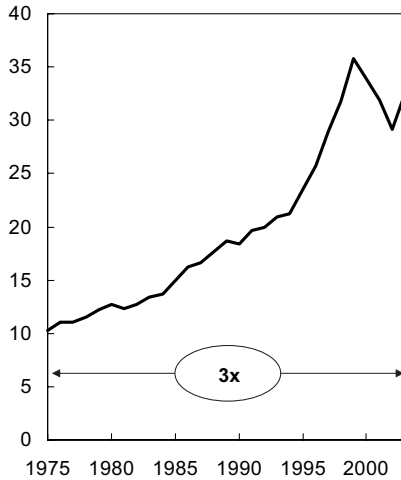
3 See "Technical Note" for a definition of the relationship between saving out of income as defined in the national accounts, and the net acquisition of financial assets as defined in the flow of funds accounts.

4 Realized capital gains are not counted in the national accounts as savings, see Reinsdorf (2004). We capture the impact of realized capital gains on purchases of new assets because asset accumulation is driven by the net acquisition of financial assets as measured by the flow of funds accounts (see "Technical Notes" for details).

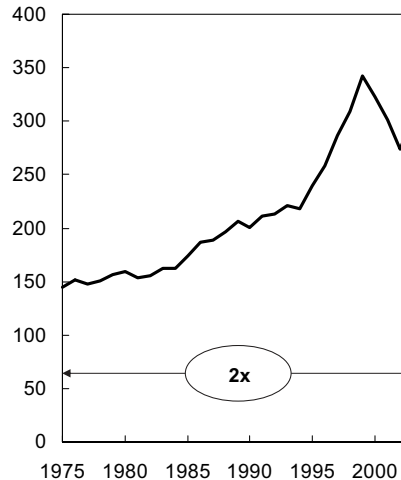
Exhibit 1

US HOUSEHOLD FINANCIAL ASSET ACCUMULATION 1975-2003

Total stock of financial assets
\$ Trillions, 2000



Financial assets per household
\$ Thousands, 2000



Source: Federal Reserve Flow of Funds (June 2004)

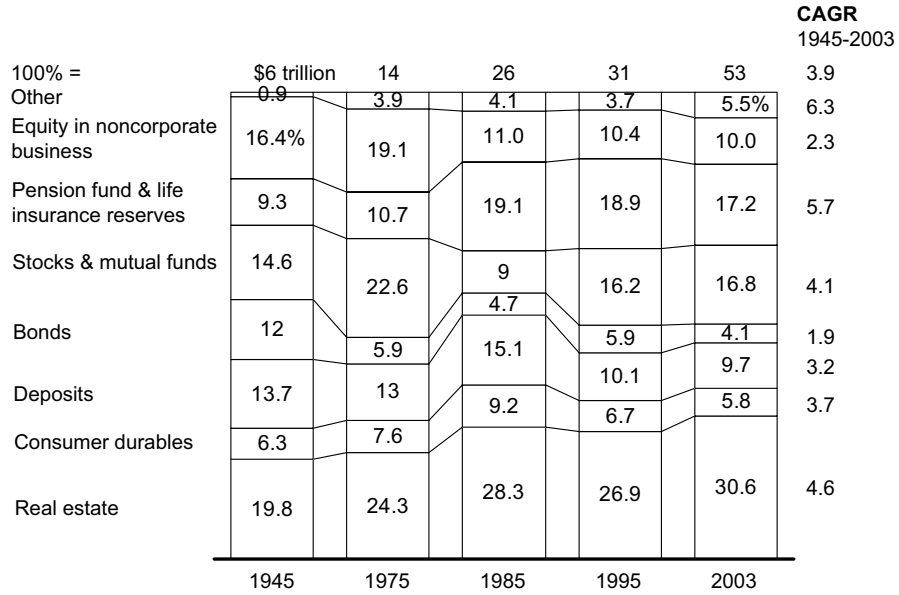
durables account for the remainder. While its share of total household assets has not increased, real estate has played an important role in counterbalancing financial asset price volatility because of its relatively stable rates appreciation (exhibits 2-3).

Financial asset appreciation drives growth in financial assets. Since 1945 the most important components of household financial asset growth have been corporate equities, mutual fund shares, and pension fund reserves (Exhibit 4). From 1980 to 1995, the value of corporate equities held by households grew 6.8 percent annually, while the value of mutual fund shares and pension fund reserves grew by 19.4 and 8.3 percent, respectively. These growth rates are significantly higher than the next largest asset class, deposits, which grew on average only 1.4 percent during the same period. In contrast, from 1995 to 1999, the market bubble pushed equities growth to 20.3 percent, but the subsequent correction from 1999 to 2003 (-12.3 percent) wiped out most of those gains.

Since 1975, asset appreciation has accounted for almost 30 percent of the growth in households' stock of financial assets with new purchases accounting

Exhibit 2

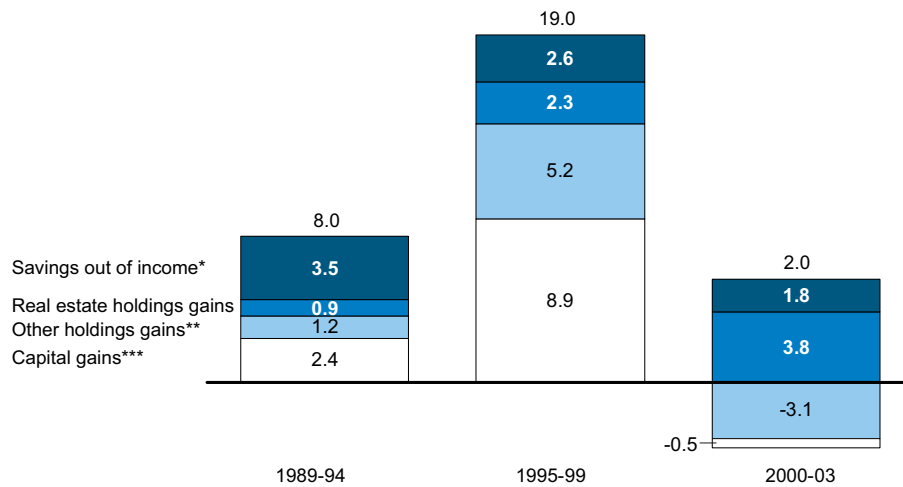
DISTRIBUTION OF US HOUSEHOLD ASSETS 1945-2003



Source: Federal Reserve Flow of Funds

Exhibit 3

CONTRIBUTION TO CHANGE IN US HOUSEHOLD NET WORTH BY ASSET CATEGORY
\$ Trillions, 2000

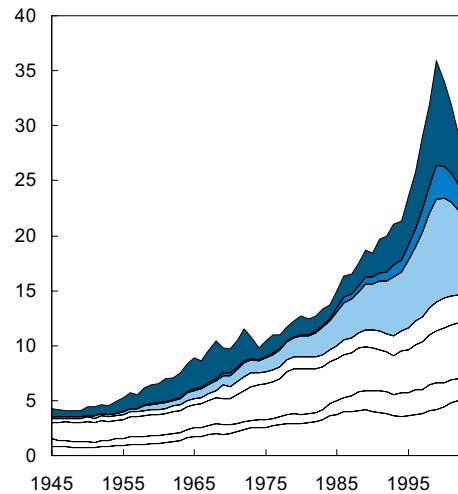


* Tangible and financial net investment (equivalent to savings from income)
 ** Includes holding gains from equity in noncorporate business, life insurance/pension fund reserves, bank personal trusts, consumer durable goods, equipment/software, and a statistical discrepancy
 *** On equities and mutual funds
 Source: Federal Reserve Flow of Funds; MGI analysis

Exhibit 4

**COMPOSITION OF US HOUSEHOLD FINANCIAL ASSETS BY CLASS
1945-2003**

\$ Trillions, 2000



	CAGR Percent			
	1945-80	1980-95	1995-99	1999-03
Corporate equities	2.1	6.8	20.3	-12.3
Mutual fund shares	6.7	19.4	24.8	-0.4
Pension fund reserves	9.0	8.3	10.8	-1.5
Miscellaneous*	3.4	3.9	7.7	0.4
Equity in non-corporate businesses	3.0	-0.4	4.7	3.3
Credit market instruments	0.5	6.5	3.6	-3.7
Deposits	3.8	1.4	3.6	4.8

* Security credit, life insurance reserves, investment in bank personal trusts, and other financial assets
Source: Federal Reserve Flow of Funds

for the remainder, highlighting the importance of asset appreciation as a source of financial asset accumulation (Exhibit 5). The rate of FAA in the US is high relative to other countries we studied: from 1975 to 2003, the US rate was 0.96 percent, compared to 0.87 percent in the UK, and -1.8 percent in Japan⁵ (Exhibit 6).

Household savings contributes less to financial asset accumulation. The US household saving rate has been declining steadily since 1982, reaching a mere 1.3 percent in 2003. When savings started to drop in the mid-1980s, the net acquisition of financial assets plummeted as well. The fall-off in acquisition of new assets emphasizes the contribution of FAA to overall asset growth. The relatively low contribution of net acquisition of financial assets to overall asset growth in the US stands in contrast to a country like Japan, where the net purchases of financial assets was the sole source of asset growth (exhibits 7-9).

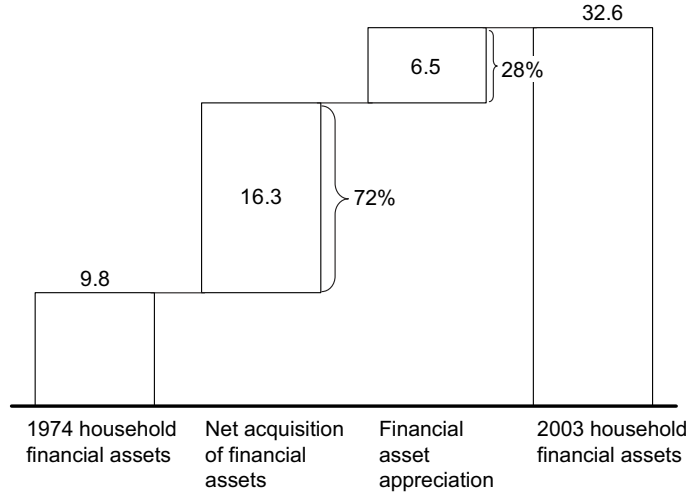
The wealth effect reduces household savings. Numerous studies have established that households modulate their spending based on changes in their financial and real estate wealth; rising asset values cause US households to

⁵ Throughout this document, rates of FAA are quoted on a real, inflation adjusted basis.

Exhibit 5

DRIVERS OF ASSET GROWTH IN US HOUSEHOLDS 1975-2003

\$ Trillions, 2000

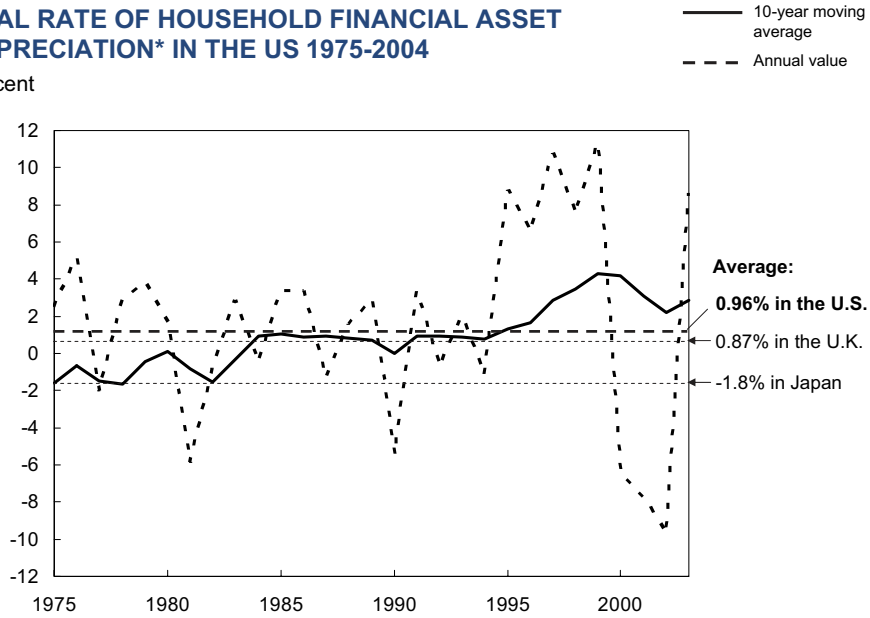


Source: Federal Reserve Flow of Funds; MGI analysis

Exhibit 6

REAL RATE OF HOUSEHOLD FINANCIAL ASSET APPRECIATION* IN THE US 1975-2004

Percent

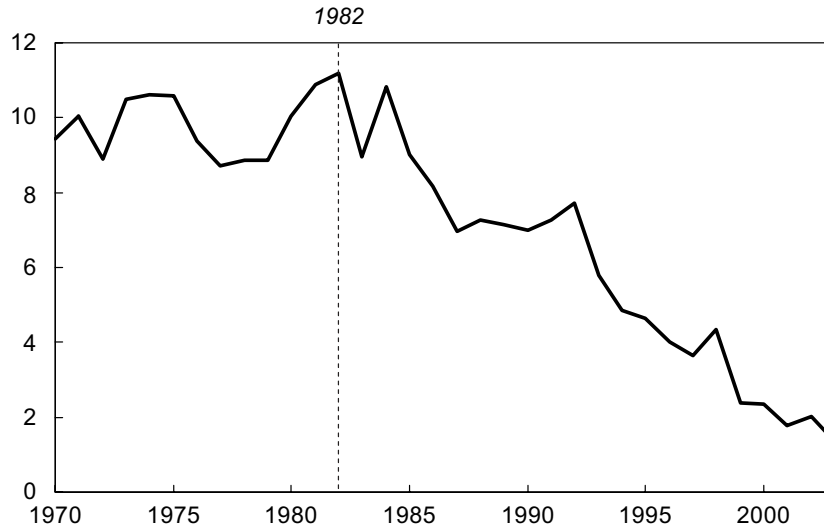


* Personal consumption deflator used to compute real appreciation
 Source: Federal Reserve Flow of Funds; BEA

Exhibit 7

US HOUSEHOLD SAVINGS RATE 1970-2003

Percent of disposable income

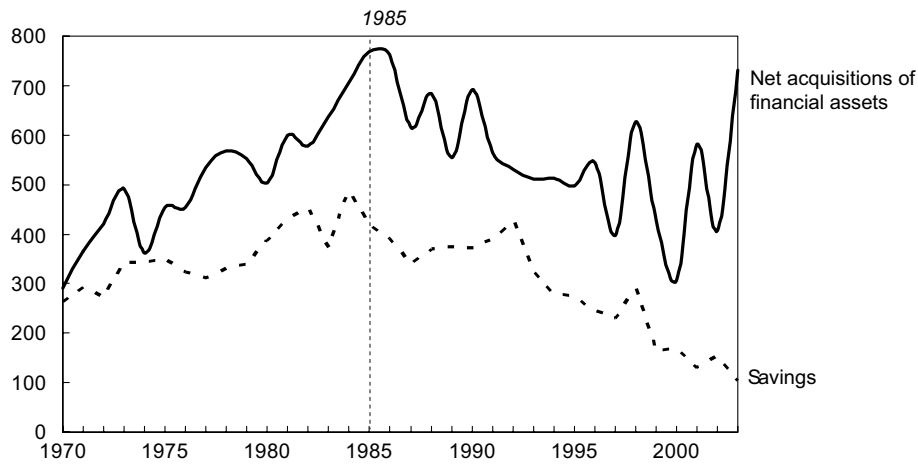


Source: BEA

Exhibit 8

SAVINGS AND NET ACQUISITION OF FINANCIAL ASSETS BY US HOUSEHOLDS 1970-2003

\$ Billions, 2000

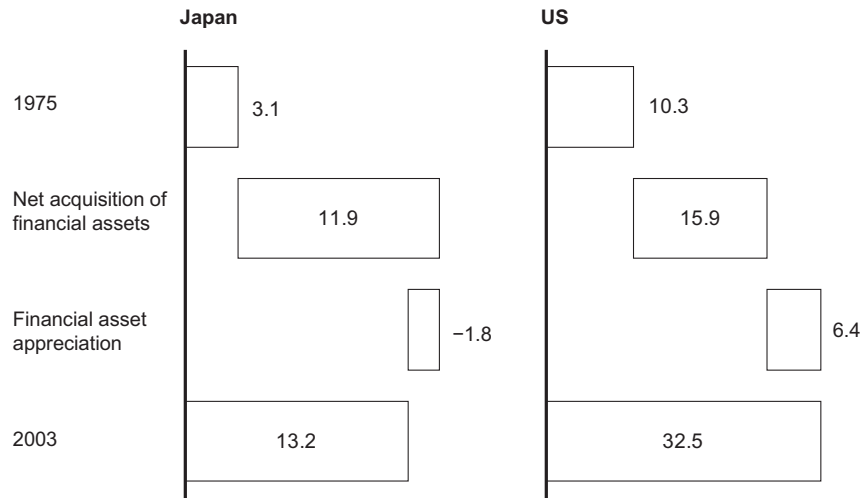


Source: Federal Reserve Flow of Funds

Exhibit 9

SOURCES OF REAL FINANCIAL ASSET GROWTH 1975-2003

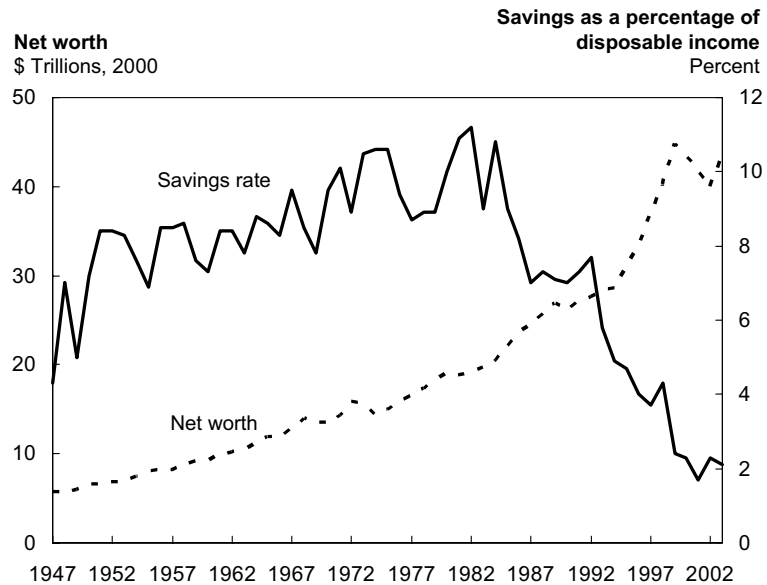
\$Trillions, 2000, percent



Source: Federal Reserve Flow of Funds; Bank of Japan; Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan

Exhibit 10

HOUSEHOLD SAVING RATE AND NET WORTH IN THE US 1947-2002



Source: Federal Reserve Flow of Funds; BEA

consume more and save less. This "wealth effect" has been estimated to increase spending by 3 to 5 cents for every dollar increase in financial assets, and 5 to 8 cents for every dollar increase in real estate.⁶ The relationship between increases in wealth, increases in spending, and decreases in savings have been readily apparent since the mid 1980s (Exhibit 10).

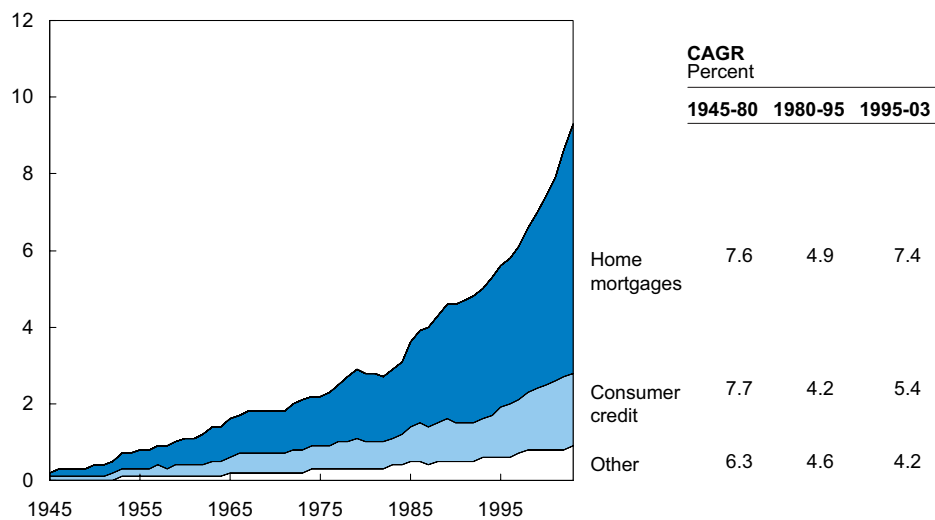
Household liabilities

The increasing sophistication of financial markets has eased many of the borrowing constraints households formerly faced. New products – such as mortgages and credit cards for borrowers with impaired credit or limited funds, or loan structures enabling homeowners to tap accumulated equity – have provided greater access to credit markets for households. The resulting growth in household liabilities has gone through three distinct phases since 1945 (Exhibit 11):

Exhibit 11

COMPOSITION OF US HOUSEHOLD LIABILITIES BY CLASS 1945-2003

\$ Trillions, 2000



Source: Federal Reserve Flow of Funds

⁶ For more information on wealth effects, see Davis and Palumbo (2001) and case, Quigley, and Shiller (2000).

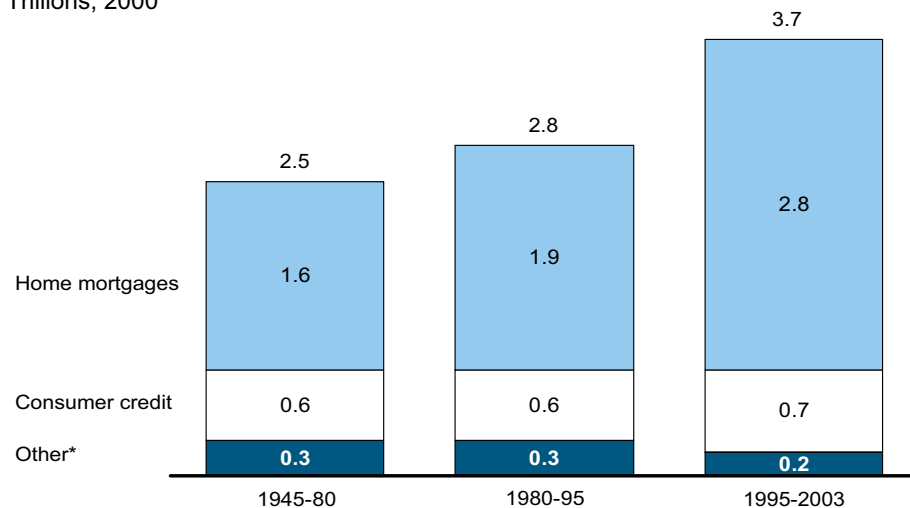
- 1945 to 1980: mortgages and consumer credit grew at virtually identical rates of 7.6 and 7.7 percent, respectively.
- 1980-1995: growth rates in all liabilities classes slowed to less than 5 percent.
- 1995-2003: mortgages accelerated more rapidly than consumer credit.

During all three phases, mortgages have been the most important contributor to liabilities growth (Exhibit 12).

Exhibit 12

PERIOD CHANGE IN US HOUSEHOLD LIABILITIES BY TYPE

\$ Trillions, 2000

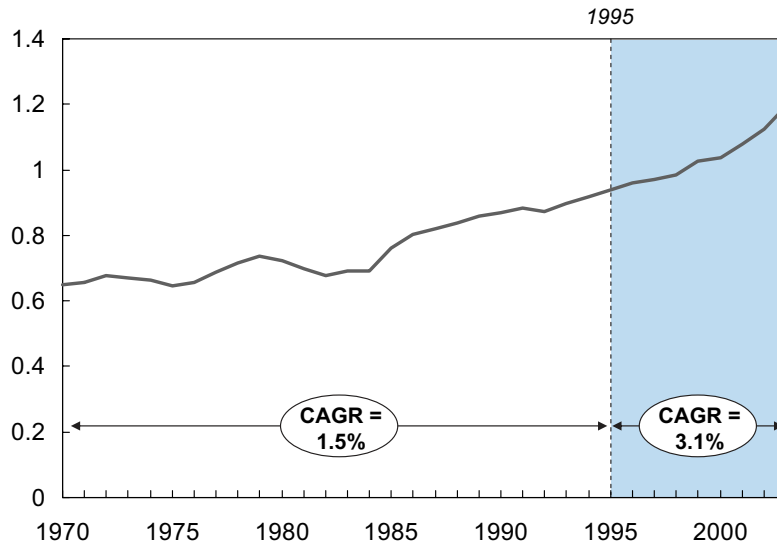


* Includes municipal securities, bank loans, commercial mortgages, security debt, trade payables, and unpaid insurance premiums
 Source: Federal Reserve Flow of Funds; MGI analysis

Although the growth in liabilities has increased US households' liability to income ratio, particularly after 1995, interest rates have been also near historic lows, keeping debt service burden in check. Between 1980 and 2003, debt service as a proportion of disposable income increased 2.7 percentage points from 15.8 to 18.5 percent. Since most of this debt are mortgages, and most mortgages are fixed rate, the debt service burden will not likely be overly sensitive to changes in interest rates. However, the debt service burden would be expected to worsen if interest rates spiked sharply (exhibits 13-15).

Exhibit 13

LIABILITIES-TO-INCOME RATIO OF U.S. HOUSEHOLDS 1970-2003

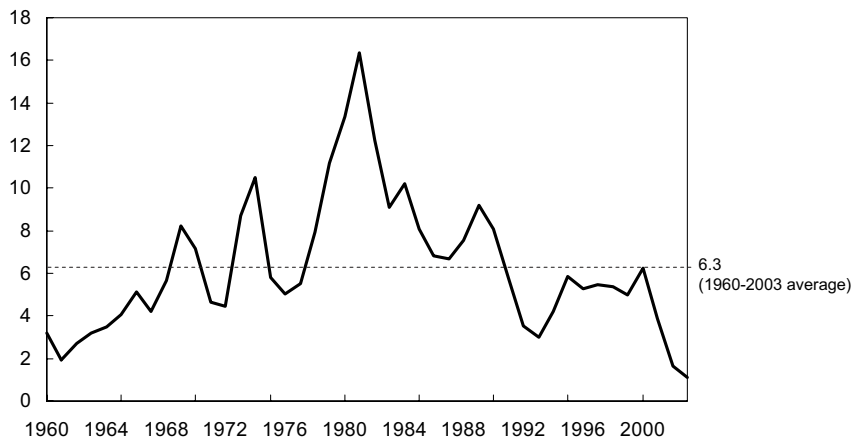


Source: Federal Reserve Flow of Funds

Exhibit 14

EFFECTIVE FEDERAL FUNDS RATE 1960-2003

Percent

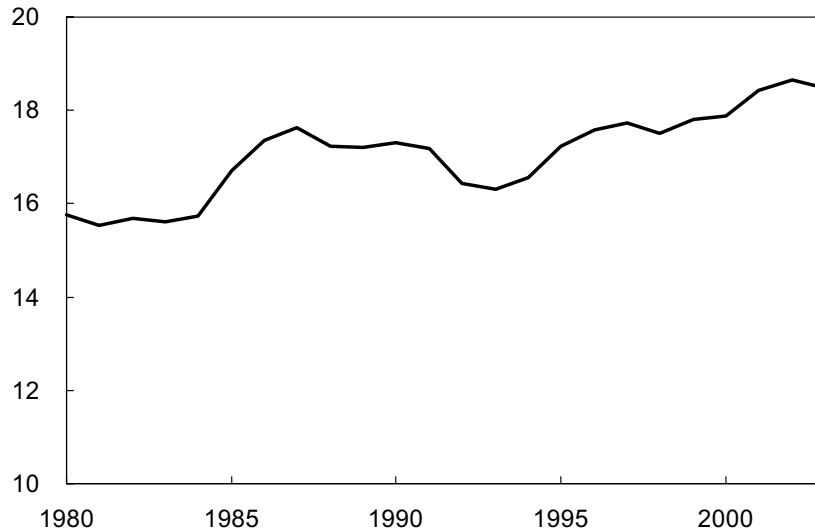


Source: Federal Reserve Flow of Funds

Exhibit 15

US DEBT SERVICE TO DISPOSABLE INCOME RATIO 1980-85

Percent



Source: Federal Reserve, household debt service ratios

**DEMOGRAPHIC DRIVERS OF CHANGE IN HOUSEHOLD
NET FINANCIAL WEALTH**

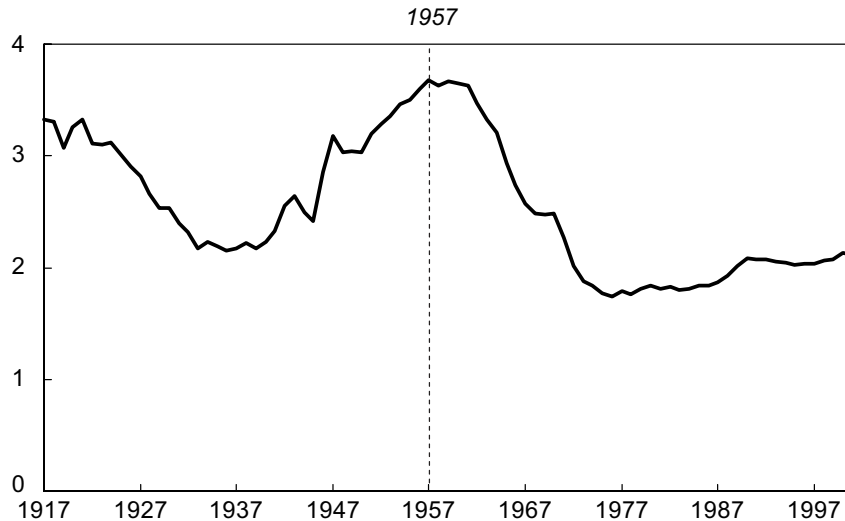
The US demographic structure is now passing through an important inflection point: the enormous baby-boom generation is approaching retirement age and will have an increasingly negative impact on NFW accumulation in the years ahead. This demographic pressure comes from three sources:

- **Households available to create wealth will be limited** by slowing population growth and reduced household formation;
- **Financial asset accumulation will slow** because falling prime saver ratio and cohort-specific behavioral changes will lower average saving per household;
- **Liability growth will be slowed** because older households will begin to pay down their liabilities.

Exhibit 16

US FERTILITY RATE 1917-2002

Expected number of children per woman



Source: National Center of Health Statistics

Slowing population growth will reduce household formation

The slowing population growth in the US is primarily a result of falling birth rates. The total fertility rate, which measures the average number of children born to women during their childbearing years, peaked in the US in 1957 at 3.8.⁷ Over the subsequent 20 years, the fertility rate dropped precipitously to 1.8 (Exhibit 16).

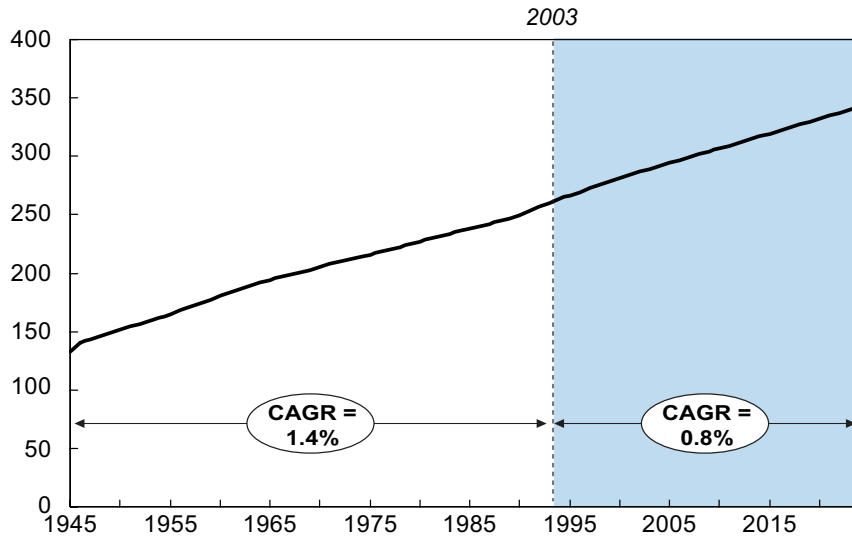
Declining fertility has taken a toll on population growth. After rising at a compound annual rate of 1.4 percent from 1945 to 2003, population growth will slow to 0.8 percent annually between 2003 to 2024 (Exhibit 17). Slowing population growth will slow the rate of household formation. While the number of households increased nearly 1.6 percent per year between 1975 and 2003, this number will increase just 1.1 percent per year between 2003 and 2024 (Exhibit 18). Lower rates of household formation will constrain aggregate wealth accumulation since there will be fewer households earning income and generating savings.

⁷ The total fertility rate is a cumulative measure of separate fertility rates for women of different ages in a given year. In 2000, the total fertility rate was 2.1, which means that the average woman would be expected to have 2.1 children during her childbearing years.

Exhibit 17

US POPULATION 1945-2024

Millions

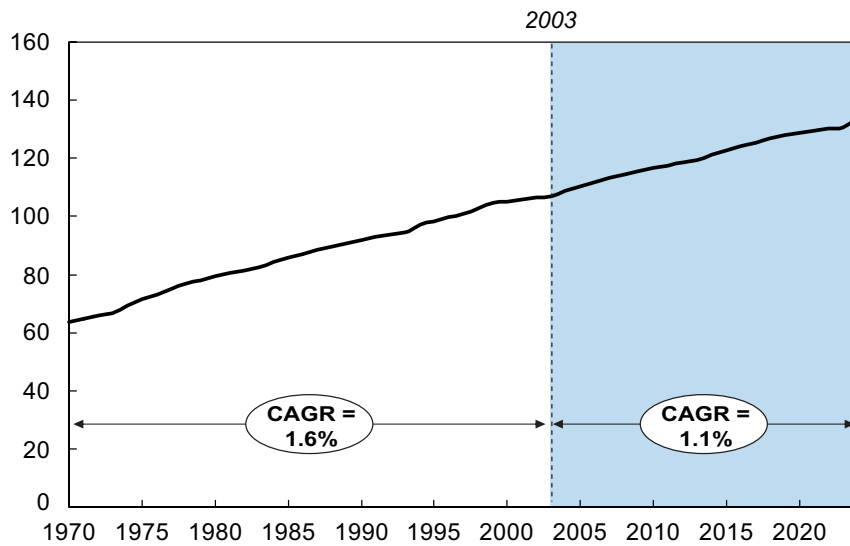


Source: US Census Bureau; MGI analysis

Exhibit 18

US HOUSEHOLD 1970-2024

Millions



Source: US Census Bureau; MGI analysis

Financial asset accumulation will be slowed by lower savings per household

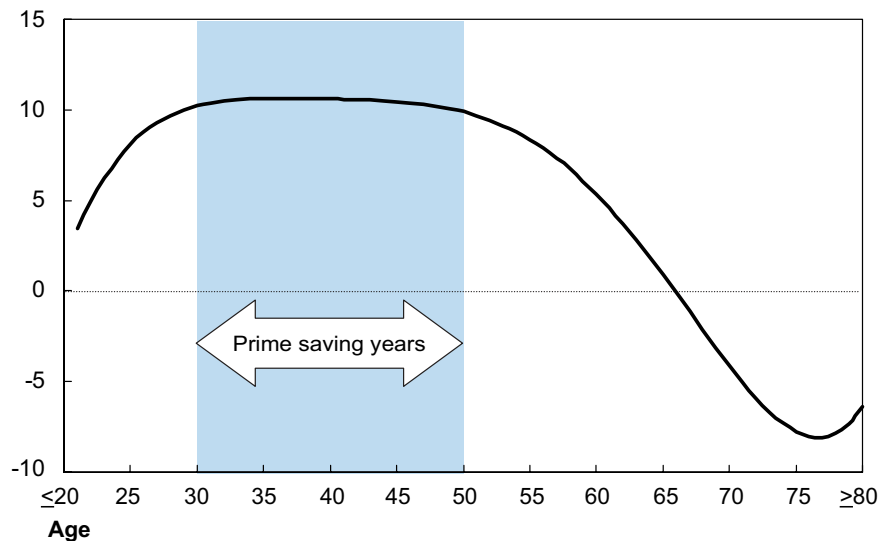
Average household savings will be lower because there will be fewer households in their prime saving years, and younger cohorts who are entering their prime saving years consume more and save less than the boomer cohorts did.

Prime saver ratio is declining. The prime saver ratio measures the number of households in their prime saving years relative to the number of elderly households. We use the lifecycle savings curve to define prime saver households as the 20-year age bracket with the highest levels of savings. In the US, this is between ages 30 and 50 (Exhibit 19).

Exhibit 19

US LIFECYCLE SAVINGS CURVE

Annual savings per household, cohort 1945-54
\$ Thousands, 2000



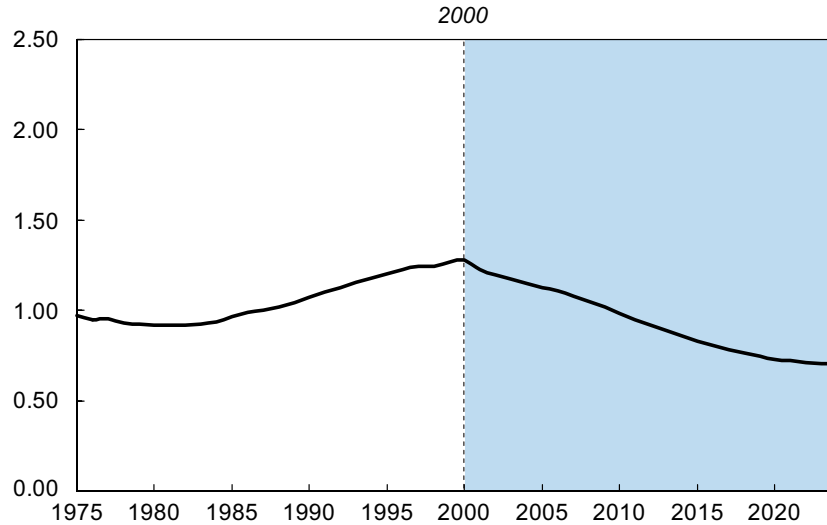
Source: Bureau of Labor Statistics (BLS) Consumer Expenditure Survey; MGI estimates

As the mass of the baby boom generation moved through their prime saving years, the prime saver ratio in the US reached its peak in 2000 and then started declining quickly. Going forward, the prime saver ratio will stabilize at a relatively low level (Exhibit 20).

Exhibit 20

**RATIO OF US PRIME SAVER TO ELDERLY HOUSEHOLDS
1975-2024**

Percent



Note: Prime savers defined as the 20-year age band with maximum savings (30-50 in US)
Source: McKinsey Global Institute Household Financial Wealth Model

The declining prime saver ratio will moderate financial asset accumulation because aging households are moving into the low saving and dissaving parts of their life cycle.

- **Age-based lifecycle savings behavior impacts savings and wealth accumulation.** US households have a "humped-shaped" lifecycle savings profile, with savings starting at very low levels in the 20s, rising sharply by age 30, then leveling out between ages 30 and 50 – the prime saving years. The savings curve then drops off, and by age 66, US households become dissavers (cohorts begin dissaving at different ages). The savings curve trails off more rapidly after the peak, as older households seek to maintain their consumption levels even while income levels begin to taper. These lifecycle curves depict real savings flows and are derived from estimates of real lifecycle income and consumption⁸ (exhibits 19, 21).

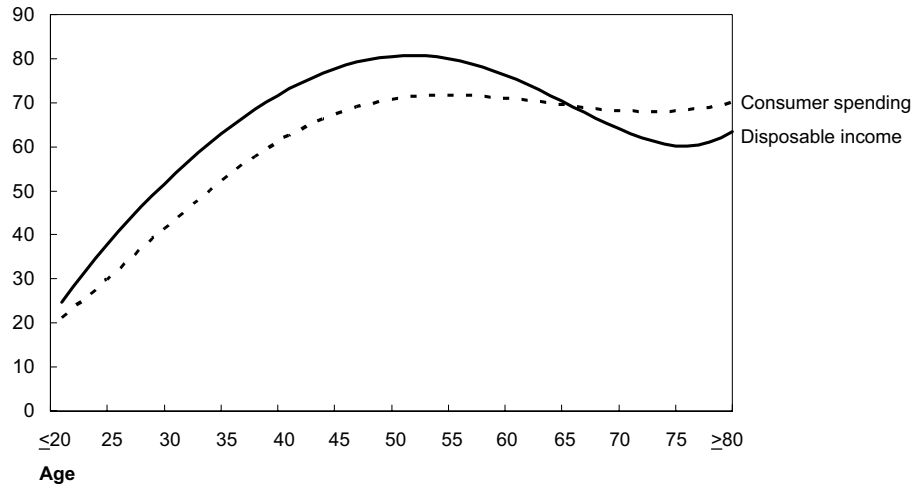
⁸ MGI worked closely with Professor Orazio Attanasio of the Institute of Fiscal Studies (IFS), a leading expert on lifecycle and cohort saving behavior, to estimate income and spending lifecycle curves based on the most recent Consumer Expenditure Survey data. See "Technical Notes."

Exhibit 21

US HOUSEHOLD INCOME AND SPENDING LIFE CYCLES

Cohort 1945-54

\$ Thousands per household, 2000



Source: BLS Consumer Expenditure Survey; MGI estimates

- **Aging households moving into lower saving years.** The age profile of the US population will change over the next two decades. Although the median age will increase by only 1 year, to 38, between 2005 and 2024, the share of households aged 65 or older will rise eight percentage points to 28 percent over the same period (Exhibit 22).

The aging of the US population is mild compared to what is occurring in Japan and much of Europe. US birth rates have fallen much less than elsewhere and strong immigration flows have helped mitigate the impact of lower birth rates among the US-born population.

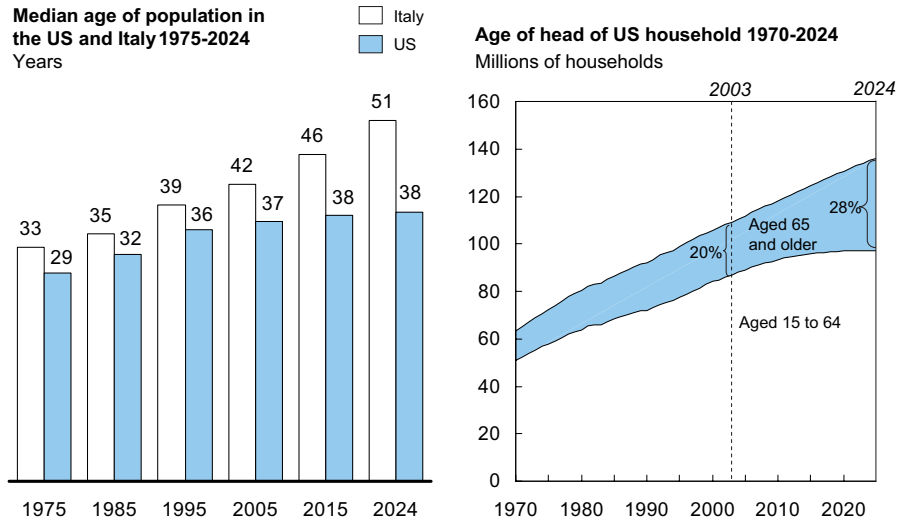
The result of all this is that aging households save less (or even dissave), and therefore accumulate fewer (or shed) assets (Exhibit 23).

Lower saving by younger cohorts exacerbates declining prime saver ratio.

Beyond the lifecycle effect there have been fundamental changes in the savings behavior of younger generations. Households that are in their prime saving years in 2004 and beyond were born after 1954. The first part of this group

Exhibit 22

POPULATION AGING TRENDS

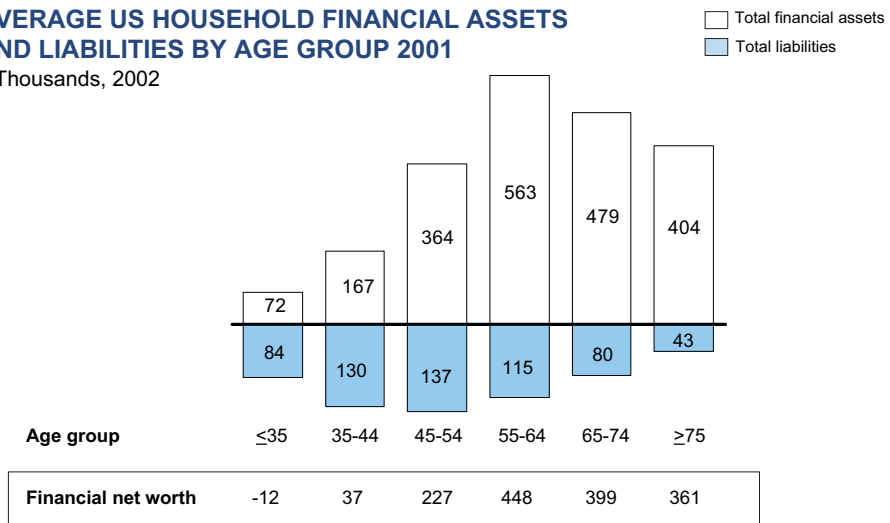


Source: UN World Population Prospects (2002 revision); McKinsey Global Institute Household Financial Wealth Model; US Census Bureau

Exhibit 23

AVERAGE US HOUSEHOLD FINANCIAL ASSETS AND LIABILITIES BY AGE GROUP 2001

\$ Thousands, 2002



Note: The age distribution from the Survey of Consumer Finances was applied to the asset and liability totals in the Flow of Funds
Source: McKinsey Global Institute Household Financial Wealth Model; Federal Reserve Flow of Funds; US Census Bureau; Survey of Consumer Finances

became prime savers in 1984, and many did not to do so until the 1990s. Those who became prime savers in the 20 years since 1984 experienced a markedly different economic environment than those who did in the previous 20 years.

The 1960s was a time of robust economic expansion. In contrast, with the Vietnam War, two oil shocks, two major recessions, and the appearance of stagflation, the 1970s and early 1980s was a turbulent period. The economy was strong in the second half of the 1980s, before slipping into a brief recession near the time of the first Gulf War in 1990. Coming out of that recession, the economy began its longest ever peacetime expansion, which ended with the popping of the dot-com bubble in 2000.

Since households headed by individuals born after 1954 have experienced a different economic environment, it should not be surprising that their behavior is different as well. They have higher disposable incomes than earlier generations, but also spend money at higher rates, implying that they have higher lifecycle income and spending curves (Exhibit 24). The net impact on savings provides a simple but powerful result: prime saver households headed by younger cohorts save less (Exhibit 25). As we move forward through the next 20 years, this change in household behavior will reinforce the negative impact of aging on saving behavior.

Liability growth slowed by pay down of debt by older households

Changes in household liabilities are driven by lifecycle borrowing behavior and the increasing ability and willingness of households to take on debt. We capture lifecycle borrowing behavior through a liability-to-income lifecycle curve. On average, older households have less debt: the average householder at age 35 has approximately 1.6 times more debt than one at age 65. We capture increases in average debt levels by the long-term trend in the liability-to-income ratio, which by 2003 was 1.7 times its 1975 level⁹ (Exhibit 26). Since liabilities are modeled using the liability-to-income ratio, the evolution of life-cycle income at the cohort level is an important determinant of liability accumulation going forward.

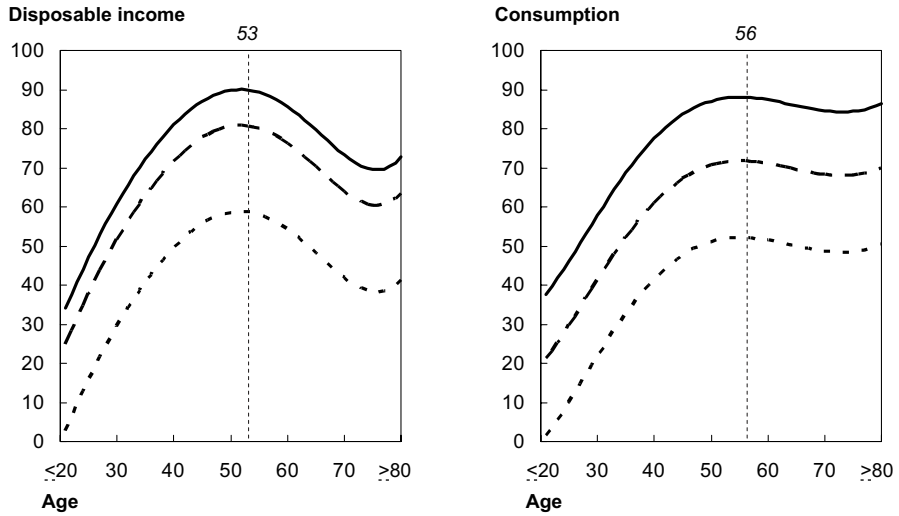
⁹ See "Technical Notes" for a more detailed discussion on how liabilities are modeled.

Exhibit 24

US HOUSEHOLD DISPOSABLE INCOME AND CONSUMPTION BY COHORT

Average per household, \$ Thousands, 2000

— Cohort 1965-74
 - - Cohort 1945-54
 - - - Cohort 1925-34

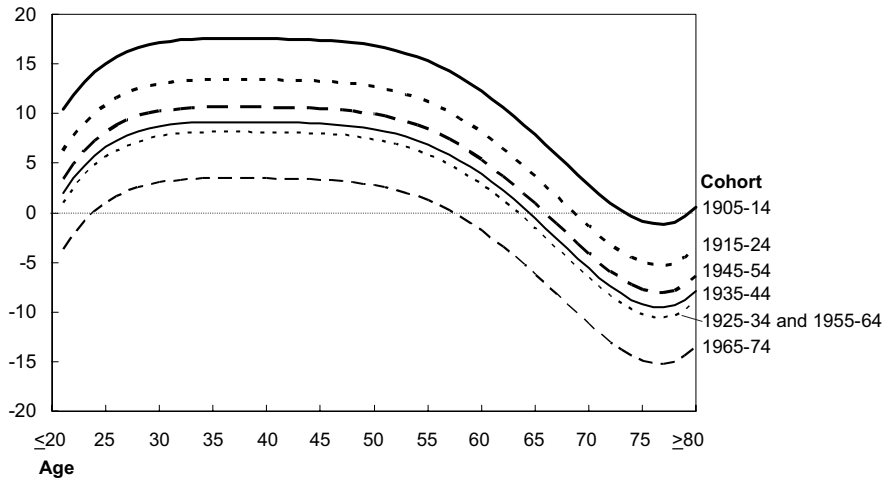


Source: BLS Consumer Expenditure Survey; MGI estimates

Exhibit 25

LIFECYCLE SAVINGS CURVES FOR 7 US COHORTS

Annual savings per household
 \$ Thousands, 2000

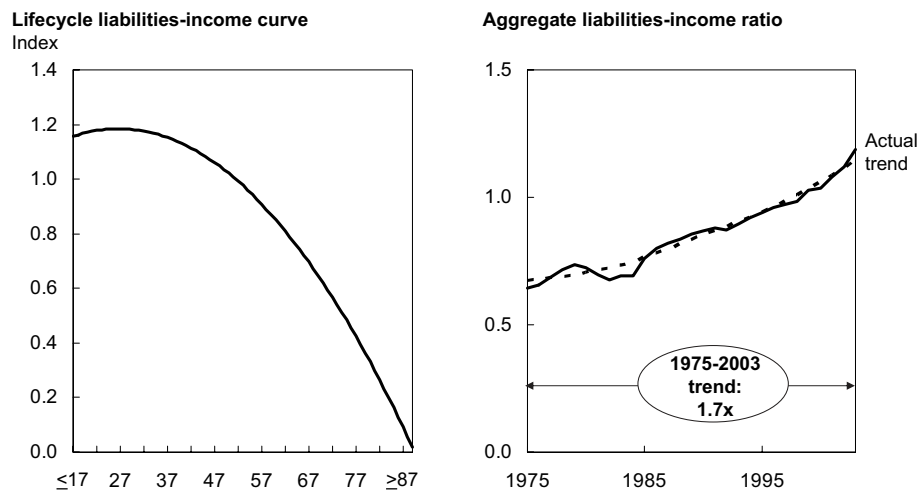


Source: BLS Consumer Expenditure Survey; MGI estimates

As the overall population ages, average household debt levels will decrease. This will hold down the growth of aggregate liabilities, and moderate the long-term upward trend in the liabilities-to-income ratio. All else being equal, weaker liability growth will boost NFW accumulation.

Exhibit 26

LIFECYCLE LIABILITIES CURVE AND THE LONG-TERM TREND IN LIABILITIES-TO-INCOME RATIO*



* 1995 lifecycle liabilities-income curve is multiplied by aggregate liabilities-income ratio (trend) in each year to produce a scaled series of annual lifecycle liabilities-income curves
 Source: Survey of Consumer Finance; Federal Reserve Flow of Funds; BEA; MGI analysis

DEMOGRAPHIC IMPACT ON HOUSEHOLD NET FINANCIAL WEALTH GOING FORWARD

The foregoing discussion has set the historical context and outlined the demographic drivers of household behavior and how they impact savings and NFW accumulation. This section describes the aggregate implications of this microeconomic behavior.

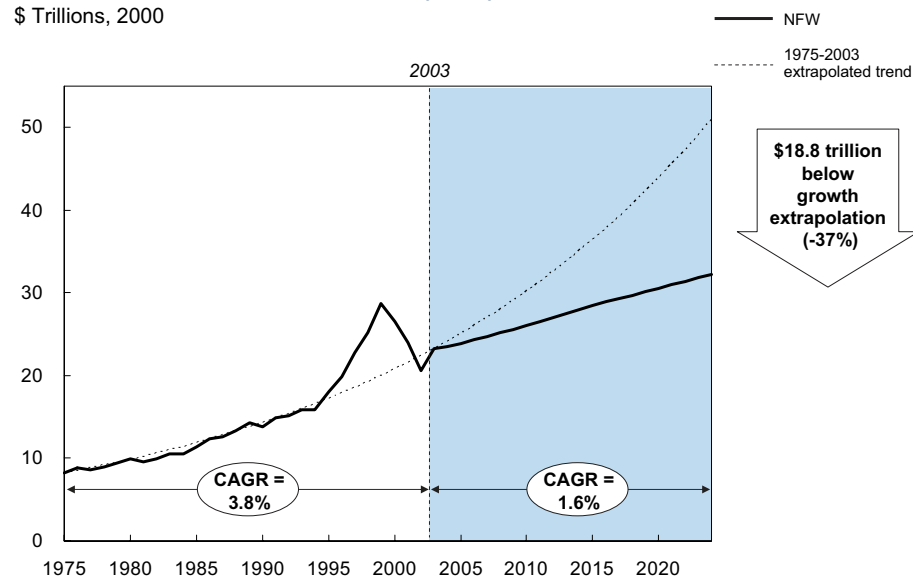
The demographic changes described above will drive a significant decline in savings and NFW accumulation over the next twenty years. With financial assets growing more slowly, and liabilities continuing to increase, our baseline projections indicate a two-thirds decline in the growth rate of US household NFW,

from 3.8 percent over the 1975-2003 period, to 1.6 percent between 2003 and 2024. This slowing growth will cause NFW to fall some 37 percent, or by \$18.8 trillion, below what it would have been had the growth rates of 1975 to 2003 persisted (Exhibit 27).

Exhibit 27

TOTAL NET FINANCIAL WEALTH (NFW) OF US HOUSEHOLDS

\$ Trillions, 2000



Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Financial Wealth Model

This slowdown is meaningful for the US and in a global context, although it is not the most severe demographically driven NFW slowdown in the industrialized world. In Japan, a combination of a rapidly aging population, very low birth rates, low real rates of FAA, steep lifecycle savings curves, and negative cohort effects result in an absolute decline in household NFW by 2024 (see chapter 3).

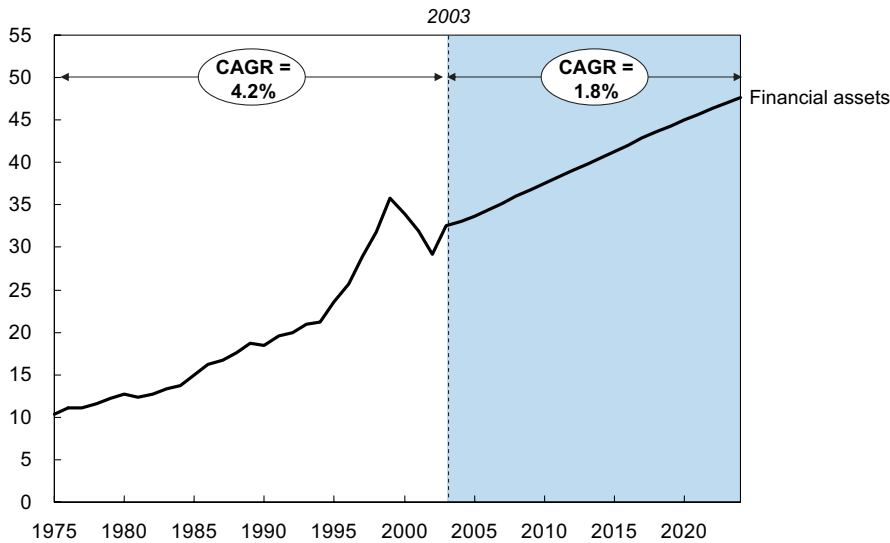
Projected financial assets

Financial asset accumulation will slow from a 4.2 percent compound annual growth rate between 1975 and 2003 to a 1.8 percent annual rate through 2024 (Exhibit 28). With the rate of FAA kept constant at the 1975 to 2003 historical average, diminishing household savings are primarily responsible for this slowdown.

Exhibit 28

US HOUSEHOLD FINANCIAL ASSET ACCUMULATION 1975-2024

\$ Trillions, 2000



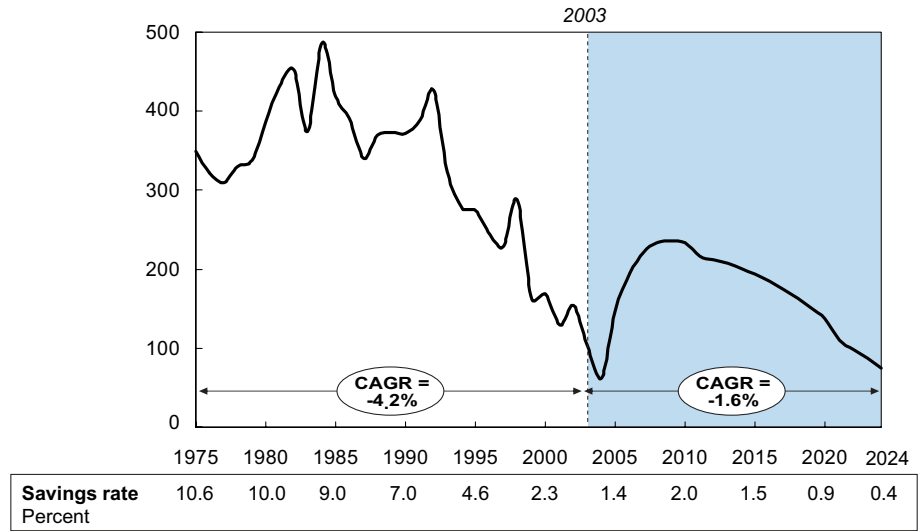
Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (March 2004); McKinsey Global Institute Household Financial Wealth Model

- **Household savings will continue to decline.** A decline in the prime saver ratio, amplified by lower average savings by younger cohorts, will cause aggregate household savings to decline 1.6 percent annually between 2003 and 2024, with the saving rate dropping to 0.4 percent (Exhibit 29). Wealth effects reduce savings by 25 percent or \$44 billion per year on average over the next two decades (Exhibit 30).
- **Net acquisition of financial assets will decline.** Weak savings will limit households' ability to acquire new financial assets. Net acquisition of financial assets is expected to decline at a compound annual rate of 5.8 percent between 2003 and 2024 (Exhibit 31). On a per-household basis, net acquisition of financial assets will average \$2,900 annually between 2004 and 2024, down from \$6,300 annually between 1975 and 2003 (Exhibit 32).

Exhibit 29

SAVINGS OF US HOUSEHOLDS 1975-2024

\$ Billions, 2000

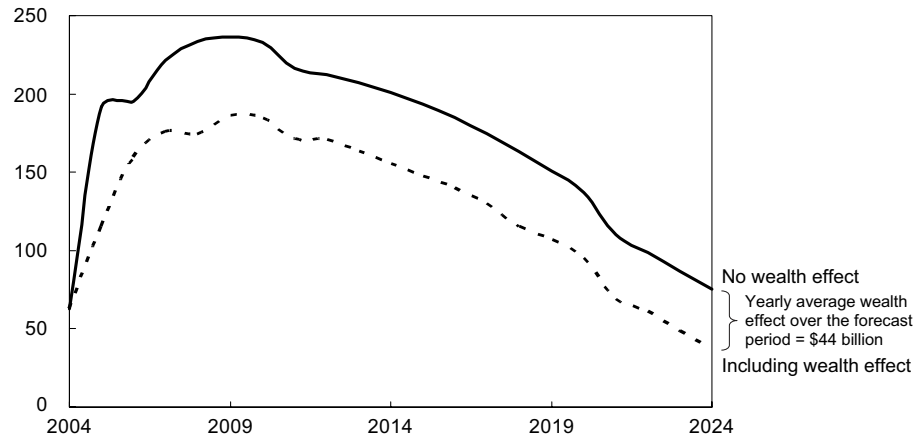


Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds; National Income and Product Accounts (NIPA); McKinsey Global Institute Household Financial Wealth Model

Exhibit 30

US HOUSEHOLD ANNUAL SAVINGS 2004-24

\$ Billions, 2000

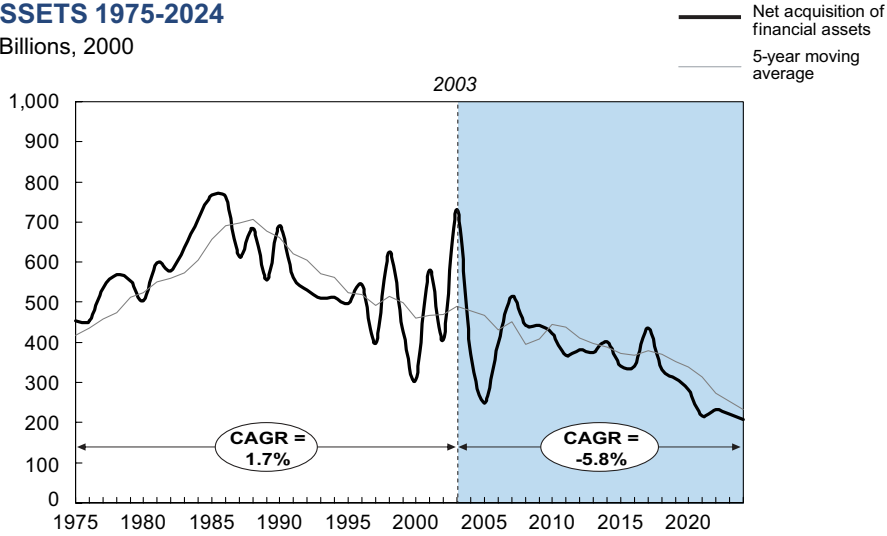


Note: The calculations apply lower bound estimates for wealth effect
 Source: Economy.com; MGI analysis; Financial Wealth Accumulation Model

Exhibit 31

US HOUSEHOLD NET ACQUISITION OF FINANCIAL ASSETS 1975-2024

\$ Billions, 2000

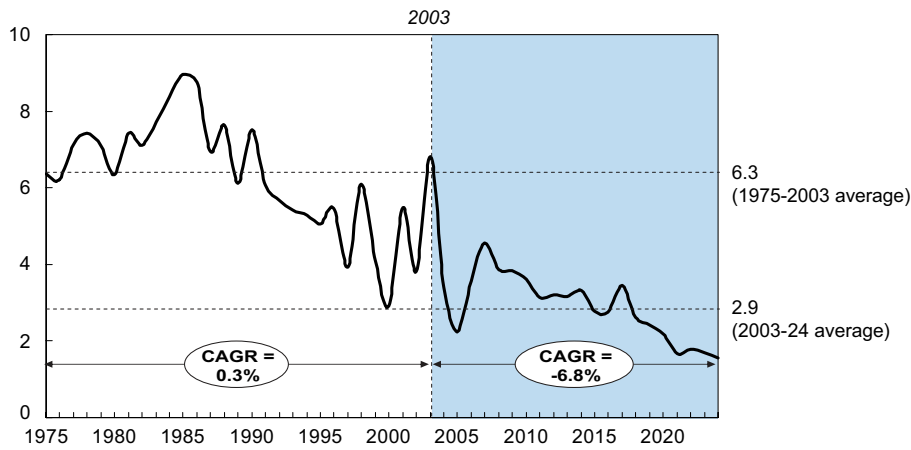


Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Financial Wealth Model

Exhibit 32

NET ACQUISITION OF FINANCIAL ASSETS PER HOUSEHOLD 1975-2024

\$ Thousands, 2000

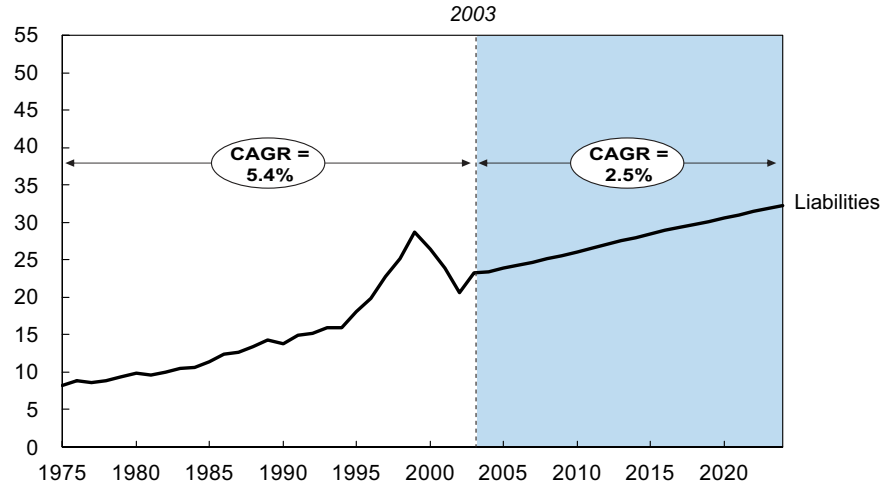


Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Financial Wealth Model

Exhibit 33

US HOUSEHOLD LIABILITIES 1975-2024

\$ Trillions, 2000



Source: Survey of consumer finance (SCF), Federal Reserve Flow of Funds, McKinsey Global Institute Household Financial Wealth Model

Projected liabilities

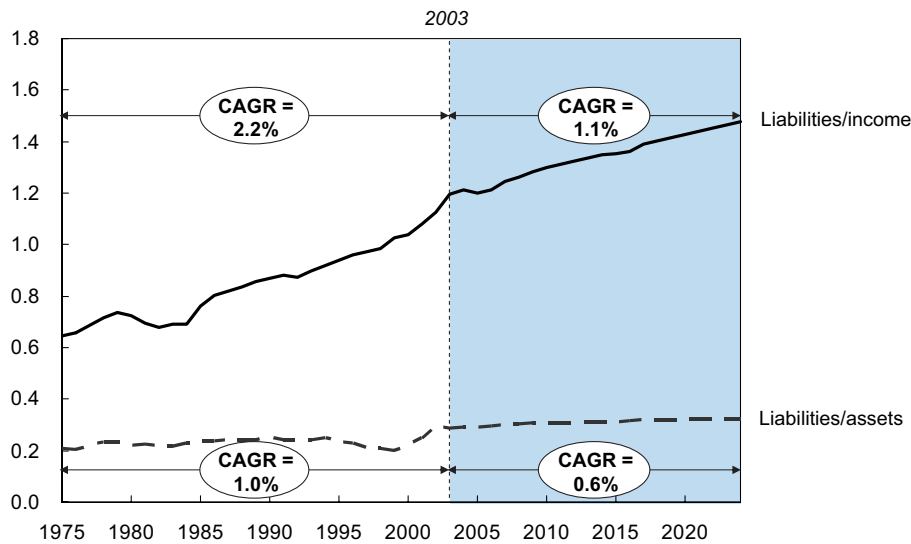
The growth rate of liabilities will slow from the 5.4 percent annual rate it achieved from 1975 to 2003, to 2.5 percent over the next 20 years (Exhibit 33). The slowdown in liability growth will moderate the upward trend in the liability-to-income ratio, which between 2003 and 2024, will increase at less than half its previous pace. Since the growth of financial assets is also slowing, the liability-to-asset ratio continues to increase over the projection period, but again, at a rate less than historical experience (Exhibit 34).

NAVIGATING THE DEMOGRAPHIC TRANSITION

Our baseline projection for the US shows that, unchecked, the demographic headwind will cause a substantial decline in the growth of US household NFW. Depending on how the economy responds to these changes, the impact of the demographic headwind could pose a number of downside risks to the economy as a whole. For instance, lower savings could imply less accumulation of capital, less growth, and less real domestic income creation. This slowdown would reduce corporate earnings and government tax revenues, at the same

Exhibit 34

US HOUSEHOLD INDEBTEDNESS RATIOS 1975-2024



Source: Survey of consumer finance (SCF), Federal Reserve Flow of Funds, McKinsey Global Institute Household Financial Wealth Model

time that the US will be grappling with fast-rising health care and pension costs. In turn, this could exacerbate already ballooning government budget deficits, increasing the risk of a rise in real interest rates, the crowding out of private-sector borrowers and further declines in investment.

Up until now, shortfalls in US domestic savings have been compensated by large cross border capital inflows. Above and beyond the usual arguments regarding the *willingness* of other countries to continue to lend to the US, our results for Japan and Western Europe raise questions about their *ability* to do so. These countries' populations are aging more rapidly than the US population is, and they face their own enormous demographic pressures on savings and NFW accumulation. With savings drying up at home, it is far from certain that they can maintain their positions as net exporters of capital. The prospect of reduced capital inflows heightens the necessity that the US increases national savings.

Our analysis suggests that there are no easy answers – in order meaningfully to counterbalance the demographic pressure, US households and the US

government will need to take action to increase household savings, reduce household and government borrowing and, if possible, further raise rates of FAA. These objectives will require coordinated efforts by the public and private sector, sustained over the foreseeable future.

In this section we use sensitivity analysis to test whether changes in the key drivers of our model can meaningfully alter our projections. Our objective is to isolate the high impact drivers which could suggest changes in future policy directions. The results of this exercise are threefold:

- Raising rates of FAA would have a significant impact on NFW accumulation, but a doubling of the already very high rate is required.
- Policies that change household behavior and *substantially* increase savings can help relieve the demographic pressure on NFW accumulation.
- Changes in immigration and birth rates would have little if any impact on NFW accumulation over the next 20 years.

Changes in financial asset appreciation rates have a significant impact on NFW accumulation. Increasing our baseline rate of FAA from the historical average of 0.96 to 1.96 percent adds \$9 trillion to NFW by 2024, raises the projected growth rate from 1.6 to 2.8 percent, and closes the shortfall from trend by 76 percent (exhibits 35-36).

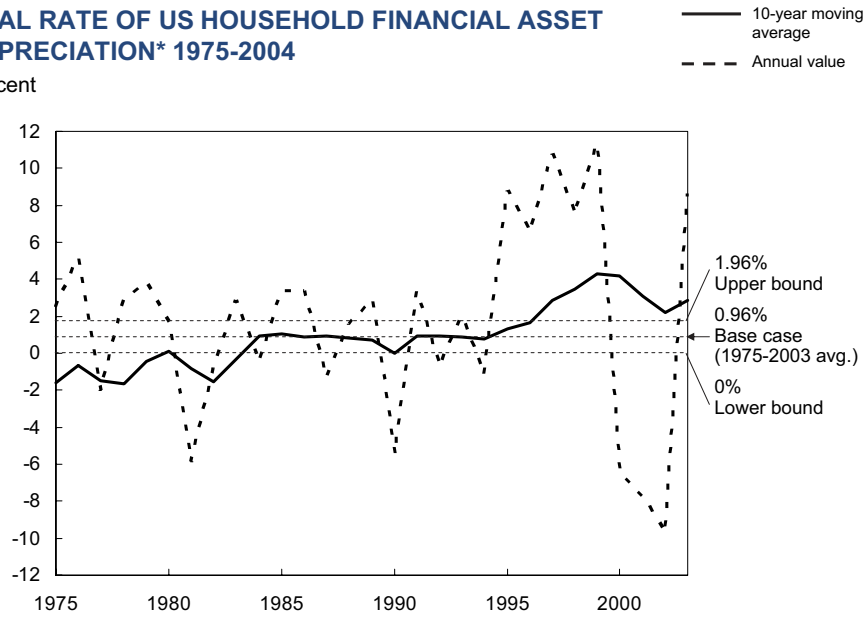
Another possible, though gloomy, scenario examines the impact of a substantial decline in FAA. Given the deterioration in the prime saver ratio, a decline in the rate of FAA is possible. All else equal, fewer buyers (prime savers) and more sellers (dissavers) of financial assets could lower the rate of FAA. If the rate of FAA falls to zero, the level of NFW in 2024 will be \$25 trillion, which is comparable to the 1998 levels: the shortfall from trend increases by approximately \$7 trillion.

Working off such a large stock of financial assets, FAA is clearly a high-impact driver of asset accumulation, but difficult to influence. Given the efficiency of US capital markets, and the already high rates of FAA experienced in the US relative to other countries, increasing the rate of FAA would be challenging from a policy perspective (see chapter 1 for a discussion). Indeed, at 0.96 percent, US already

Exhibit 35

REAL RATE OF US HOUSEHOLD FINANCIAL ASSET APPRECIATION* 1975-2004

Percent

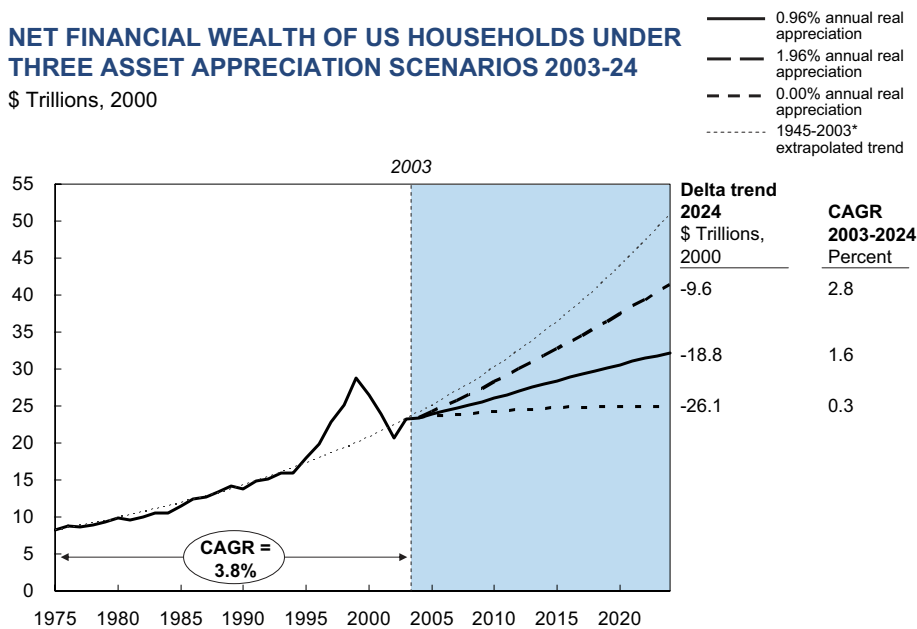


* Personal consumption deflator used to compute real appreciation
Source: Federal Reserve Flow of Funds; BEA

Exhibit 36

NET FINANCIAL WEALTH OF US HOUSEHOLDS UNDER THREE ASSET APPRECIATION SCENARIOS 2003-24

\$ Trillions, 2000



* Trend line is CAGR extrapolation of historical data 1975-2003 (CAGR=3.8%)
Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (March 2004); McKinsey Global Institute Household Financial Wealth Model

has the highest rate of FAA of all the countries we studied.

Increases in savings impact NFW accumulation. Changes in household saving behavior can affect net financial wealth accumulation, but the magnitude of changes in behavior has to be significant.

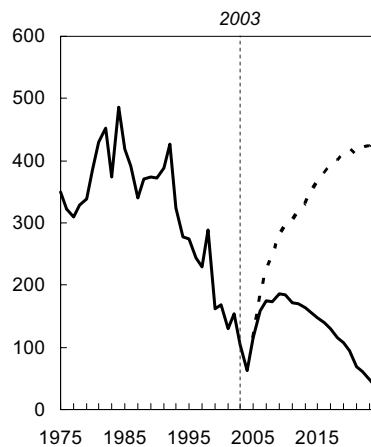
- **Raising younger cohorts saving boosts NFW accumulation significantly.** The higher spending rates of younger cohorts, and their increasing dominance in the population, is a key driver of the projected decline in aggregate savings. In order to test the impact of these different spending habits, we assumed that cohorts born after 1965 gradually increase savings by reducing their average per-household spending levels until they are in line with the 1955 to 1964 cohort (i.e., we eliminated the consumption cohort effect). This change has a significant impact on savings, the net acquisition of financial assets, and on NFW accumulation. NFW growth increases from 1.6 to 2.4 percent annually, eliminating a third of the shortfall relative to trend (exhibits 37-39).

Exhibit 37

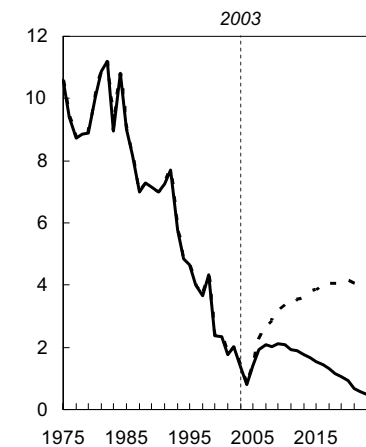
IMPACT OF ELIMINATING CONSUMPTION COHORT EFFECT OF YOUNGER COHORTS ON US HOUSEHOLD SAVINGS

— Base case
- - - No cohort effect

Household savings
\$ Billions, 2000



Household savings rate
Percent of disposable income

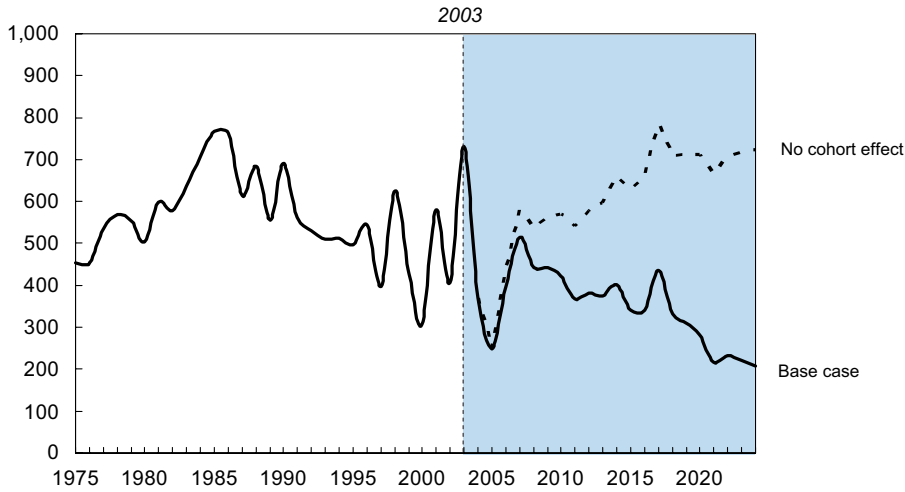


Source: BEA; McKinsey Global Institute Household Financial Wealth Model

Exhibit 38

IMPACT OF ELIMINATING CONSUMPTION COHORT EFFECT OF YOUNGER COHORTS ON US HOUSEHOLD NET ACQUISITIONS OF FINANCIAL ASSETS

\$ Billions, 2000

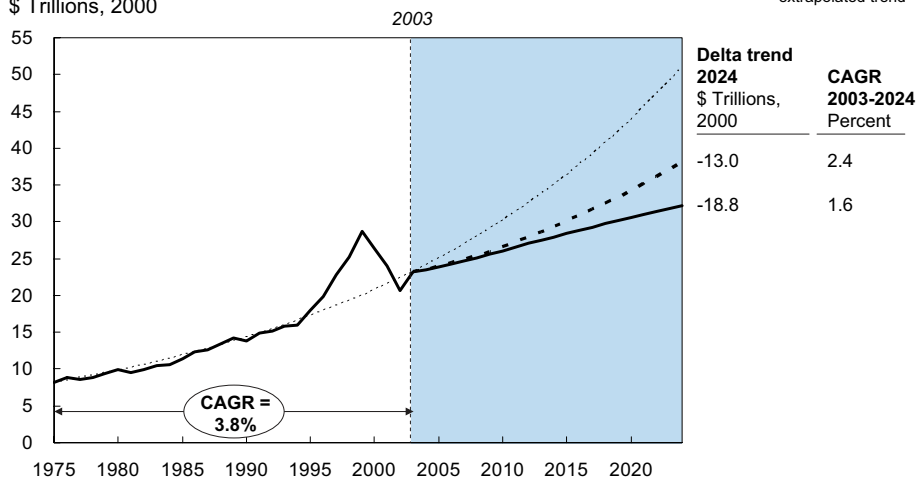


Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Financial Wealth Model

Exhibit 39

IMPACT OF ELIMINATING CONSUMPTION COHORT EFFECT OF YOUNGER COHORTS ON US HOUSEHOLD NET FINANCIAL WEALTH

\$ Trillions, 2000



* Trend line is CAGR extrapolation of historical data 1975-2003 (CAGR=3.8%)
 Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (March 2004); McKinsey Global Institute Household Financial Wealth Model

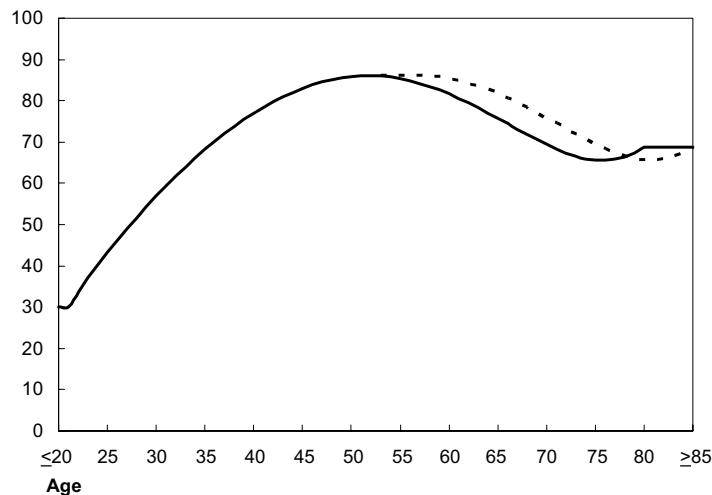
Getting younger cohorts to change their behavior will be challenging, but might be encouraged by policies designed to postpone consumption, such as increasing the non-cash proportion of compensation and even imposing mandatory savings programs. The benefits of any policies that increase savings through reduced spending would need to account for any reductions in income creation that might come about through reduced spending activity.

- Extending peak saving years boosts NFW accumulation.** To isolate the impact of delaying dissaving behavior, we have prolonged peak income and spending by five years (exhibits 40-41). This behavioral change increases the growth rate of NFW from 1.6 to 2.1 percent and reduces the shortfall from trend by 22 percent (exhibits 42-44). Statutory increases in the retirement age or increases in precautionary savings by households (in light of a future pension crisis) could potentially influence such a change in behavior.

Exhibit 40

SENSITIVITY SCENARIOS – 5-YEAR EXTENSION OF HIGH-INCOME YEARS

Lifecycle income per US household*
\$ Thousands, 2000

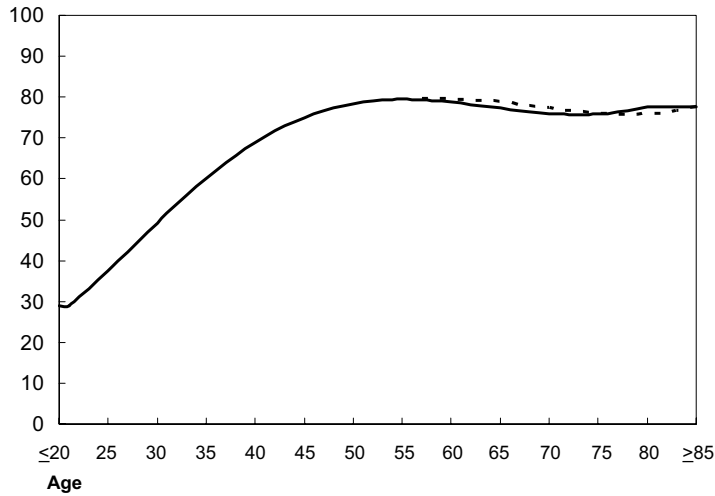


* Representative cohort; not calibrated to the national account levels
Source: MGI estimates based on BLS Consumer Expenditure Survey; McKinsey Global Institute Household Financial Wealth Model

Exhibit 41

SENSITIVITY SCENARIOS – 5-YEAR EXTENSION OF HIGH-CONSUMPTION YEARS

Lifecycle consumption per US household*
\$ Thousands, 2000



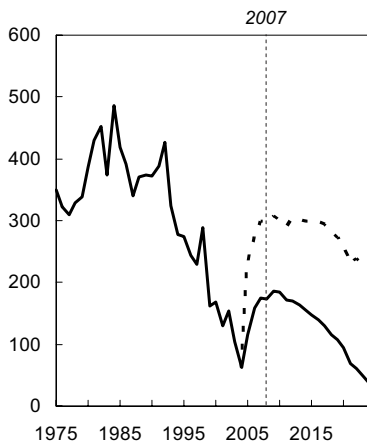
— Baseline scenario
- - - Scenario with 5-year extension of high-consumption years

* Representative cohort; not calibrated to the national account levels
Source: MGI estimates based on BLS Consumer Expenditure Survey; MGI Household Financial Wealth Accumulation Model

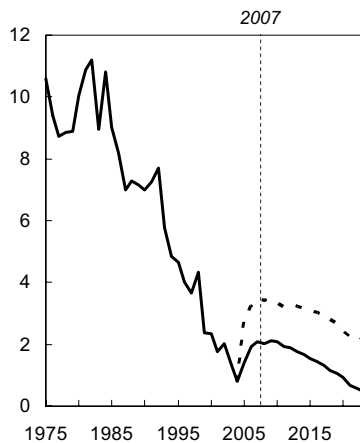
Exhibit 42

IMPACT OF DELAYING DISSAVING BEHAVIOR ON US HOUSEHOLDS SAVINGS

Household savings
\$ Billions, 2000



Household savings rate
Percent of disposable income



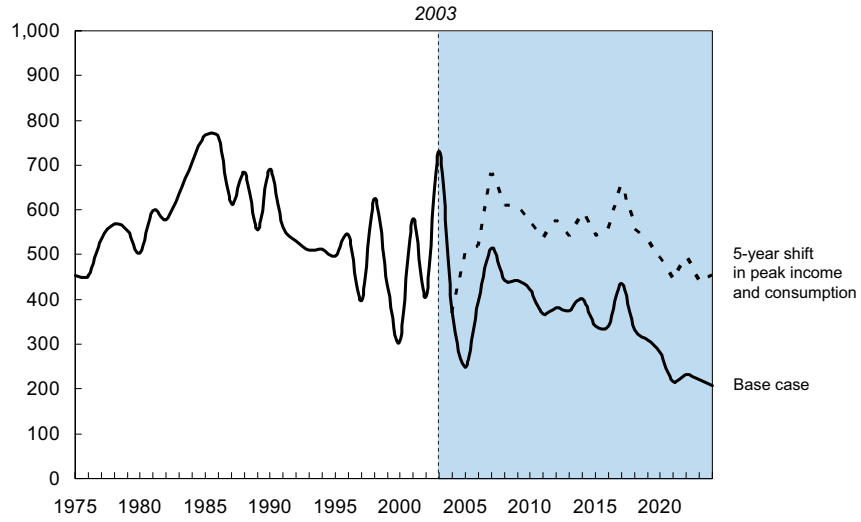
— Base case
- - - 5-year shift in peak income and consumption

Source: BEA; McKinsey Global Institute Household Financial Wealth Model

Exhibit 43

IMPACT OF DELAYING DISSAVING BEHAVIOR ON US HOUSEHOLDS NET ACQUISITION OF FINANCIAL ASSETS

\$ Billions, 2000

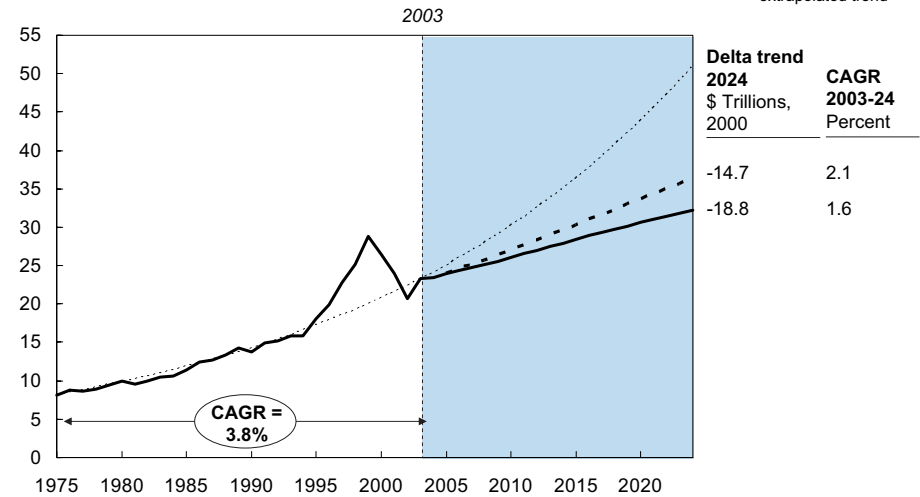


Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (June 2004); McKinsey Global Institute Household Financial Wealth Model

Exhibit 44

IMPACT OF DELAYING DISSAVING BEHAVIOR ON NET FINANCIAL WEALTH OF US HOUSEHOLDS

\$ Trillions, 2000



* Trend line is CAGR extrapolation of historical data 1975-2000 (CAGR=3.8%)
 Source: MGI estimates based on BLS Consumer Expenditure Survey; McKinsey Global Institute Household Financial Wealth Model

Increasing economic growth by itself, without changing the relationship between income and spending, will not change the amount of savings by enough to materially alter the rate of NFW.

Changing demographics, through higher immigration and birth rates, does not materially impact net financial wealth accumulation in the short or medium term. Increasing birth rates is not effective in increasing net financial wealth over the next 20 years because higher birth rates do not produce prime savers for several decades. Increasing immigration, even at the highest levels projected by government statistics, is not large enough to change overall demographic structure, and thus does not materially impact net financial wealth accumulation.

- **Doubling international immigration has a negligible impact on NFW.**

Given that a slowdown in household formation is a important demographic force in the projection period, we tested the impact of increases in immigration. Our baseline scenario incorporates the official population forecast, which assumes average annual immigration of approximately 800,000 people. Assuming the 2004 average of 2.67 people per household implies that immigration adds approximately 300,000 households annually.

We tested an extreme case where international immigration was doubled to 1.6 million people per year (Exhibit 45). As a result, the number of households in 2024 would be higher by 4.7 percent in 2024. This increases the net acquisition of financial assets by an average of \$8.5 billion annually which amounts to a negligible addition of \$192 billion to NFW by 2024 leaving the growth rate nearly unchanged (exhibits 46-47). Changes in international immigration will not have a significant impact on NFW accumulation over the next 20 years.

- **Increasing birth rates is ineffective for raising 20-year net financial wealth accumulation.** Adopting policies to increase birth rates is another frequently discussed solution to aging. However, given households reach their prime saving years between the ages of 30 and 50, the impact of higher birth rates on increasing savings

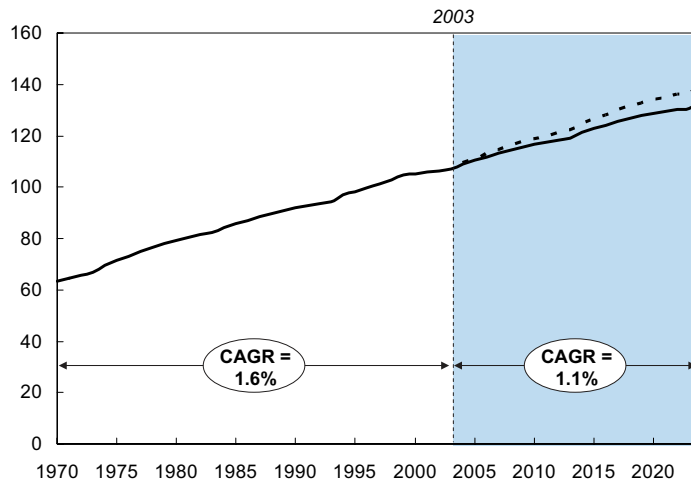
(through more prime savers) will be delayed by several decades. Thus, while higher birth rates could provide a long term solution, it does not address the impact of the aging baby boomers on NFW accumulation over the next 20 years.

Exhibit 45

SENSITIVITY SCENARIOS – IMPACT OF DOUBLING IMMIGRATION FORECAST

Millions of US households

- Immigration at 1.6 million per annum
- - - Immigration at 800,000 per annum



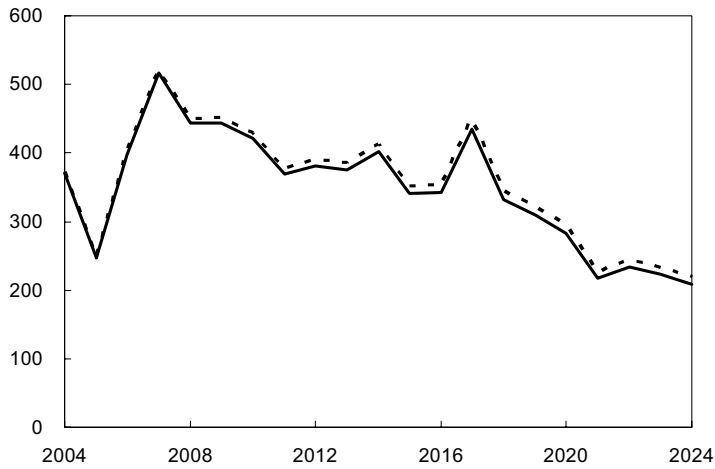
* Assumes 1.6 millions immigrants per year instead of 800,000 in US Census Bureau medium variant projection
Source: US Census Bureau; MGI analysis

Exhibit 46

IMPACT OF DOUBLING IMMIGRATION ON US HOUSEHOLD NET ACQUISITION OF FINANCIAL ASSETS 2004-24

--- Immigration at 1.6 million per annum
 — Immigration at 800,000 per annum

\$ Trillions, 2000



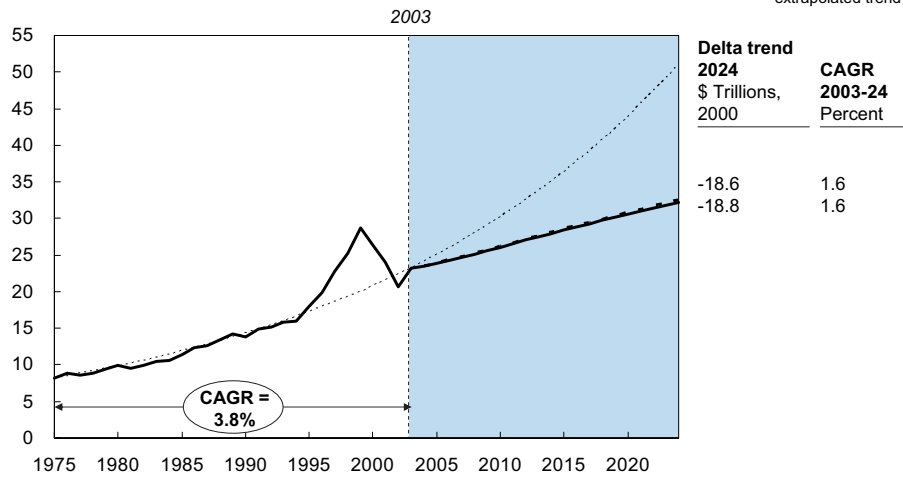
Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (March 2004); McKinsey Global Institute Household Financial Wealth Model

Exhibit 47

IMPACT OF DOUBLING IMMIGRATION ON US HOUSEHOLD NET FINANCIAL WEALTH

— Base case
 --- NFW with immigration doubled
 - - - 1945-2003 extrapolated trend

\$ Trillions, 2000



Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (March 2004); McKinsey Global Institute Household Financial Wealth Model

3. Japan: *The World's Savers Retire*

SUMMARY OF FINDINGS

Demographic trends are expected to slow the rate of growth in Japanese household savings and financial wealth accumulation in the coming years, with potentially significant implications for economic growth in Japan and globally. Our analysis suggests that – in the absence of changes in population trends, savings behavior, or returns on financial assets – the net financial wealth (NFW) of Japanese households will decline 0.2 percent annually between 2003 and 2024, after increasing 5.5 percent per year between 1975 and 2003.¹ By 2024, this retreat will cause total NFW to fall by nearly ¥ 1,000 trillion (or 47 percent) below what it would be had historical growth rates continued.²

The demographic transition is already under way in Japan. The rapid aging of the population and the dramatic slowdown in its rate of population growth are often discussed as important forces that will slow household savings growth. As important, but less widely discussed, are the slowdown in the rate of household formation (implied by the slowing population growth), and the significant differences in saving behavior between younger and older

1 Unless otherwise noted, all growth rates quoted henceforth are in real terms. Values are quoted in 2000 yen.

2 In this study we focus on assessing the direction, timing and magnitude of the demographic pressure on household savings and financial wealth accumulation, using country-specific demographic forecasts, empirical observations of historical lifecycle and cohort saving behavior, and historical rates of financial asset appreciation (see "Technical Notes" for more details). Our findings should not be interpreted as point forecasts because we do not capture the feedback that will occur as households, markets and other forces adjust to these demographic changes. For ease of exposition, we use "will" (e.g., savings "will" fall) throughout this document to describe our demographically driven projections.

generations. To fully understand the implications of the demographic transition for NFW accumulation, the impact of all these microeconomic forces must be considered and translated into results meaningful for the overall economy.

In this study we show how these forces build on each other to produce a particularly acute impact on savings and net financial wealth accumulation. New household formation is coming to a standstill, and in 20 years there will be nearly the same number of households available to save as there are today. Of these households, an increasing number of older households are moving into the lower saving or dissaving part of their life cycle. The remaining younger households are part of younger generations which save less and borrow more than older generations at all ages. All of this results in a meager flow of aggregate new savings, and produces an actual decline in aggregate NFW by 2024.

This decline has significance for both households and the economy as a whole. For households, NFW accumulation is a good proxy for economic well-being because it represents the wealth that can be used to support future living standards. For the economy, there will be less household savings to support a fast-growing retiree population and it will become more difficult to support domestic investment and sustain strong economic growth.

We have sought to identify countervailing forces that could moderate or even reverse the projected slowdown in savings and NFW accumulation. The results of these exercises indicate that, barring an upsurge in economic activity which raises household income, higher economywide rates of return, and major behavioral changes that ramp up saving rates to 1980s levels, Japan will, at best, see anemic growth in household NFW over the next 20 years. To unleash the countervailing forces, Japan needs to focus on instituting economic, institutional, and regulatory reforms that would generate increased domestic competition and stronger rates of productivity growth.

In the rest of this chapter, we explore these dimensions of Japan's household net financial wealth:

- The two distinct historical phases of household NFW accumulation in Japan.

-
- The slowdown in household formation and changes in household behavior which will drive changes in household NFW.
 - The impact of demographic changes on household NFW accumulation over the next 20 years.
 - Identifying changes that could mitigate the impact of demographic forces, and suggest potential policy directions.

HISTORICAL EVOLUTION OF HOUSEHOLD NET FINANCIAL WEALTH

The accumulation of NFW by Japanese households has taken place in two distinct phases over the last 30 years. During the buildup phase, which began in the 1970s and proceeded through the stock and housing market bubbles that peaked in December 1989, NFW accumulation was robust, rising at an average annual rate of 8.2 percent after adjusting for inflation. This impressive record came to an abrupt end in 1990 with the bursting of the twin bubbles. During the subsequent "slowdown phase," growth in NFW was cut by almost two-thirds, rising at only a 2.9 percent annual rate. Japan is still in this phase today.

This section documents the shifting pattern of NFW accumulation by Japanese households during the buildup (1975-89) and slowdown (1990-2003) by considering the evolution of both assets and liabilities. Over the last 30 years, savings has been the most important driver of asset accumulation (rather than investment income and appreciation) and the real estate bubble in the 1980s is the most important factor in liability accumulation.

Basic facts on net financial wealth accumulation

The stock of financial assets held by households can change in two ways: households can purchase new assets and existing asset holdings can be revalued because of changing market prices.

The *net acquisition of financial assets* – purchases less sales – is largely driven by contemporaneous savings out of income.³ Total returns on financial assets, as commonly understood, are a combination of realized capital income and unrealized asset appreciation. Realized capital income, including interest and dividends, is by convention counted as personal income, a portion of which is saved.⁴ The revaluation of asset holdings therefore only captures unrealized asset appreciation (or depreciation). All references to *financial asset appreciation* (FAA) constitute these unrealized gains, and are adjusted for inflation.

The stock of financial assets less outstanding liabilities equals the net financial wealth of household (NFW). We focus on measuring the demographic impact on NFW because this metric enables us to build our understanding of the demographic impact on the global capital market. It also helps us understand the impact on households because NFW is a good proxy for overall economic well being (see chapter 1 for discussion).

Household financial assets

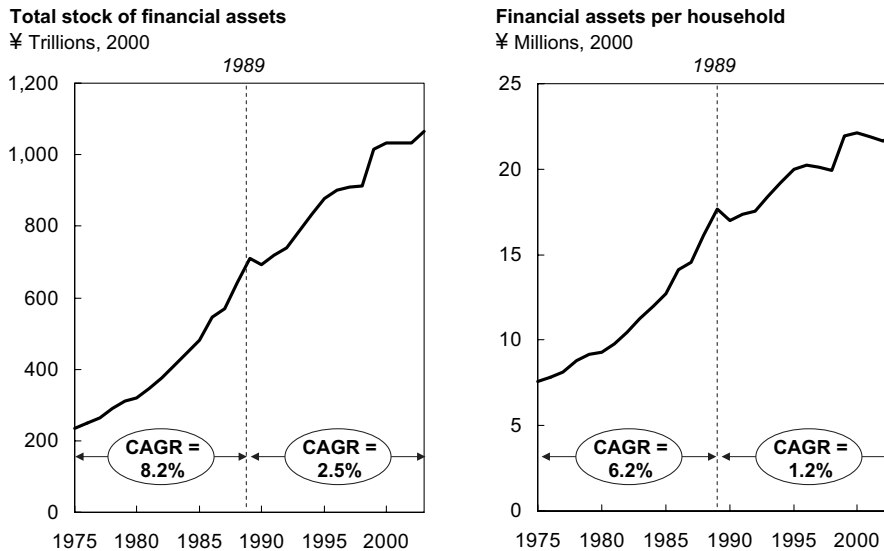
The total stock of financial assets held by Japanese households tripled during the buildup, rising at an 8.2 percent annual rate, while average assets per household increased at a 6.2 percent annual rate. During the slowdown, the rate at which households accumulated assets declined by nearly two-thirds on both an aggregate and per-household basis (Exhibit 1). The importance of savings and the

3 See "Technical Notes" for a definition of the relationship between saving out of income as defined in the national accounts, and the net acquisition of financial assets as defined in the flow of funds accounts.

4 Realized capital gains are not counted in the national accounts as savings, see Reinsdorf (2004) for the U.S. case. We capture the impact of realized capital gains on purchases of new assets because asset accumulation is driven by the net acquisition of financial assets as measured by the flow of funds accounts (see "Technical Notes" for details).

Exhibit 1

**JAPANESE HOUSEHOLD FINANCIAL ASSET ACCUMULATION
1975-2003**



Source: Bank of Japan; Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan; National Institute of Population and Social Security Research, Japan; MGI estimates

conservative stance of Japanese households' asset allocation have been the main themes underpinning this pattern of financial asset accumulation.

Household savings drives net acquisition of financial assets. The primary driver of financial asset acquisition by Japanese households has been their historically strong saving behavior. When savings faltered, acquisition of financial assets plummeted.

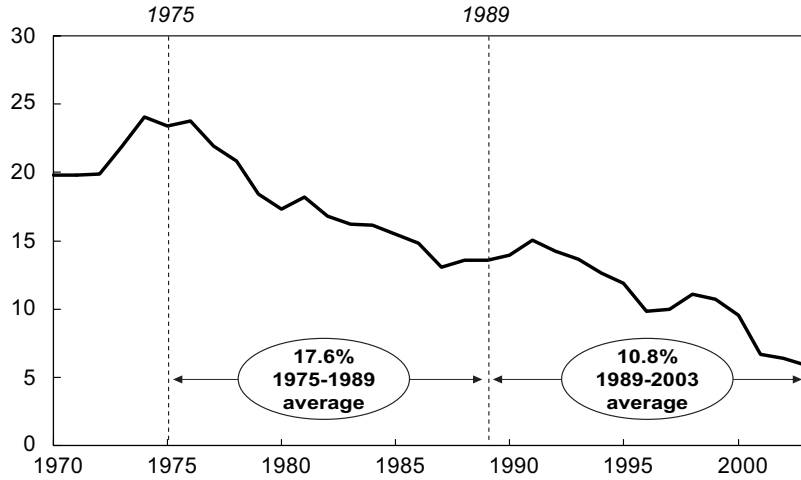
Although saving rates have been falling steadily from their peak of 24 percent in 1974, Japanese households still saved a very high average of 17.6 percent of their disposable income during the buildup (as compared to 9.1 percent in the United States). With high saving rates and with disposable income growing at 2.8 percent per year, the level of household savings remained strong, translating directly into a steady acquisition of financial assets (exhibits 2-4).

The saving rate continued its decline during the slowdown. When the stock and housing market bubbles burst, the economy tumbled into recession and more than a decade of poor economic performance. Disposable income growth

Exhibit 2

JAPANESE HOUSEHOLD SAVINGS RATE 1970-2003

Percent of disposable income

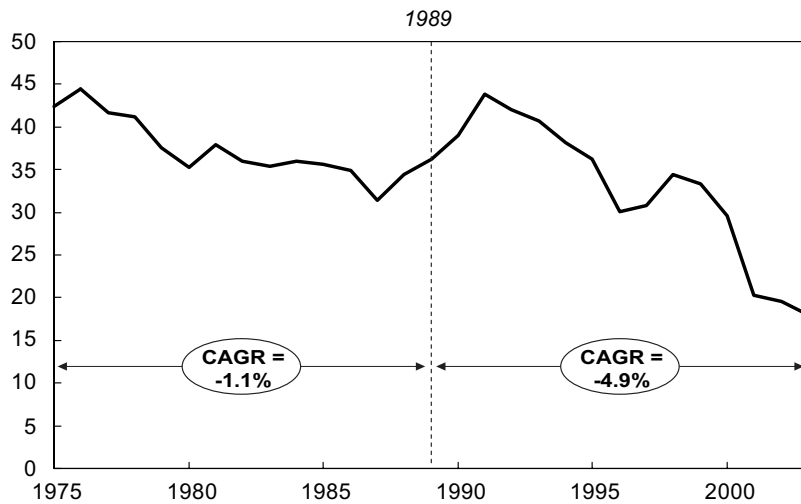


Source: ESRI, Cabinet Office, Government of Japan

Exhibit 3

ANNUAL SAVINGS OF JAPANESE HOUSEHOLDS 1975-2003

¥ Trillions, 2000

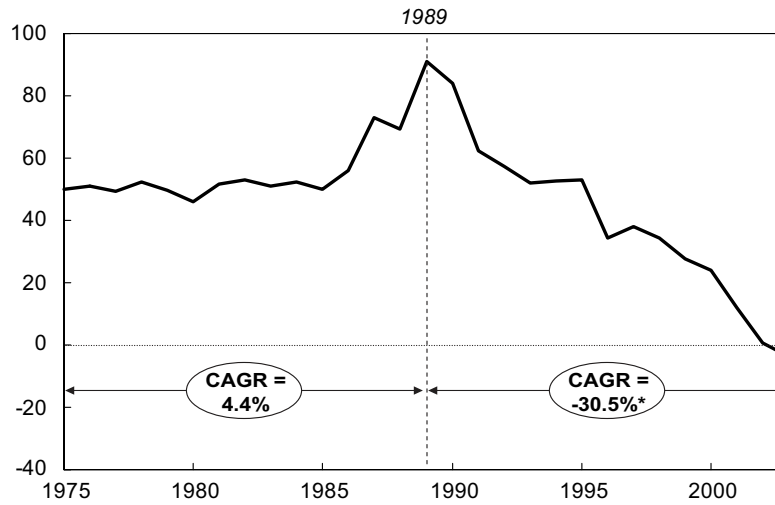


Source: ESRI, Cabinet Office, Government of Japan

Exhibit 4

NET ACQUISITION OF FINANCIAL ASSETS BY JAPANESE HOUSEHOLDS 1975-2003

¥ Trillions, 2000



* CAGR is 1989-2002 as net acquisition is negative in 2003
Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

slowed to just over 1 percent, and the level of household savings plummeted at an annual rate of -4.9 percent. Households' net acquisition of financial assets went into free-fall, dropping at -30.5 percent per year from 1989-2002 before actually dropping below 0 (implying net sales of financial assets) in 2003.

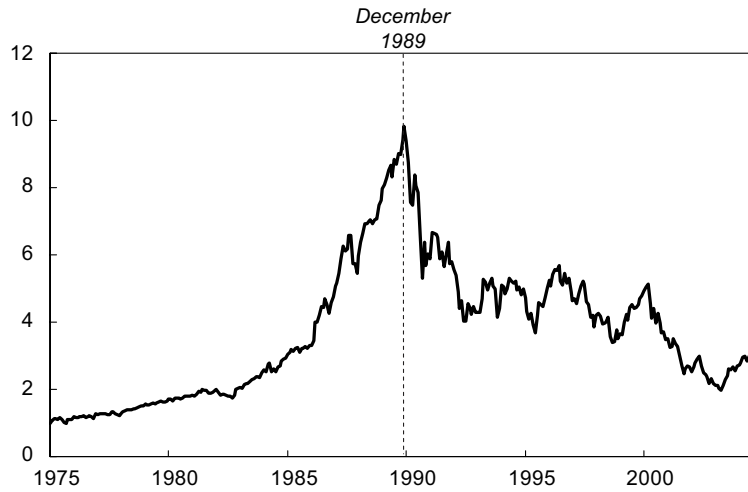
Risk-averse portfolio allocation demonstrates importance of savings. By 1989, the Nikkei had surged to almost 10 times its 1975 level, with a substantial amount of the appreciation occurring in the late 1980s (Exhibit 5). Even with this expansion, equities were only the third-largest contributor to household asset growth during the buildup, as households held just 15.1 percent of their financial assets in equities during this period. In contrast, household held 51.7 percent of their assets in cash equivalents, and increases in these instruments through savings accounted for 43.6 percent of the overall growth in financial assets. Purchases of fixed income instruments accounted for an additional 24.5 percent of growth (Exhibit 6).⁵ Interest income did not

⁵ In the case of Japan, fixed income securities includes bonds directly held by households as well as insurance and private pension fund reserves that generate fixed income. Cash equivalents include demand and time deposits.

Exhibit 5

NIKKEI 225 STOCK MARKET INDEX 1975-2004

Monthly, January 1975 = 1.00

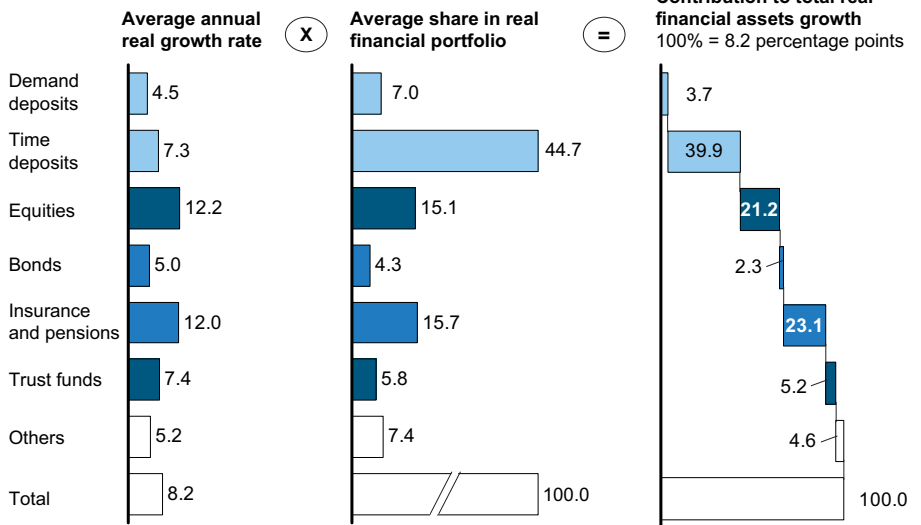


Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

Exhibit 6

CONTRIBUTION TO JAPANESE FINANCIAL ASSET GROWTH BY ASSET CLASS 1975-1989

Percent



Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

prove to be an important source of income and savings during this period: cash equivalents averaged an estimated real return of -0.1 percent while fixed-income securities averaged 1.2 percent.⁶

The conservative posture taken by Japanese households paid off during the slowdown, when financial assets growth fell to 2.5 percent, less than two-thirds its previous annual rate. The collapse of the Nikkei in the 1990s hurt the value of household portfolios, but the damage was limited, subtracting just 0.6 percentage points from growth (Exhibit 7). Japanese households reacted by making their allocation even more conservative, maintaining their cash equivalents at close to a 50 percent share while increasing their share of fixed income instruments from 20.0 percent to 28.5 percent. (Exhibit 8). The low returns produced by these asset classes magnified the reliance on savings for increases in financial assets just when, as noted, savings was drying up.

Financial assets have not appreciated. Given their conservative portfolio allocation, it is not surprising that Japanese households have seen limited after-inflation gains in the value of their assets. During the buildup, low nominal rates of appreciation conspired with high rates of inflation to produce negative real rates of asset appreciation for Japanese household. Over this period, household financial assets depreciated 2.8 percent annually. In the slowdown, the Nikkei collapsed, but inflation also slowed dramatically, moderating the pace of decline in asset values. Over this second period, household financial assets depreciated 0.8 percent annually. In contrast, US households' assets depreciated in value 0.2 percent per year during the Japanese buildup years, but appreciated 2.0 percent during the slowdown in Japan.⁷ The differential impacts of asset appreciation on asset accumulation in Japan and the U.S. are stark: in Japan, net purchases of financial assets were the sole source of asset growth between 1975 and 2003; in the US net purchases were responsible for only 70 percent of growth (exhibits 9-10).

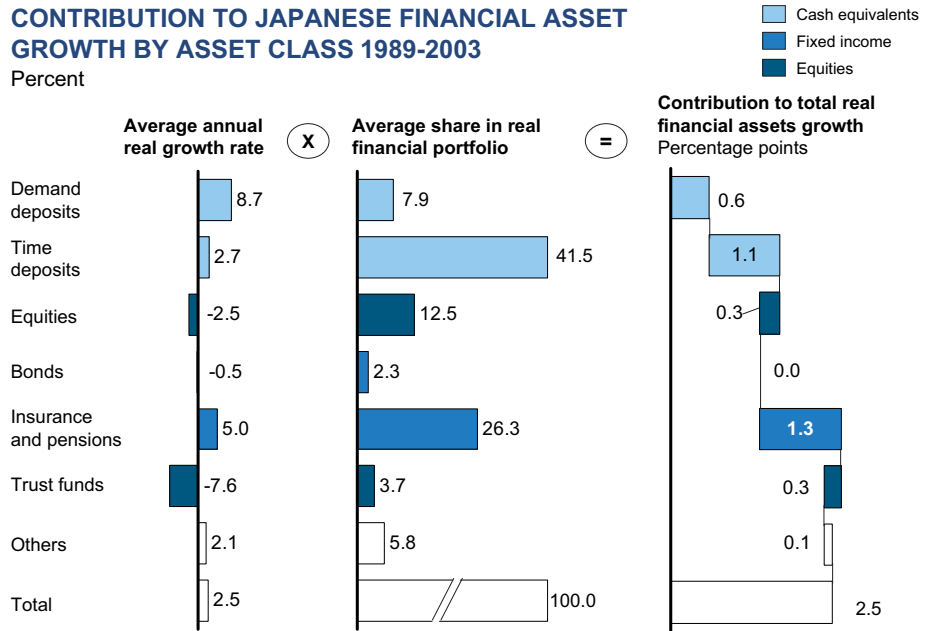
6 Weighted real return calculations are based on using outside return benchmarks, actual portfolio shares, and the personal consumption price deflator.

7 A large percentage of the growth in asset value in the US was as a result of the 1995-99 bubble (when equities appreciated at an average rate of 19.7 percent) but most of that growth was wiped out by the correction (1999-2003 when equities fell an average of 12.7 percent per year)

Exhibit 7

CONTRIBUTION TO JAPANESE FINANCIAL ASSET GROWTH BY ASSET CLASS 1989-2003

Percent

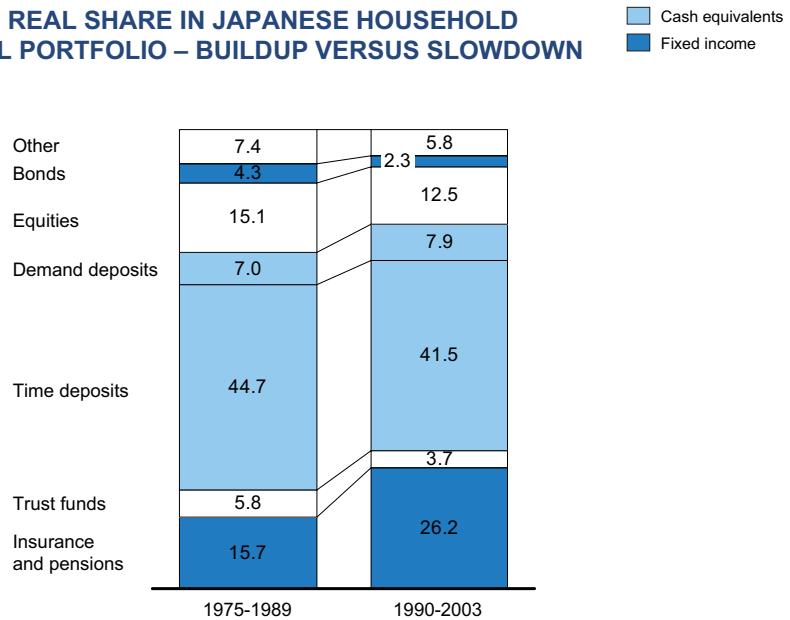


Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

Exhibit 8

AVERAGE REAL SHARE IN JAPANESE HOUSEHOLD FINANCIAL PORTFOLIO – BUILDUP VERSUS SLOWDOWN

Percent

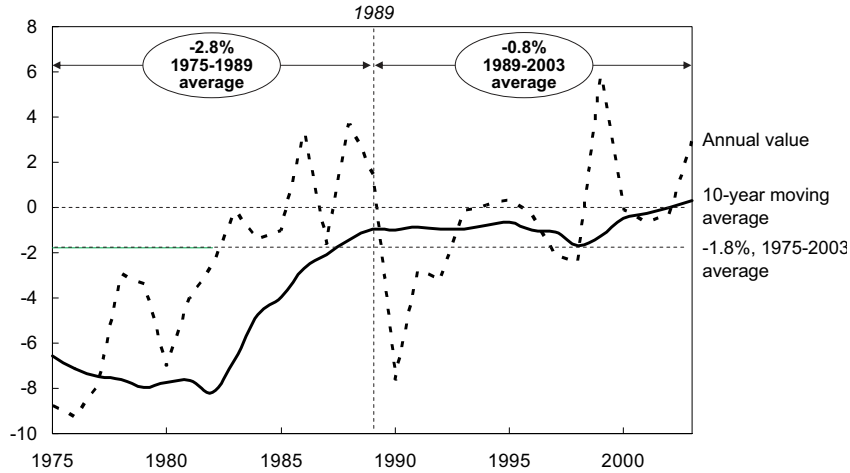


Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

Exhibit 9

REAL RATE OF APPRECIATION OF FINANCIAL ASSETS HELD BY JAPANESE HOUSEHOLDS* 1975-2003

Percent

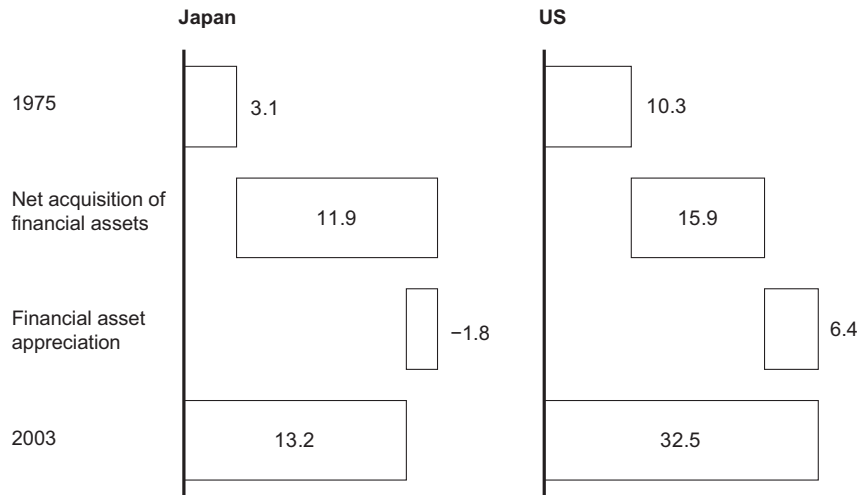


* MGI estimates based on the stock of financial assets, net acquisition of financial assets, and consumer price deflator
 Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

Exhibit 10

SOURCES OF REAL FINANCIAL ASSET GROWTH 1975-2003

\$Trillions, 2000; percent



Source: Federal Reserve Flow of Funds; Bank of Japan; Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan

Historical evolution of financial liabilities

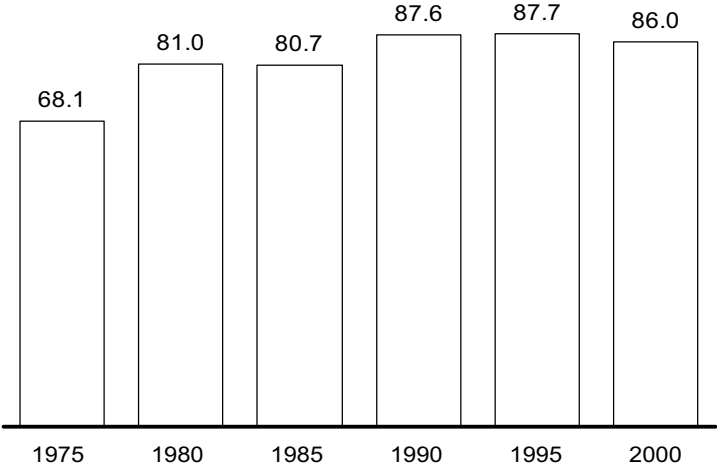
As is true in many countries, mortgages are the largest financial liability of households in Japan. Since 1980, the housing share of liabilities has been 80 percent or higher (Exhibit 11). To understand the historical evolution of liabilities in Japan, it is helpful to disaggregate the buildup phase into two sub-phases: 1975 to 1986, and 1986 to 1990. During the first period, real liabilities grew at a robust rate of 7.0 percent annually. Beginning in 1986, liability growth spiked, increasing 11.5 percent per year through 1990. This spike in the growth of liabilities corresponded with the housing market bubble (exhibits 12-13).

Once the bubble burst, liability growth slowed dramatically to 1.1 percent annually. On a per-household basis, liabilities actually decreased 0.2 percent annually between 1990 and 2003 (Exhibit 14).

Exhibit 11

HOUSING LIABILITIES SHARE OF TOTAL FINANCIAL LIABILITIES 1975-2000

Percent

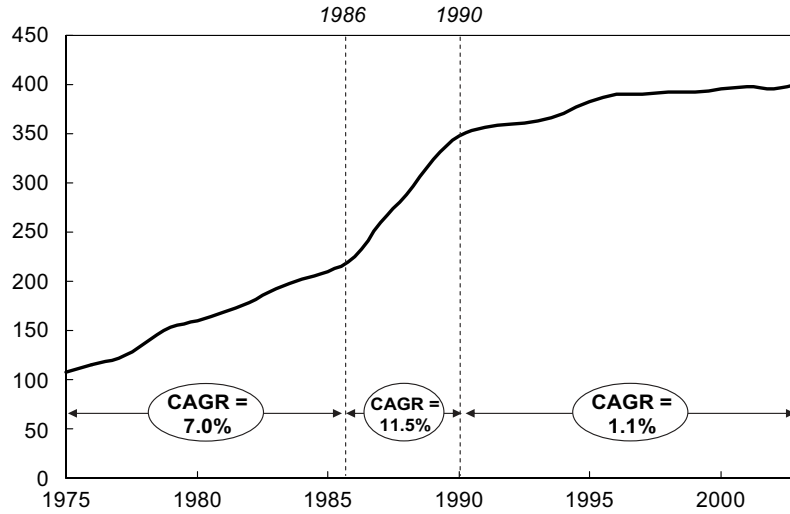


Source: Family Expenditure Survey, 1975-2000, Japan

Exhibit 12

TOTAL STOCK OF LIABILITIES BY JAPANESE HOUSEHOLDS 1975-2003

¥ Trillions, 2000

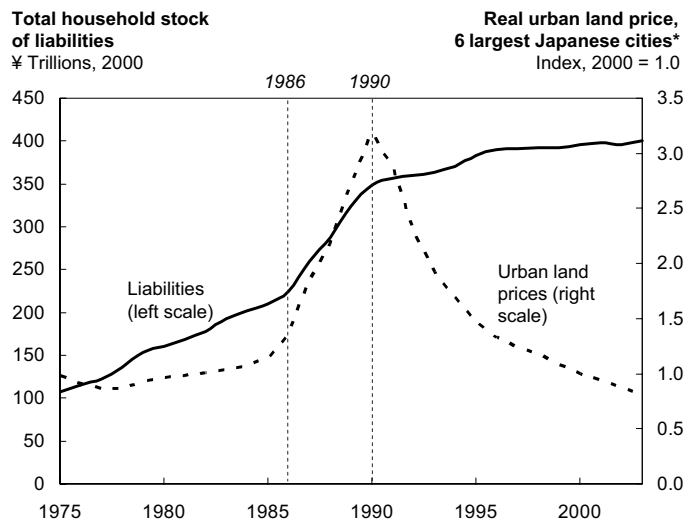


Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

Exhibit 13

LIABILITIES AND LAND PRICES IN JAPAN, 1975-2003

— Liabilities
- - - Land price

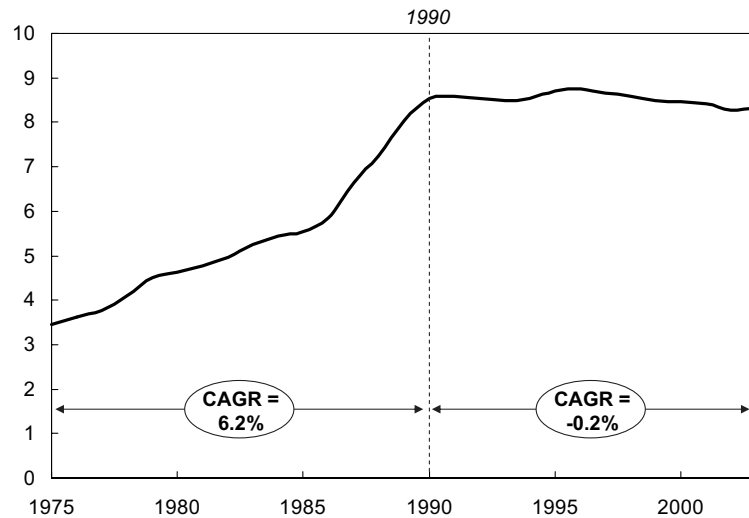


* District areas of Japan's largest cities: Tokyo, Yokohama, Nagoya, Kyoto, Osaka, and Kobe; price index relative to consumption price deflator; index published in Q1 & Q3; annual number is taken to be Q3 value
Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan; Japan Real Estate Research Institute

Exhibit 14

TOTAL LIABILITIES PER JAPANESE HOUSEHOLD 1975-2003

¥ Millions, 2000



Source: Bank of Japan; ESRI, Cabinet Office, Government of Japan

DEMOGRAPHIC DRIVERS OF CHANGE IN HOUSEHOLD NET FINANCIAL WEALTH

Japan is already undergoing significant demographic change which will have an increasingly negative impact on NFW accumulation in the years ahead:

- **Households available to create wealth will be limited** by slowing population growth and reduced household formation.
- **Financial asset accumulation will slow** because falling prime saver ratio and cohort-specific behavioral changes will lower average saving per household.
- **Liability growth will bounce back** as higher borrowing by younger cohorts mitigates positive impact of older households' reducing liabilities.

Slowing population growth will reduce household formation

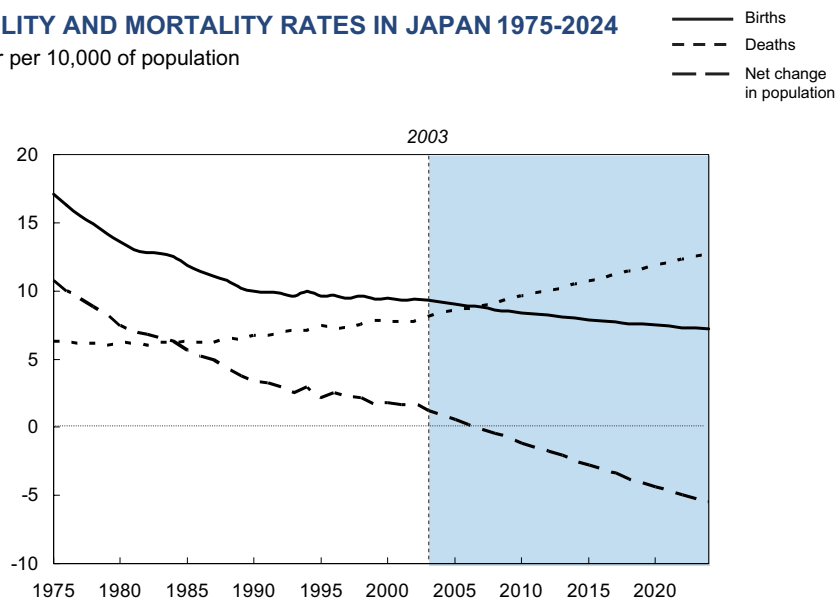
Falling birth rates, increasing death rates, and insignificant immigration will

cause the Japanese population to start declining in 2006. Between 1975 and 2003, birth rates have fallen nearly by half and death rates have increased by one-third. By 2024, the birth rate will be nearly 60 percent below its 1975 level, while the death rate will be more than two times higher. The death rate will exceed the birth rate for the first time in 2006 (Exhibit 15).

Exhibit 15

FERTILITY AND MORTALITY RATES IN JAPAN 1975-2024

Number per 10,000 of population



Source: National Institute of Population and Social Security Research, Japan

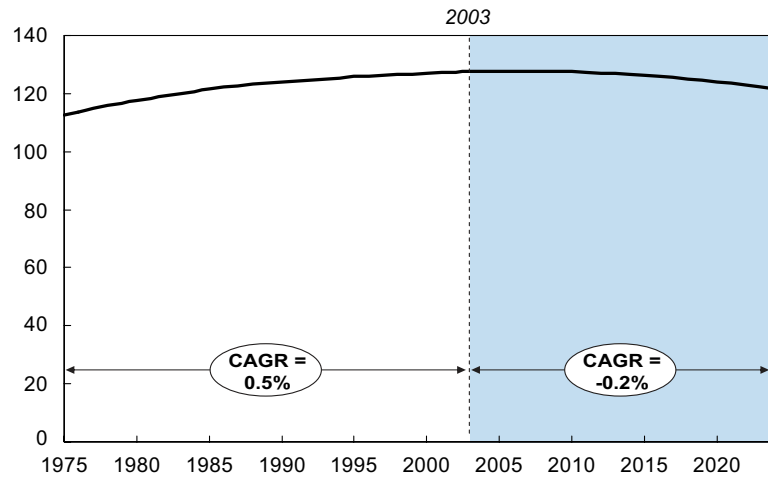
Declining fertility and mortality rates have taken a toll on population growth.

The population growth rate, after rising at a compound annual rate of 1.3 percent from 1947 to 1975, slowed by more than half from 1975 to 2003. From 2003 to 2024, population is projected to fall by 0.2 percent per year (Exhibit 16). Slowing population growth will slow the rate of household formation. The number of households will rise just 0.2 percent per year between 2003 and 2024 as compared to 1.6 percent annually between 1975 and 2003 (Exhibit 17). Lower rates of household formation will constrain aggregate NFW accumulation since there will be fewer households earning income and generating savings.

Exhibit 16

POPULATION OF JAPAN 1975-2024

Millions

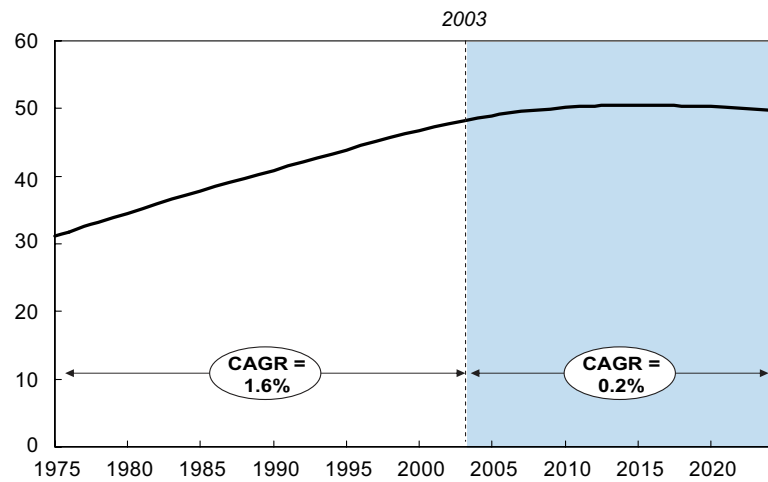


Source: National Institute of Population and Social Security Research, Japan

Exhibit 17

NUMBER OF HOUSEHOLDS IN JAPAN 1975-2024

Millions



Source: National Institute of Population and Social Security Research, Japan

Financial asset accumulation will be slowed by lower savings per household

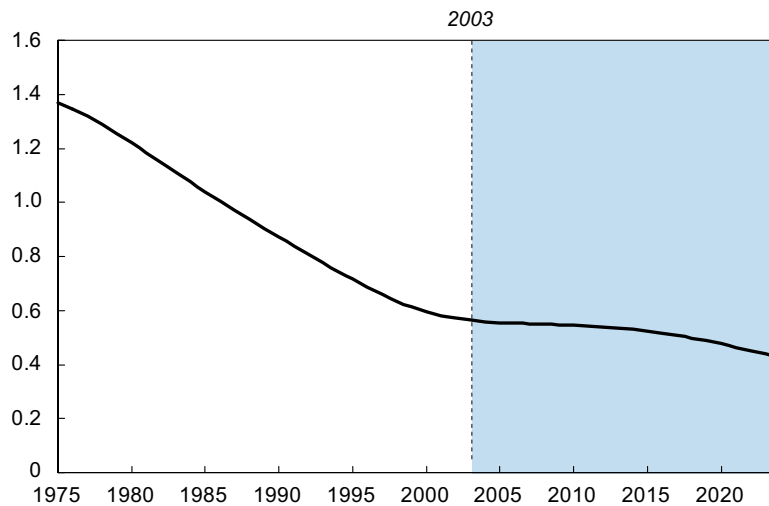
Average household savings will be lower because there will be fewer households in their prime saving years, and prime saver households who consume more and save less will become increasingly dominant.

Declining prime saver ratio. The prime saver ratio measures the number of households in their prime saving years relative to the number of elderly households who save at lower rates or dissave. Prime saver households are headed by individuals in the 20-year brackets between 30 and 50 years old, when household savings is at its maximum. In Japan, the prime saver ratio has been declining since 1970, and is expected to stabilize at a very low level through 2024 (Exhibit 18). This implies that the demographic structure in Japan will be increasingly less able to support NFW accumulation as the number of prime savers grows more slowly than elderly households.

Exhibit 18

JAPANESE PRIME SAVER RATIO 1975-2024

Ratio of households aged 30-50 to households aged 65 and older*



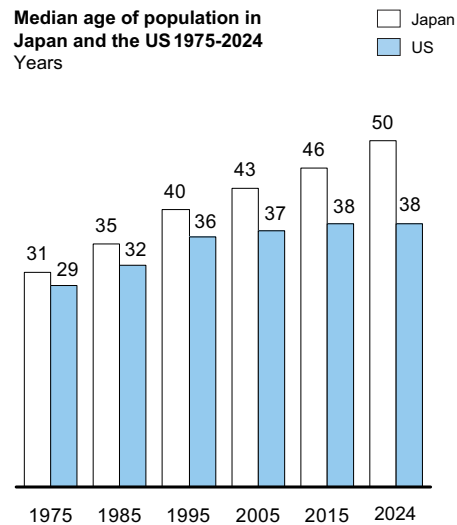
* Defined by lifecycle savings curve (Exhibit 20)
Source: National Institute of Population and Social Security Research, Japan

The declining prime saver ratio moderates financial asset accumulation in Japan because aging households are moving into the low saving and the dissaving phases of their life cycle.

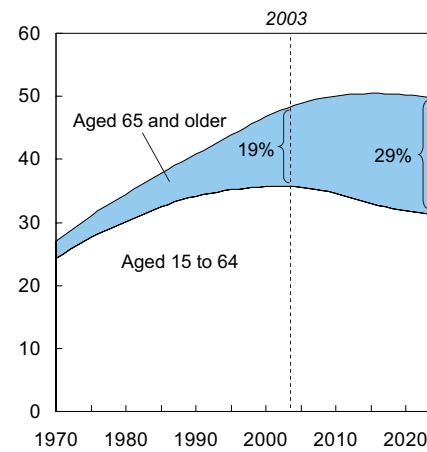
Exhibit 19

POPULATION AGING TRENDS

Median age of population in Japan and the US 1975-2024
Years



Age of head of household in Japan 1970-2024
Millions



Source: Population census, National Institute of Population and Social Security Research, Japan; Family Expenditure Survey, 1975-2000, Japan; US Census Bureau; MGI estimates

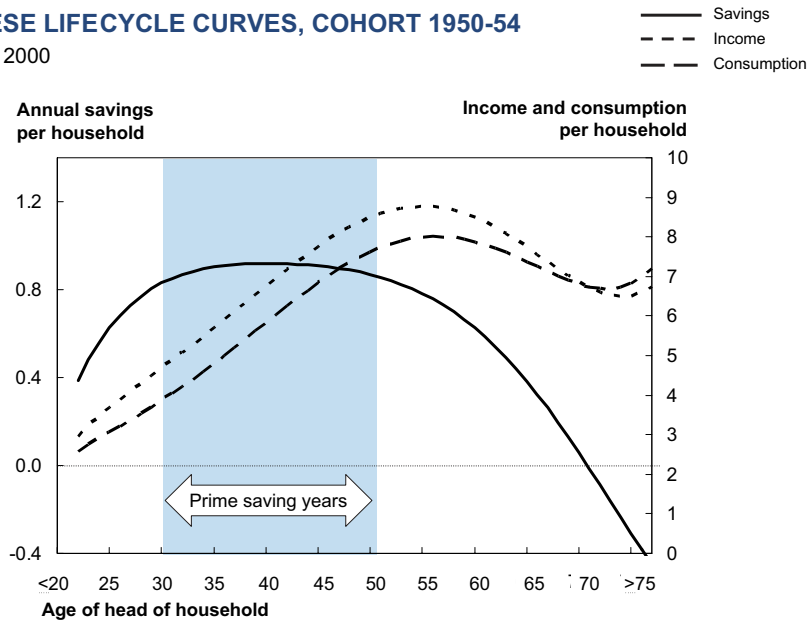
- **The Japanese population is aging quickly.** The median age will rise to 50 by 2024, 12 years older than the median age in the United States, where strong immigration flows mitigate the impact of the aging baby boom generation (Exhibit 19). Meanwhile the number of individuals in Japan aged 65 will rise from 19 percent in 2003, to 29 percent in 2024.
- **The aging of the population impacts savings and financial asset accumulation through age-based lifecycle savings behavior.** The sharply sloping household lifecycle savings curve found in Japan implies that total savings is highly sensitive to population aging. Indeed, part of the drop off in savings during the 1990s is due to the already aging population. The Japanese income and consumption life cycle curves peak between the ages of 50 and 60 (Exhibit 20).⁸ The income curve trails off more rapidly after the peak, as older

⁸ MGI worked closely with Professor Orazio Attanasio, a leading expert on lifecycle and cohort savings behavior, to produce lifecycle and cohort curves for the United States. Attanasio's methodology was used by MGI to estimate life cycle curves for Japan; see "References."

Exhibit 20

JAPANESE LIFECYCLE CURVES, COHORT 1950-54

¥ Millions, 2000



Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

households seek to maintain their consumption levels even while income levels begin to taper off.

The savings curve is the difference between the income and consumption profiles (and hence it shows additional savings flows, not accumulated assets). Savings moves up rapidly early in life, stays relatively constant through the peak earning years, and then tapers off as households age. For the 1945-54 cohort, the savings life cycle goes negative after age 70.⁹

The impact of a declining prime saver ratio on asset accumulation should now be clear: aging households save less (or even dissave), and therefore accumulate fewer assets (or shed them).

Lower saving by younger cohorts will exacerbate problem of declining prime saver ratio. Even though the prime saver ratio was declining in the 1970s and

⁹ The age at which households begin dissaving varies by cohort.

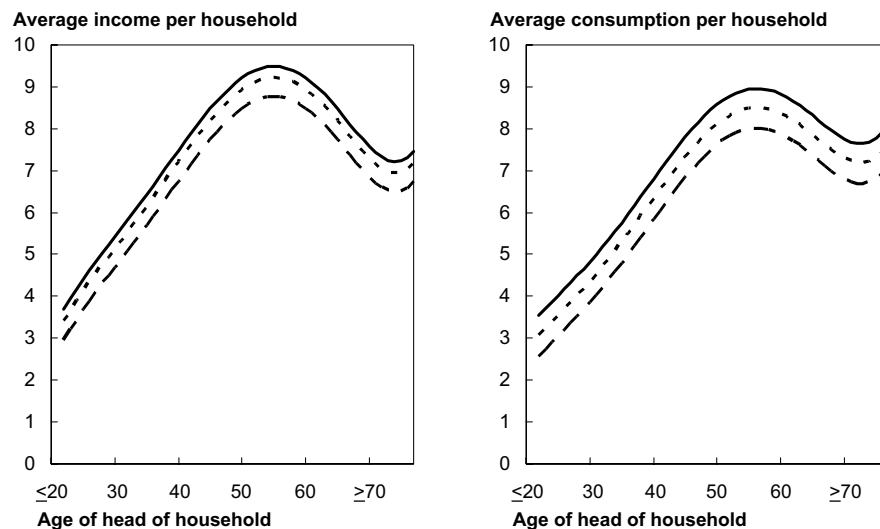
1980s, the 1990s have been different, as will the coming decades, because the behavior of Japanese households has changed. Household headed by individuals born in the 1960s and 1970s have been moving into their prime saving years since 1990. These households have higher disposable incomes than earlier generations, and therefore higher lifecycle income curves. They also spend money at higher rates, implying higher lifecycle consumption curves as well (Exhibit 21). The net impact on savings provides a simple but powerful result: prime saver households headed by younger cohorts save less (Exhibit 22). This change in household behavior will amplify the impact of a declining prime saver ratio going forward, as the prime savers will be saving less on average than comparable prime savers in the past.

Exhibit 21

INCOME AND CONSUMPTION LIFE CYCLES OF 3 JAPANESE COHORTS

¥ Millions, 2000

— Cohort 1970-74
 - - - Cohort 1960-64
 - · - Cohort 1950-54



Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

Liability growth will bounce back because of higher borrowing by younger cohorts

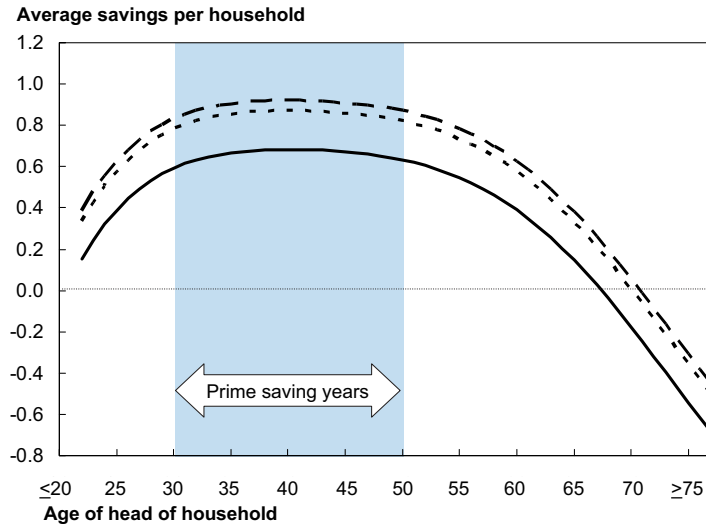
Similar to income, consumption, and savings, household borrowing also follows a lifecycle pattern, with household liabilities peaking between ages 50 and 60. Unlike income and spending, lifecycle liabilities track the stock of outstanding

Exhibit 22

LIFECYCLE SAVINGS BY 3 JAPANESE COHORTS

¥ Millions, 2000

— Cohort 1970-74
- - Cohort 1960-64
- · - Cohort 1950-54



Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

liabilities, not the annual increase in borrowing. This explains why the liability lifecycle curve tapers off more slowly than the lifecycle savings curve (Exhibit 23).

As the overall population ages, this lifecycle behavior will help reduce liabilities and increase NFW. The positive impact of aging on outstanding liabilities is mitigated by a behavioral change in the younger cohorts: not only do younger cohorts save less, they borrow more (Exhibit 24). Going forward, the net impact on NFW accumulation will depend on which of these forces are stronger.

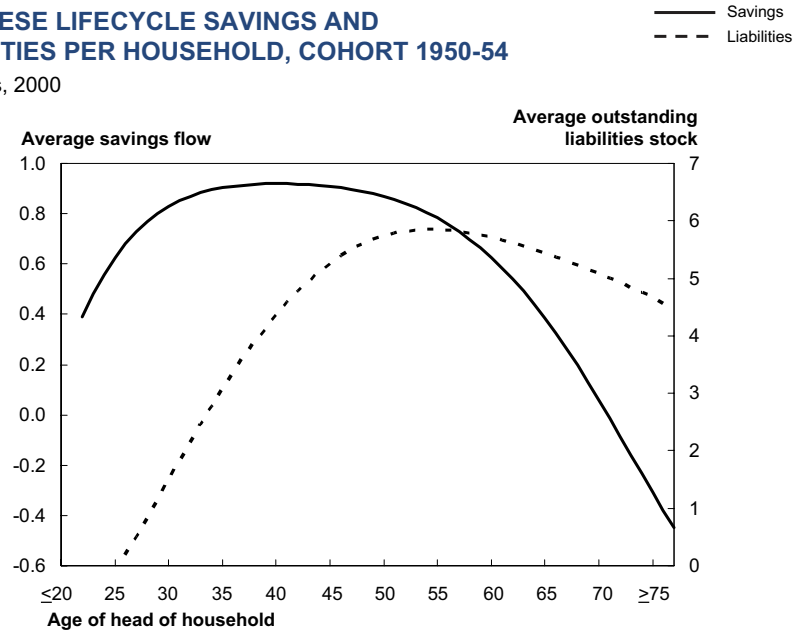
DEMOGRAPHIC IMPACT ON JAPANESE HOUSEHOLD NET FINANCIAL WEALTH

The demographic and behavioral changes in Japan add up to a bleak picture for savings and NFW accumulation over the next 20 years. We expect that Japan will actually regress, and end up in 2024 with lower NFW per household than today.

Exhibit 23

JAPANESE LIFECYCLE SAVINGS AND LIABILITIES PER HOUSEHOLD, COHORT 1950-54

¥ Millions, 2000

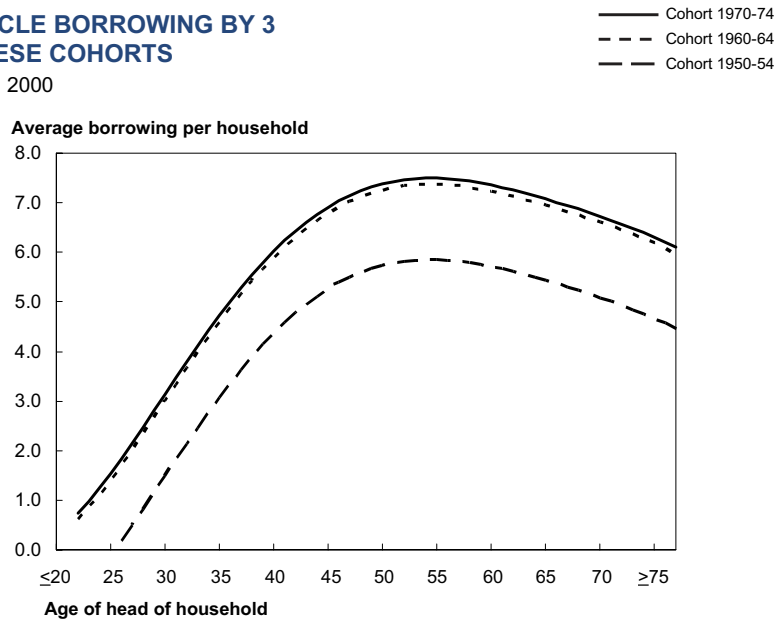


Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

Exhibit 24

LIFECYCLE BORROWING BY 3 JAPANESE COHORTS

¥ Millions, 2000



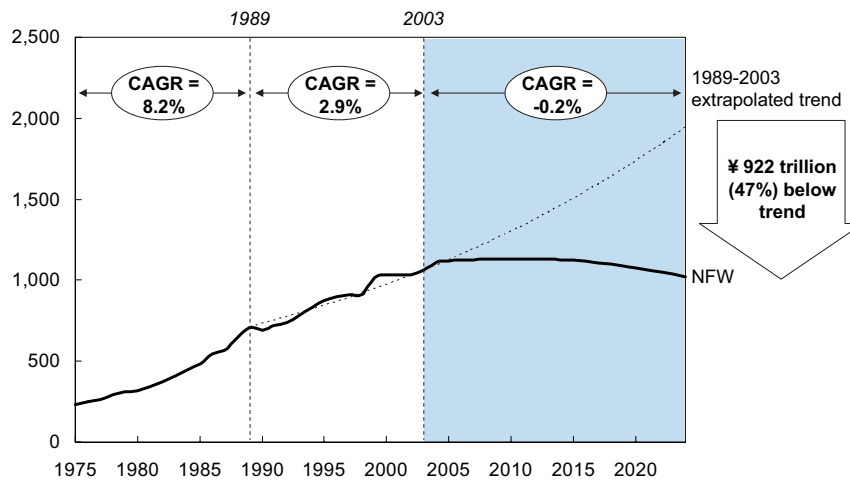
Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

With financial assets falling, and liabilities continuing to increase, our baseline projections indicate that aggregate NFW held by Japanese households will fall 0.2 percent annually between 2003 and 2024, ending up nearly ¥ 1,000 trillion below an extrapolation of the 1989-2003 compound annual growth trend (Exhibit 25). On a per-household basis, NFW will fall 0.4 percent annually over the same period, reducing per-household net financial wealth to 1997 levels (Exhibit 26).

Exhibit 25

NET FINANCIAL WEALTH OF JAPANESE HOUSEHOLDS 1975-2024

¥ Trillions, 2000



Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Projected evolution of financial assets

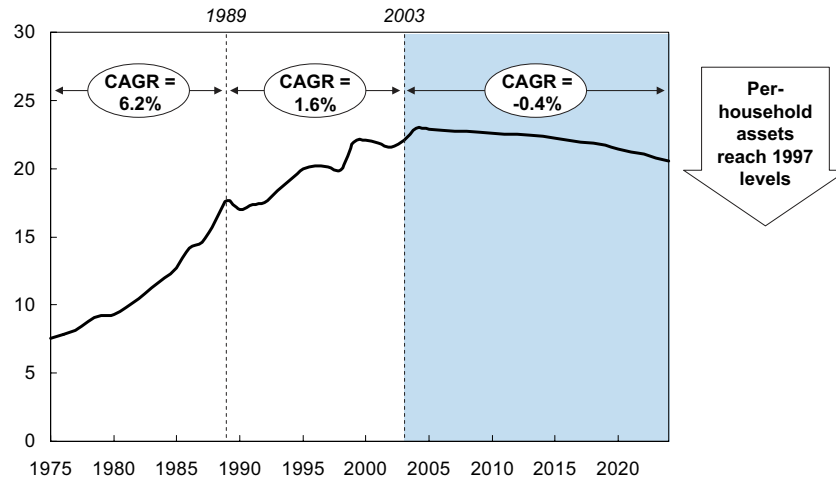
Financial asset accumulation will slow to a virtual standstill between 2003 and 2024 on both an aggregate and a per household basis (Exhibits 27, 28). Weak household savings cannot support positive rates of net asset acquisition in the longer term. Nor will growth come from returns: our baseline scenario for financial asset appreciation is 0 percent – equal to the 10-year moving average in 2003 and far above the 1975-2003 average.

- **Household savings will continue to decline.** With the decline in the prime saver ratio amplified by lower average savings by younger cohorts, aggregate savings is expected to decline 3.4 percent

Exhibit 26

NET FINANCIAL WEALTH PER JAPANESE HOUSEHOLD 1975-2024

¥ Millions, 2000

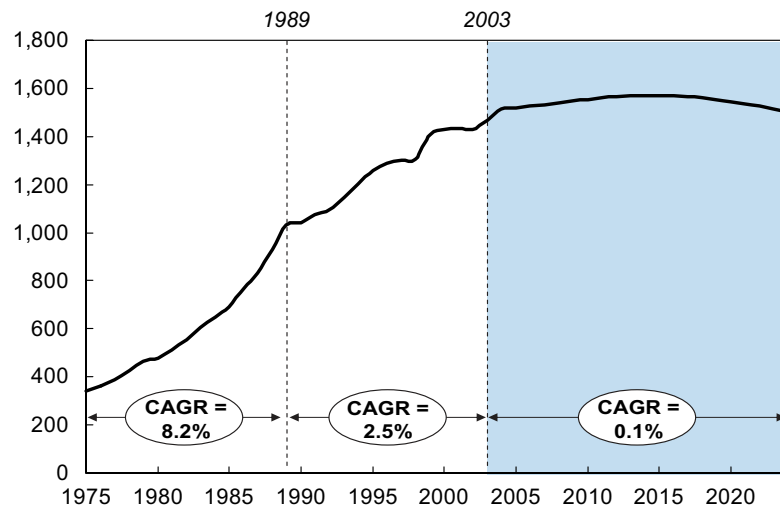


Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 27

TOTAL STOCK OF FINANCIAL ASSETS HELD BY JAPANESE HOUSEHOLDS 1975-2024

¥ Trillions, 2000

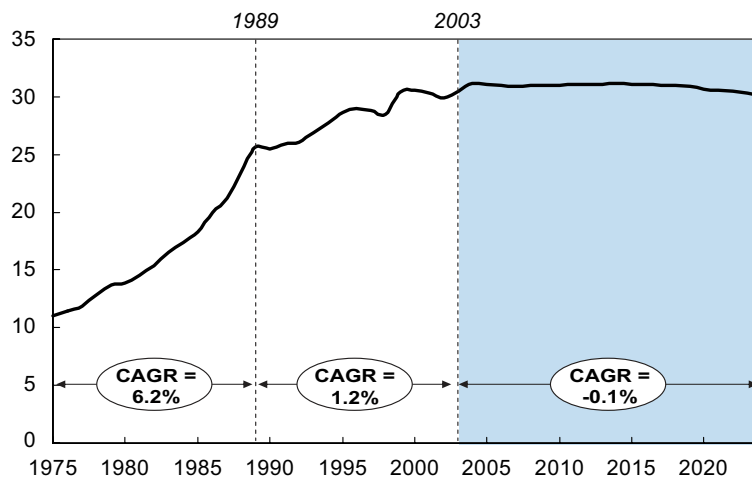


Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 28

**STOCK OF FINANCIAL ASSETS HELD
PER JAPANESE HOUSEHOLD 1975-2024**

¥ Millions, 2000



Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

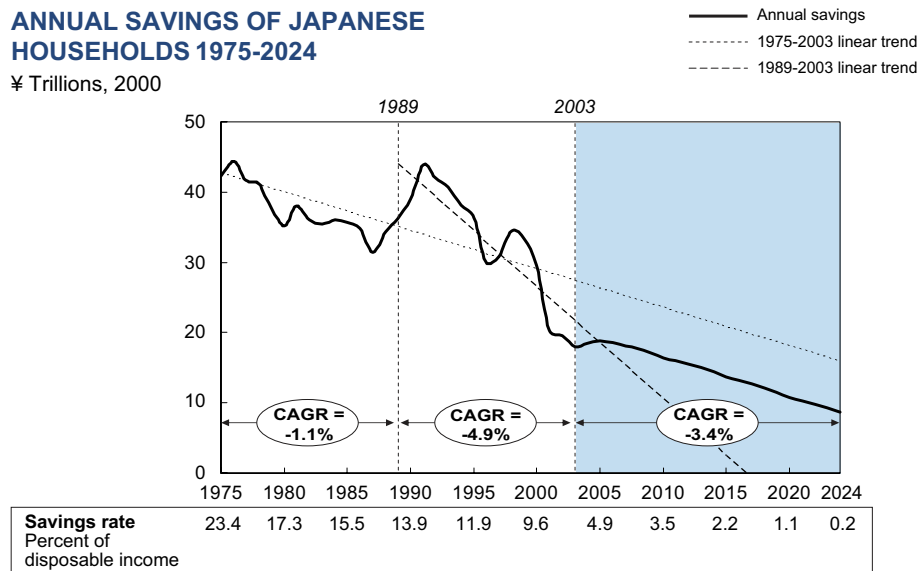
annually between 2003 and 2024, with the saving rate dropping to 0.2 percent (Exhibit 29).

- **Net acquisition of financial assets will turn negative.** Although rebounding moderately in the medium term, selling of assets by older cohorts will outpace purchases of assets by younger cohorts by 2015 (Exhibit 30). Net sales of financial assets will continue through 2024, subtracting an average ¥7 trillion per year (excluding compounding) from aggregate financial assets.
- **Assuming better than historical real rates of asset appreciation is insufficient.** As illustrated in Exhibit 9, Japanese households saw their financial assets depreciate 1.8 percent annually between 1975 and 2003 after accounting for inflation. Performance in recent years has been somewhat improved (primarily because of lower inflation and/or actual deflation) putting the 10-year moving average near 0 percent. Financial asset accumulation remains weak despite our baseline assumption that a 0 percent real asset appreciation rate will be maintained going forward.

Exhibit 29

ANNUAL SAVINGS OF JAPANESE HOUSEHOLDS 1975-2024

¥ Trillions, 2000

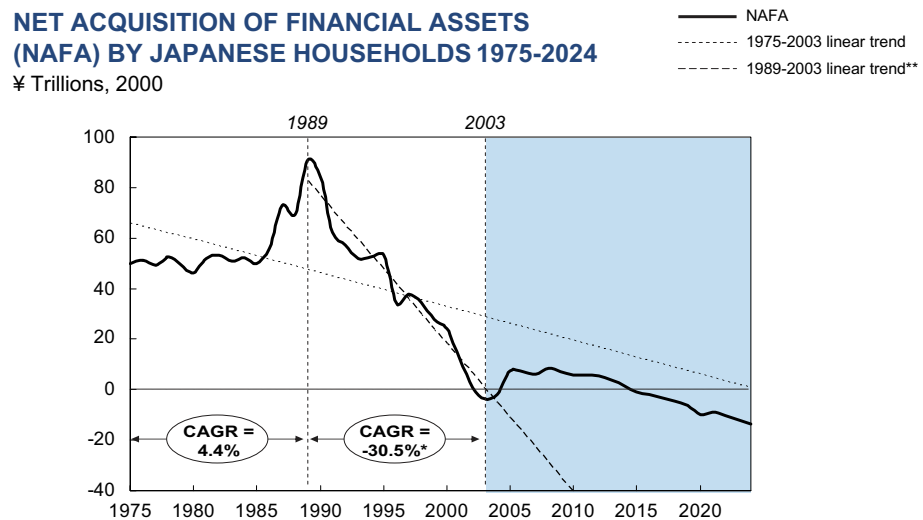


Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 30

NET ACQUISITION OF FINANCIAL ASSETS (NAFA) BY JAPANESE HOUSEHOLDS 1975-2024

¥ Trillions, 2000



* CAGR is 1990-2002 as net acquisition of financial assets (NAFA) is negative in 2003
 ** 1989-2003 trend reaches -128 by 2025
 Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Household financial liabilities

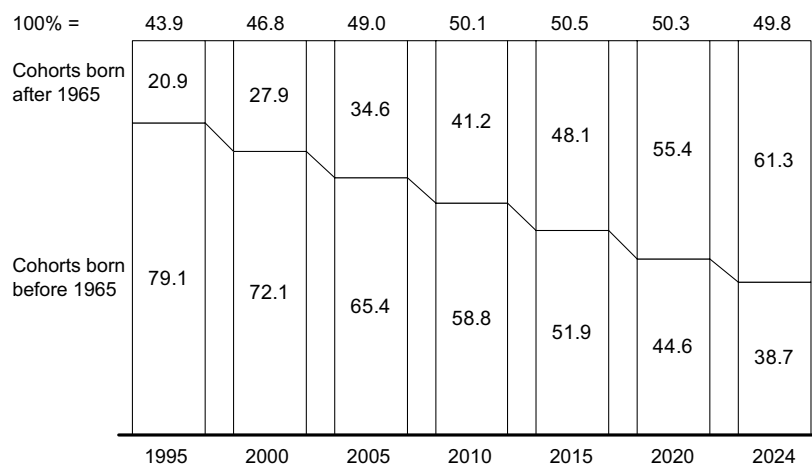
As noted above, the impact of liabilities on NFW accumulation will depend on whether higher average household borrowing by younger cohorts will outpace the pay-down of liabilities by older cohorts as they age.

Exhibit 19 illustrates that households headed by individuals aged 65 or greater will become increasingly important in the years to come. This trend will reduce the level of aggregate liabilities held by Japanese households. Despite the increasing importance of older households, households headed by individuals born since 1965 will become the majority after 2015 (Exhibit 31). With their higher propensity to borrow, these households reversed the per-household downward slide of liabilities between 1990 and 2003, and will have an increasing impact through the projection period (Exhibit 32). Overall, aggregate liabilities growth is expected to remain soft in the near term before picking up. On average, liabilities are expected to grow 0.8 percent per year between 2003 and 2024 (Exhibit 33).

Exhibit 31

DISTRIBUTION OF JAPANESE HOUSEHOLDS BY COHORT 1995-2024

Millions of households; percent

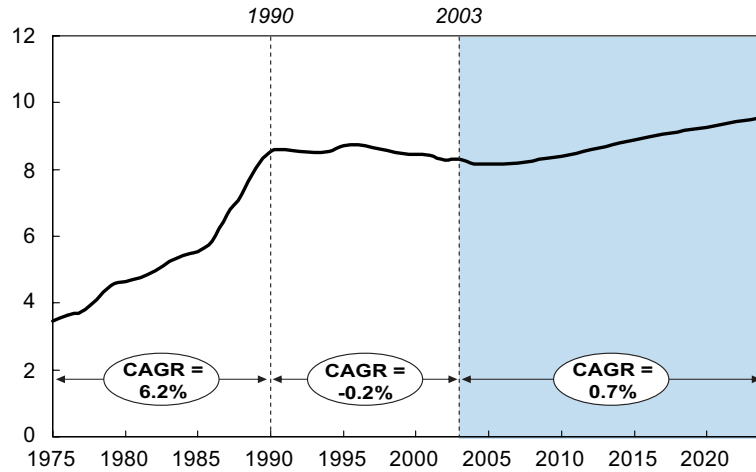


Source: Population census, National Institute of Population and Social Security Research, Japan; Family Expenditure Survey, 1975-2000, Japan; MGI estimates

Exhibit 32

STOCK OF FINANCIAL LIABILITIES HELD PER JAPANESE HOUSEHOLD 1975-2024

¥ Millions, 2000

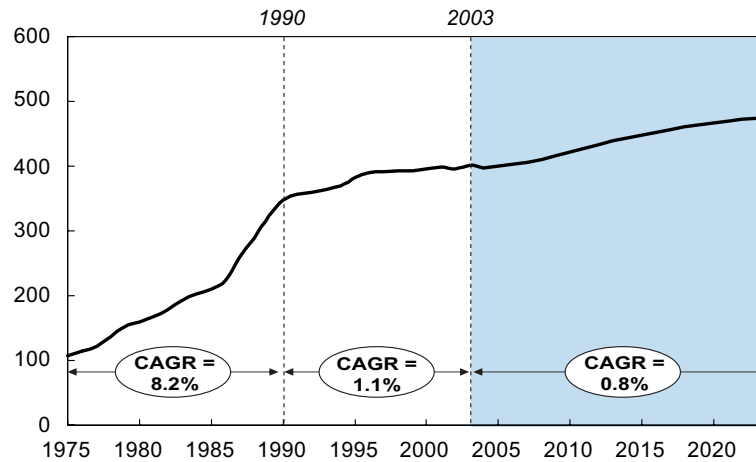


Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 33

TOTAL STOCK OF LIABILITIES HELD BY JAPANESE HOUSEHOLDS 1975-2024

¥ Trillions, 2000



Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

NAVIGATING THE DEMOGRAPHIC TRANSITION

Our baseline projection for Japan shows that the demographic headwind will cause an absolute reduction in the level of NFW held by Japanese households on both an aggregate and a per household basis. Depending on how the economy responds to these changes, the impact of the demographic headwind could pose a number of downside risks to the economy as a whole.

For instance, decreases in the prime saver ratio implies that there will be a dwindling number of households to support an increasingly large retired population, and a smaller workforce available to drive growth; lower savings implies less investment, less growth, and less real income creation; a retreat in NFW implies that future generations will be less well off than the current generation. Globally, a shrinking supply of savings at home could turn Japan from its historical position of being a net lender to the rest of the world, to being a net borrower.¹⁰ If lending from Japan dries up, this will raise difficult questions about how the US and other countries will finance their current account deficits.

Are there opportunities to reasonably alter this outcome? Can policy makers influence these forces and moderate the impact of the demographic headwind? In this section we use sensitivity analysis to test whether changes in the key drivers of our model can meaningfully alter our projections. Our objective is to isolate the high impact drivers which could suggest changes in future policy directions. The results of this exercise are three fold:

- Raising rates of financial asset appreciation would have a significant impact on NFW accumulation, but increases required are large and difficult to achieve.
- Policies that change household behavior and *substantially* increase savings can help relieve the demographic pressure on NFW accumulation.
- Changes in immigration and birth rates would have little if any impact.

Optimistic rates of financial asset appreciation and changes in saving behavior

¹⁰ See "Projections of the Japanese Current Account" in "Technical Notes."

could moderate the demographic headwind. It will be very challenging to identify and implement the right mix of policy changes to alter this outcome.

Higher appreciation rates would raise NFW accumulation. NFW accumulation would be stronger if households received higher rates of real asset appreciation going forward. We have tested an optimistic scenario which assumes a 1.0 percent real rate of appreciation, the average rate achieved by US households between 1975 and 2003, and well above the already generous 0 percent baseline assumption discussed above (Exhibit 34). Higher rates of asset appreciation increases the annual rate of NFW accumulation from -0.2 percent to 1.2 percent, and closes 40 percent of the shortfall between the baseline and the historical growth trend (Exhibit 35). Increasing rates of appreciation will be difficult from a policy perspective, and will require Japanese households to take on far greater risk than they have historically. It will require progress on at least three margins: increasing capital efficiency (see discussion on structural reforms below), more efficient intermediation in the financial sector, and more diversified asset allocation (see discussion in the Global Chapter). There is significant room for improvement across all these margins in Japan.

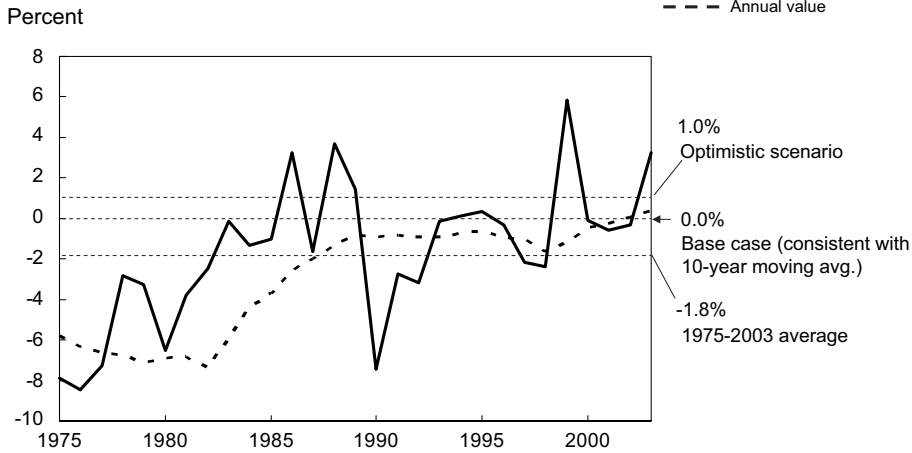
Substantial shifts in saving behavior would increase NFW accumulation, but not close the gap relative to trend. Age-based lifecycle saving choices, and behavioral shifts across cohorts are driving the persistent long-term decline in the Japanese household saving rate. Savings could increase measurably if households change these savings patterns either in response to new incentives or potential worries about the viability of the government-funded pension system.

To quantify the impact of changes in saving behavior on NFW accumulation, we have varied the lifecycle income and spending curves, and changed cohort based spending patterns.

- **Shifting lifecycle income and spending patterns boosts NFW accumulation.** To isolate the impact of changes in lifecycle behavior, we have prolonged peak income and spending by 5 years (exhibits 36-37). Shifting the timing of lifecycle patterns in this way gives a boost to income and spending in 2004 and beyond, raises savings, increases the annual rate of NFW accumulation from -0.2 percent to

Exhibit 34

ASSET APPRECIATION IN JAPAN

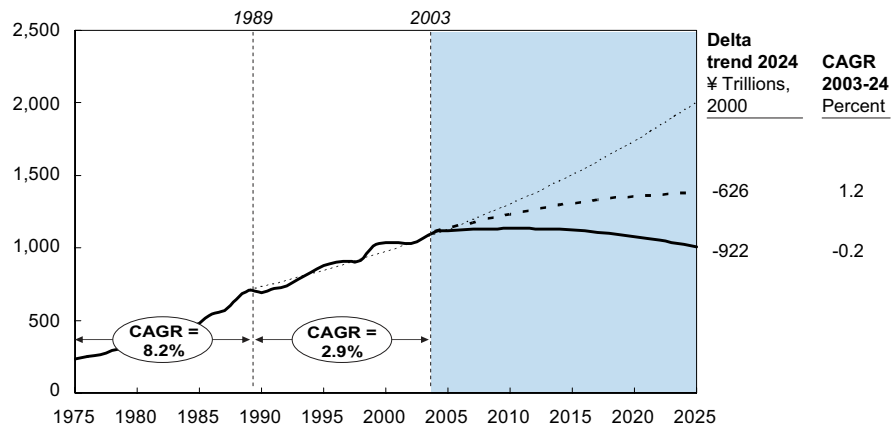


* Personal consumption deflator used to compute real appreciation
 Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan

Exhibit 35

IMPACT OF 1% RATE OF REAL ASSET APPRECIATION ON NET FINANCIAL WEALTH OF JAPANESE HOUSEHOLDS

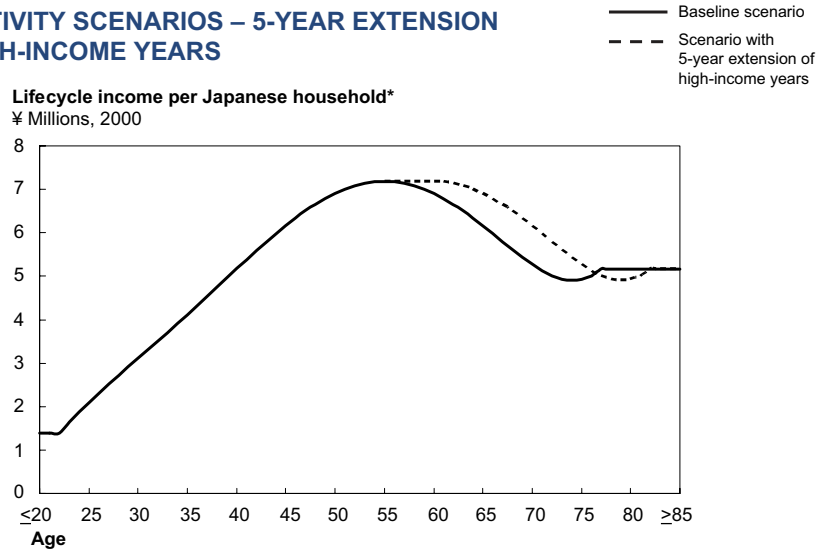
¥ Trillions, 2000



Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 36

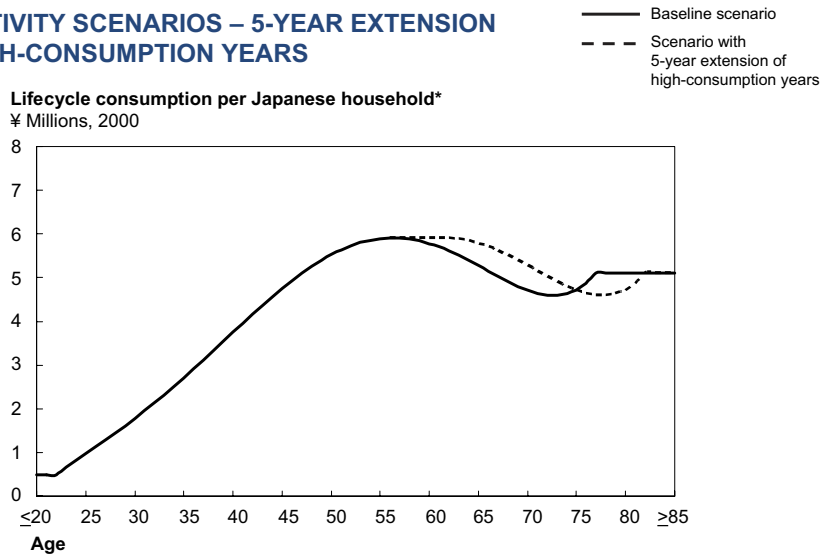
SENSITIVITY SCENARIOS – 5-YEAR EXTENSION OF HIGH-INCOME YEARS



* Representative birth cohort; not calibrated to the national account levels
 Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

Exhibit 37

SENSITIVITY SCENARIOS – 5-YEAR EXTENSION OF HIGH-CONSUMPTION YEARS



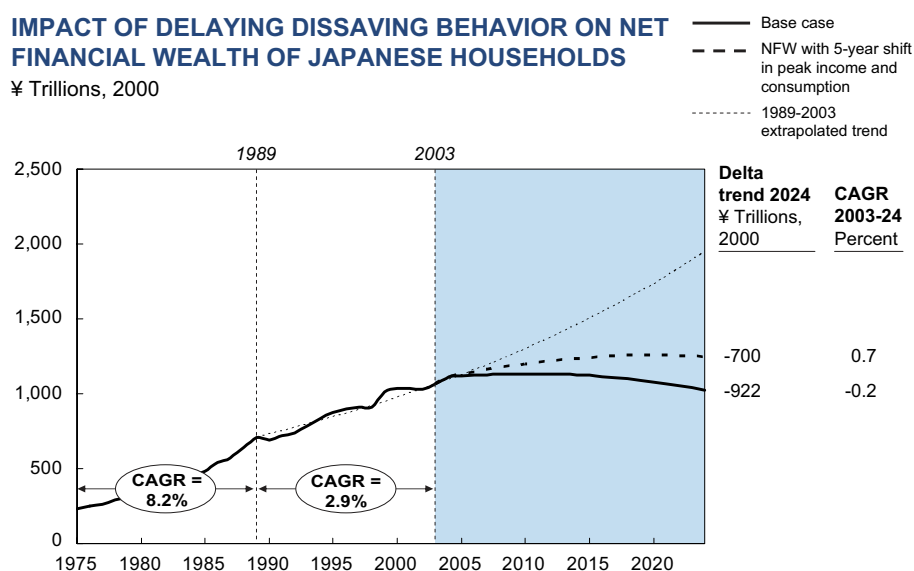
* Representative birth cohort; not calibrated to the national account levels
 Source: Family Expenditure Survey, 1975-2000, Japan; MGI estimates

0.7 percent and closes 24 percent of the shortfall between the baseline and the historical growth trend (Exhibit 38). Although such a sudden change in behavior is unlikely, this scenario establishes an upper bound on the impact of such behavioral changes.

Exhibit 38

IMPACT OF DELAYING DISSAVING BEHAVIOR ON NET FINANCIAL WEALTH OF JAPANESE HOUSEHOLDS

¥ Trillions, 2000



Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

- Shifting cohort spending patterns to match earlier generations boosts NFW accumulation.** The higher spending rates of younger cohorts are a key driver of the continued decline in aggregate savings. If we assume that cohorts born after 1960 gradually increase savings by shifting their spending levels so that they are in line with the 1950s cohorts (i.e., eliminate the consumption cohort effect), this more than doubles aggregate savings by 2024 (Exhibit 39). Higher savings increases the annual rate of NFW accumulation from -0.2 percent to 0.8 percent and closes 26 percent of the shortfall between the baseline and the historical growth trend (Exhibit 40).

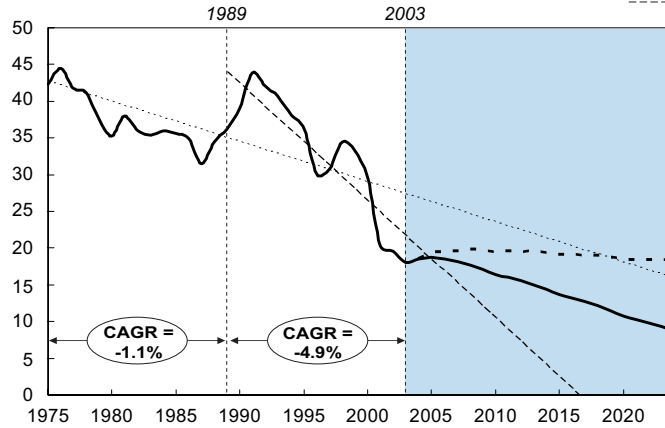
Increasing economic growth by itself, without changing the relationship between income and spending, will not change the amount of savings by enough to materially alter the rate of financial asset accumulation.

Exhibit 39

IMPACT OF YOUNGER COHORTS ADOPTING CONSUMPTION BEHAVIOR OF 1950s COHORTS ON THE ANNUAL SAVINGS OF JAPANESE HOUSEHOLDS

¥ Trillions, 2000

- Base case (with cohort effect)
- - - Consumption cohort effect shifted to 1950s*
- 1975-2003 linear trend
- - - 1989-2003 linear trend



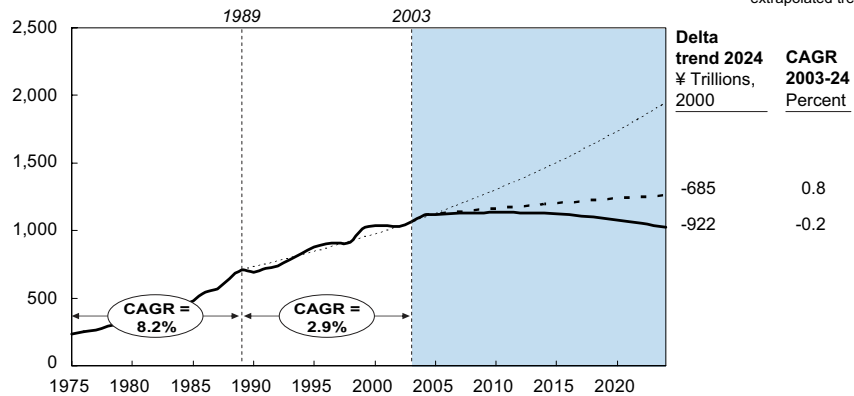
* Assumes cohorts born after 1960 gradually shift their spending until it equals the household spending of the 1950s cohorts
 Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 40

IMPACT OF YOUNGER COHORTS ADOPTING CONSUMPTION BEHAVIOR OF 1950s COHORTS ON THE NET FINANCIAL WEALTH OF JAPANESE HOUSEHOLDS

¥ Trillions, 2000

- Base case (with cohort effect)
- - - Consumption cohort effect shifted to 1950s*
- 1989-2003 extrapolated trend



* Assumes cohorts born after 1960 gradually shift their spending until it equals the household spending of the 1950s cohorts
 Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Changing demographics, through higher immigration and birth rates, does not materially impact net financial wealth accumulation in the short or medium term. Increasing birth rates is not effective in increasing net financial wealth over the next 20 years because higher birth rates do not produce prime savers for several decades. Increasing immigration, even at the highest levels projected by government statistics, is not large enough to change overall demographic structure, and thus does not materially impact net financial wealth accumulation.

- **Increasing birth rates is ineffective for raising 20-year financial wealth accumulation.** Adopting policies to increase birth rates is another frequently discussed solution to aging. However, given households typically reach their prime saving years between the ages of 30 and 50 in Japan, the impact of higher birth rates on increasing savings will be delayed by several decades. Thus, while higher birth rates could provide a long term solution, it does not address the impact of aging on NFW accumulation over the next 20 years.
- **Immigration has no significant impact on population trends.** Since everyone who will be materially participating in economic activity between 2003 and 2024 has already been born, the only factor that could change the current population trend would be a change in net international migration patterns.

Unfortunately, net international migration has not been an important factor for Japanese population growth historically. Between 1975 and 2001, total immigration accounted for only 1.4 percent of the 2001 population in Japan (Exhibit 41).

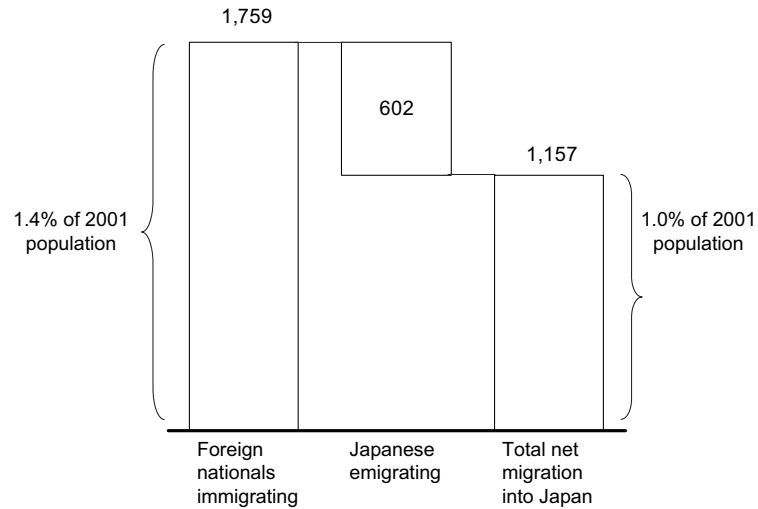
And once emigration of Japanese citizens is accounted for, net migration added only 1.0 percent to the total population. Official projections indicate that there is no expectation that this will change going forward. Even doubling the official assumption on net migration has a negligible impact on household formation and aggregate savings (exhibits 42, 43). Beyond an unprecedented radical shift in policy, household formation trends are likely to remain close to current projections.

Fundamental structural reform will be required to change current path. The demographic headwind is a particularly acute problem for Japan because of the policy-driven development path it has pursued since the 1960s. As MGI has argued in previous work, Japan achieved its rapid growth between 1960 and 1990 with an

Exhibit 41

NET MIGRATION OF FOREIGNERS INTO JAPAN 1975-2001

Thousands



Source: National Institute of Population and Social Security Research, Japan

"input-driven" model.¹¹ High levels of capital and labor inputs, driven by high savings, long working hours and high participation rates, were the key drivers of growth.

This input-intensive development path differs from the growth trajectory of the U.S. and many European countries, where the main growth driver has been increases in total factor productivity. As a result of its input model, Japan's workforce today is over 30 percent less productive than that of the US (Exhibit 44).

In the years since 1990, when real per-capita GDP growth came to a virtual standstill, the input-intensive development path ran out of steam. Our analysis of potential output in Japan suggests that demographics will be a serious supply-side constraint on economic growth over the next two decades (see "Technical Notes," "External Benchmarking," for details). The policies followed during the boom years have left a legacy that continues to constrain growth today. In effect, these policies created a dual economy. The world-beating portion – autos, steel, machine tools,

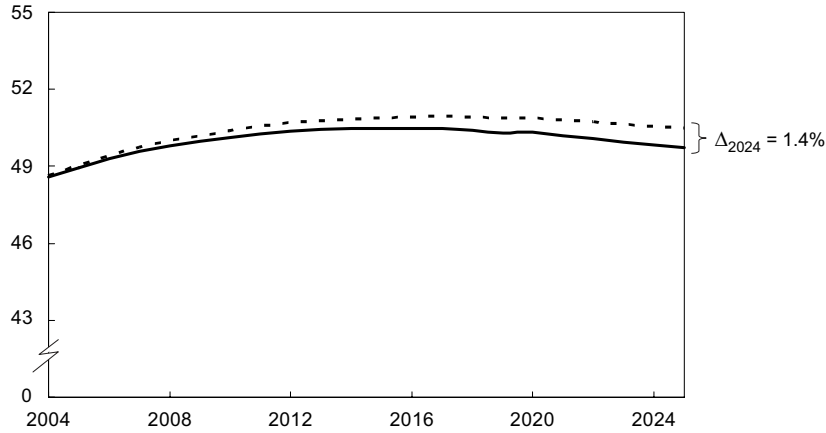
¹¹ MGI Report: "Why the Japanese Economy is Not Growing" July 2000; <http://www.mckinsey.com/knowledge/mgi/Japan>

Exhibit 42

IMPACT OF DOUBLING IMMIGRATION ON JAPANESE HOUSEHOLD FORMATION 2004-24

Millions of households

--- Immigration at 180,000 per annum
— Immigration at 90,000 per annum



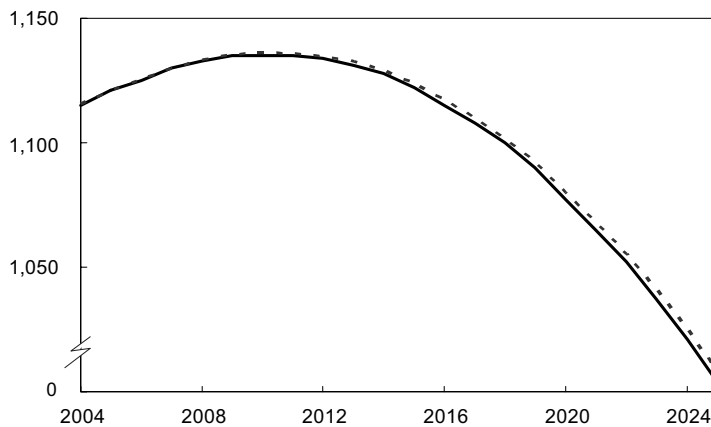
Source: National Institute of Population and Social Security Research, Japan

Exhibit 43

IMPACT OF DOUBLING IMMIGRATION ON NET FINANCIAL WEALTH IN JAPANESE HOUSEHOLDS

¥ Trillions, 2000

--- Immigration at 180,000 per annum
— Immigration at 90,000 per annum

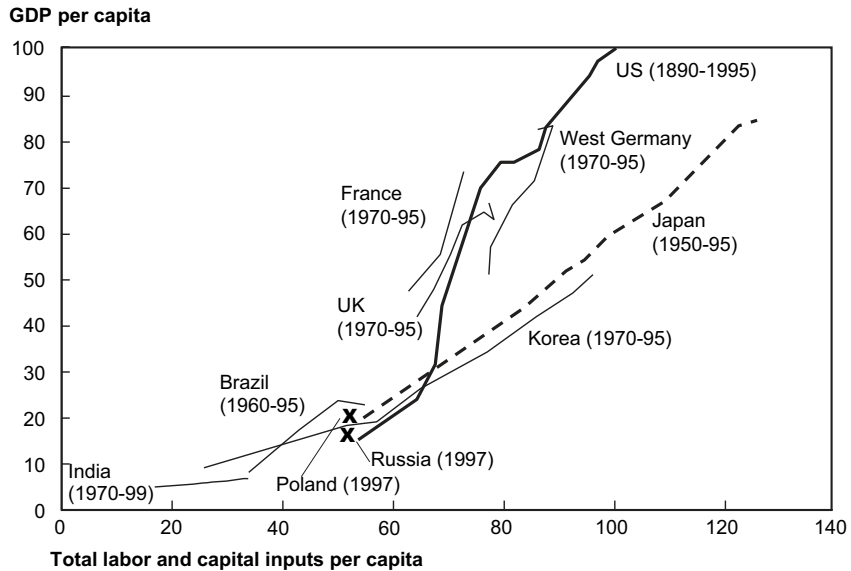


Source: National Institute of Population and Social Security Research, Japan

Exhibit 44

ECONOMIC DEVELOPMENT PATHS FOR MAJOR WORLD ECONOMIES

Percent of 1995 US level



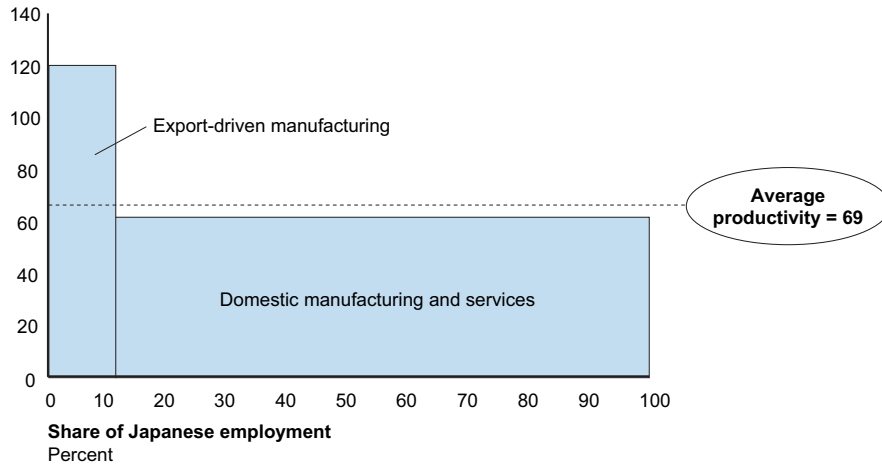
and consumer electronics – accounts for only about 10 percent of all economic activity in Japan. The remaining 90 percent takes place in companies geared towards satisfying domestic demand. The productivity of this portion of the Japanese economy stands at a mere 63 percent of US levels. The Japanese economy will not rebound until the performance of these companies improves (Exhibit 45).

To regenerate strong economic performance as its population ages and savings become increasingly scarce, Japan will have to shift from relying on increasing inputs to boosting the productivity with which those inputs are used. It must remove many of the industry-level regulations that currently limit productivity growth in sectors across the economy. This is particularly true for its domestic service industries, which employ most of the labor force (See MGI Japan report referred to in note 11 for further discussion). Given the potential impact of raising asset appreciation rates for the NFW accumulation of households, such reforms are particularly important for Japan's financial sector.

Exhibit 45

JAPAN'S DUAL ECONOMY – A SECTOR STORY

Labor productivity index to US = 100, 1999



Source: Organization for Economic Cooperation and Development (OECD); O'Mahoney, *Britain's Productivity Performance 1950-1996: An International Perspective*; MGI analysis

4. Germany: *Storm Clouds Gathering*

SUMMARY OF FINDINGS

Over the next 20 years, demographic trends are expected to exert significant pressure on the growth of German household savings and net financial wealth (NFW) accumulation, with potentially substantial implications for economic growth. Our analysis suggests that in the absence of dramatic changes in population trends, savings behavior, or rates of financial asset appreciation, there will be no overall growth in annual real savings flows; indeed, savings flows will begin declining in 2015. As a result, expected real growth in household net financial wealth will drop by more than one-third, from 3.8 percent over the 1991-2003 period, to 2.4 percent through 2024. This declining growth would cause German household NFW to fall some 25 percent or €1.2 trillion¹ below what it would have been had the higher 1986-2003 growth rates persisted.²

Germany is about to experience an important demographic shift which will reduce the population's ability to support wealth accumulation. This change, consisting of baby boomers retiring and saving less, and a slow down in the growth rate of households, will result in a decline in the growth rate of NFW, with important implications for households and the overall economy.

1 Unless otherwise noted, all growth rates hereafter quoted in real terms; values are in 2000 constant euros.

2 In this study we focus on assessing the direction, timing and magnitude of the demographic pressure on household savings and financial wealth accumulation, using country specific demographic forecasts, empirical observations of historical lifecycle and cohort saving behavior, and historical rates of financial asset appreciation (see "Technical Notes" for more details). Our findings should not be interpreted as point forecasts because we do not capture the feedback that will occur as households, markets and other forces adjust to these demographic changes. For ease of exposition, we use "will" (e.g., savings "will" fall) throughout this document to describe our demographically driven projections.

For households, NFW accumulation is a good proxy for economic well-being, and a slower rate of wealth accumulation implies a reduction in future living standards. For the economy, there will be less household savings to support a fast-growing retiree population, and it will become more difficult to support domestic investment and sustain strong economic growth.

To navigate smoothly through this demographic transition, German households and their government will need to take actions to halt the decrease in saving and to improve the returns that households obtain on their portfolios. These objectives will be not easy to achieve and will require sustained coordinated efforts by the public and private sector. Moreover, our work in Japan, the US and other European countries indicates that these economies are facing similar downward demographic pressures on NFW accumulation. As a result, most of these countries will also be coping with a domestic savings shortfall, potentially limiting their ability to be net exporters of capital.³

In this chapter, we explore these issues in greater detail, with a particular focus on the following dimensions:

- The historical evolution of household NFW accumulation;
- The slowdown in household formation and changes in household behavior, which will drive changes in household NFW;
- The impact of demographic changes on household NFW accumulation over the next 20 years;
- Changes that could mitigate the impact of demographic forces, and resulting potential policy directions.

³ As Europe integrates and grows to encompass younger, faster-growing economies to the east, Germany, as an EU and Eurozone member, may benefit from positive Europe-wide trends/effects, including the positive demographic impact of adding younger countries to the European economy, potentially higher overall growth and higher returns on Euro-denominated financial assets, and easier access to regional savings pools.

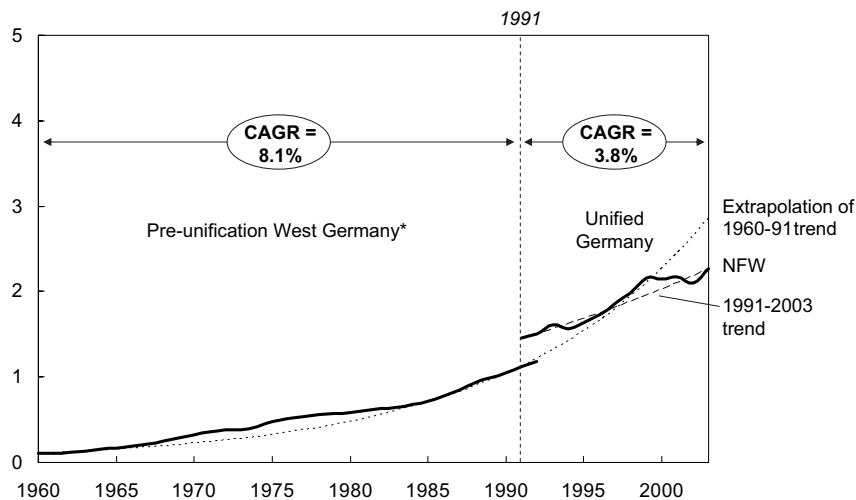
HISTORICAL EVOLUTION OF HOUSEHOLD NET FINANCIAL WEALTH

German household NFW accumulation went through two distinct phases during the past 40 years. Prior to 1991, the former West Germany was undergoing rapid economic development and as a result, household NFW accumulation was robust and grew steadily at a very healthy rate of 8.1 percent. Unification has transformed the German economic landscape, as millions of less-wealthy East German households have been absorbed into the economy. Since 1991, the NFW growth rate dropped to an average of 3.8 percent (Exhibit 1).

Exhibit 1

GERMAN HOUSEHOLD NET FINANCIAL WEALTH (NFW) 1960-2003

€ Trillions, 2000



* NFW estimated for the former West Germany between 1960 and 1991
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

Basic facts on net financial wealth accumulation

The stock of financial assets held by households can change in two ways: households can purchase new assets and existing asset holdings can be revalued because of changing market prices.

The *net acquisition of financial assets* – purchases less sales – is largely driven by contemporaneous savings out of income.⁴ Total returns on financial assets, as commonly understood, are a combination of realized capital income and unrealized asset appreciation. Realized capital income, including interest and dividends, is by convention counted as personal income, a portion of which is saved.⁵ The revaluation of asset holdings therefore only captures unrealized asset appreciation (or depreciation). All references to *financial asset appreciation (FAA)* constitute these unrealized gains, and are adjusted for inflation.

The stock of financial assets less outstanding liabilities equals the net financial wealth of households (NFW). We focus on measuring the demographic impact on NFW because this metric enables us to build our understanding of the demographic impact on the global capital market. It also helps us understand the impact on households because NFW is a good proxy for overall economic well being (see chapter 1 for discussion).

The change in NFW accumulation during the high growth, pre-unification period (prior to 1991) and the post-unification slowdown (1991-2003) can be further analyzed by considering the evolution of financial assets and liabilities.

Household financial assets

Financial asset growth in Germany declined in the post-unification period because of deteriorating savings and low rates of FAA. Growth in household

4 See "Technical Notes" for a definition of the relationship between saving out of income as defined in the national accounts, and the net acquisition of financial assets as defined in the flow of funds accounts.

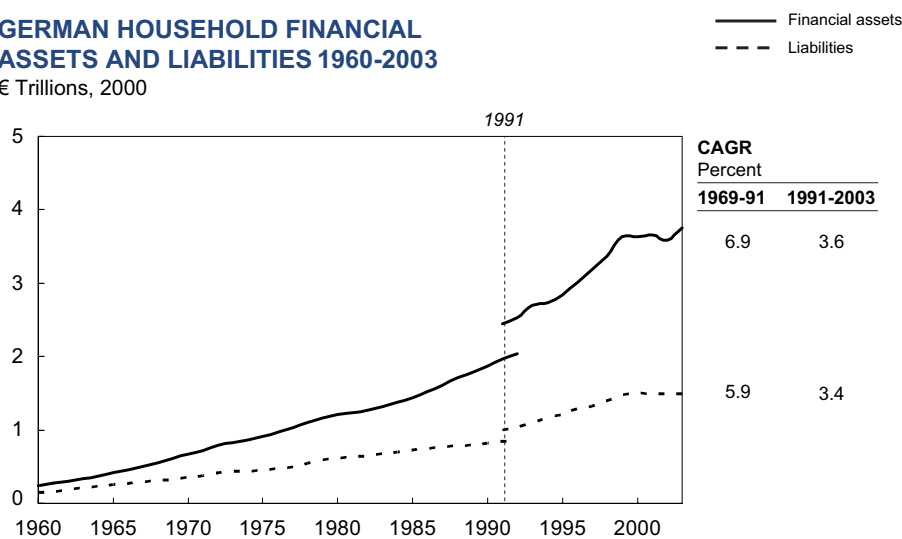
5 Realized capital gains are not counted in the national accounts as savings, see Reinsdorf (2004). We capture the impact of realized capital gains on purchases of new assets because asset accumulation is driven by the net acquisition of financial assets as measured by the flow of funds accounts (see "Technical Notes" for details).

financial assets has slowed from 6.9 percent pre-unification (1960-91) to 3.6 percent since (Exhibit 2). The post-unification period can be further segmented into a "higher growth phase" from 1991 to 1999, when financial assets, fueled by an equity bubble, grew at 5.1 percent, and a "stagnant phase" from 1999 to 2003, when financial assets grew at 0.9 percent.

Exhibit 2

GERMAN HOUSEHOLD FINANCIAL ASSETS AND LIABILITIES 1960-2003

€ Trillions, 2000



Note: Estimated for the former West Germany between 1960 and 1991
 Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

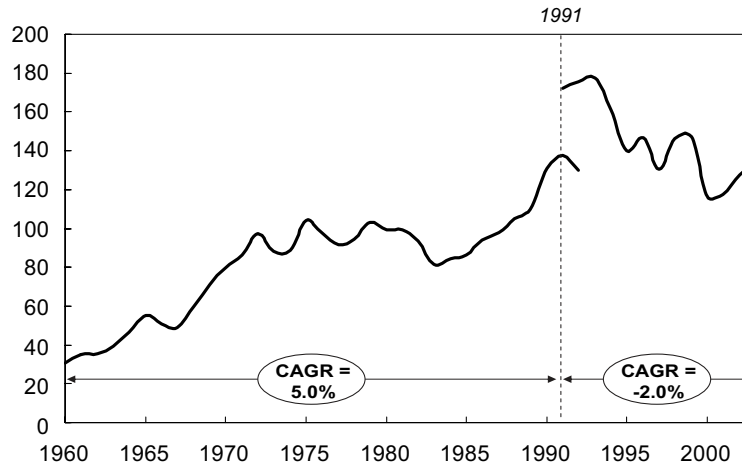
Savings drives financial asset growth. The primary driver of financial asset acquisition by German households has been their historically strong savings behavior. When savings weakened, acquisition of financial assets dropped. German households exhibited a steady decline in their savings in the 1990s, with the savings rate declining from a peak of 13 percent in 1991 to 9.7 percent in 2000. Lower net acquisition of financial assets is one of the ramifications of this change in savings behavior; net acquisitions were declining at a 2 percent rate in the period 1991-2003 (Exhibit 3).

- **High savings rate in West Germany prior to unification.** The robust growth of financial assets during 1960-91 was primarily driven by combination of high savings rates of German households and strong economic growth in West Germany, which boosted income growth. As German households allocated their financial assets mostly in low risk

Exhibit 3

**NET ACQUISITION OF FINANCIAL ASSETS
BY GERMAN HOUSEHOLDS 1960-2003**

€ Billions, 2000



Note: Estimated for the former West Germany between 1960 and 1991
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

assets – deposits comprised almost 50 percent of total financial assets and were growing at a strong 3.9 percent in this period (Exhibit 4) – little or no growth in the stock of financial assets occurred through asset appreciation.

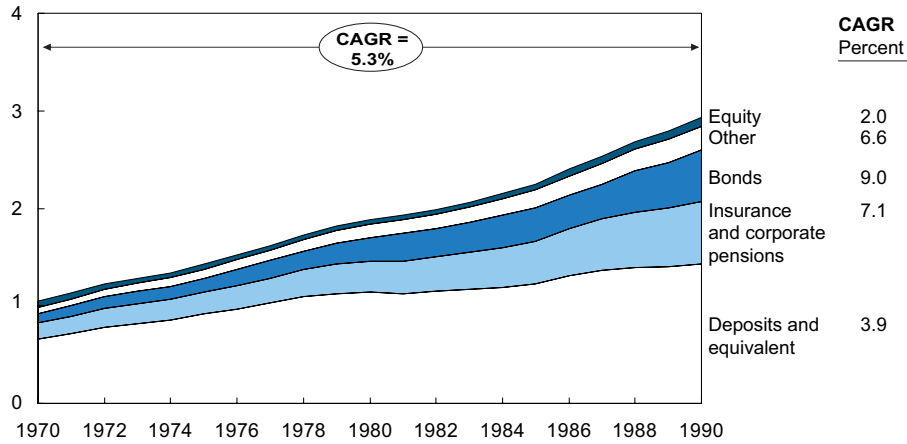
- **Integration of less wealthy East German households.** In contrast to the previous period, during the 1991-2003 period, the ability of households to save and their willingness to do so declined considerably, leading to the decline in savings flows. While deposits still constitute the largest share of financial assets, their growth slowed significantly to 1.5 percent (Exhibit 5)

Financial assets have not appreciated. Given their conservative portfolio allocation, it is not surprising that German households have seen low real gains on their stock of financial assets. Historical real rates of FAA in Germany had been negative in pre-unification Germany. Except within the technology, media, and telecommunications bubbles, these rates have remained negative between 1991 and 2003, and averaged -1.1 percent (Exhibit 6). To put this in perspective, the average rate of FAA was the highest in the US, where it

Exhibit 4

GERMAN HOUSEHOLD FINANCIAL ASSET ALLOCATION 1970-90

DEM Trillions, 1990

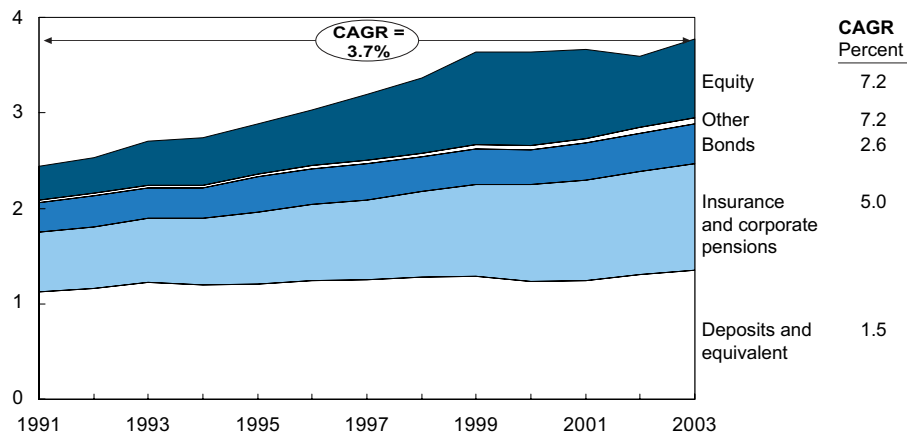


Source: Deutsche Bundesbank

Exhibit 5

GERMAN HOUSEHOLD FINANCIAL ASSET ALLOCATION 1991-2003

€ Trillions, 2000

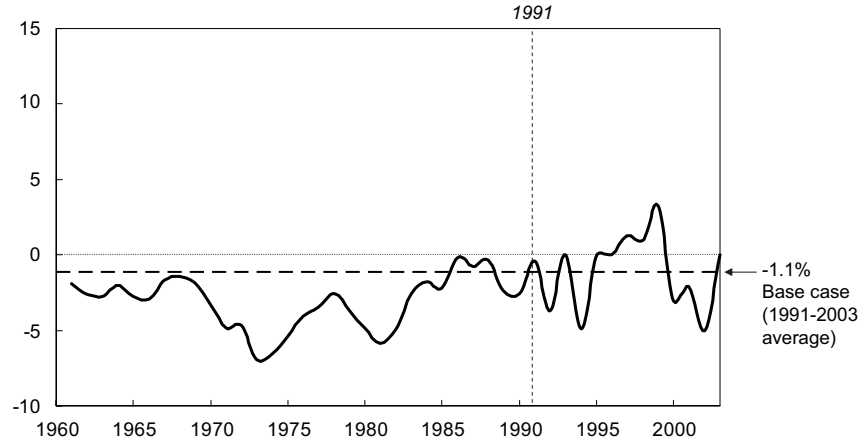


Source: Deutsche Bundesbank

Exhibit 6

REAL RATE OF GERMAN HOUSEHOLD FINANCIAL ASSET APPRECIATION* 1960-2003

Percent



* Calculated on the total stock of financial assets and acquisition of net financial assets
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

averaged 0.96 percent between 1975 and 2003. For Japan and Italy, however, rates of FAA were negative and lower than in Germany.

Low rates of FAA can be explained by households' conservative financial asset allocation, inflation rates, and equity market performance. An important characteristic of German household asset allocation is the large proportion of deposits, deposit equivalents, and bonds (at 47 percent in 2003 as compared to 21 percent in the US) and the smaller share of equities in the overall financial asset portfolio.

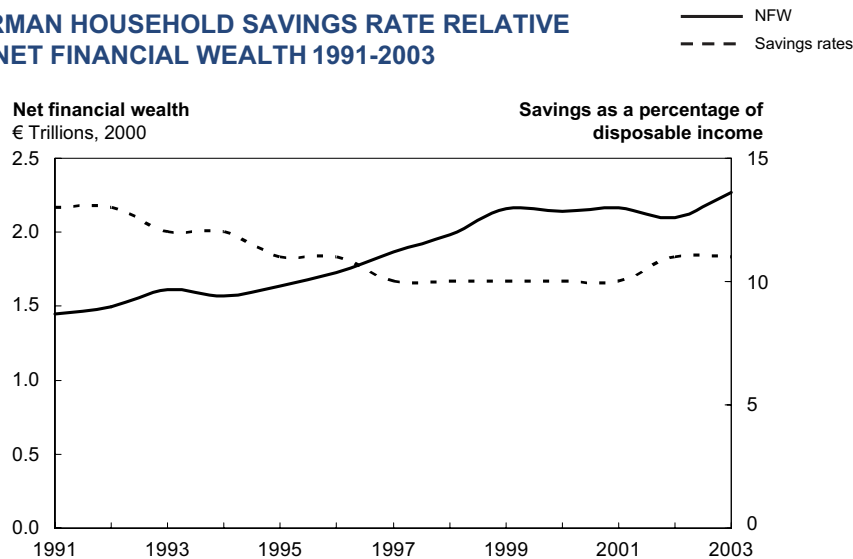
Moderate wealth effect reduced household savings. Numerous studies have established that households adapt their spending based on changes in their financial and real estate wealth. The gradual decline in the flow of savings and the declining savings rates in the nineties are correlated with the steady increase in household NFW, which can be attributed to a mild "wealth effect" (Exhibit 7).

Household liabilities

As in the case of financial assets, household liabilities grew at a slower rate in

Exhibit 7

GERMAN HOUSEHOLD SAVINGS RATE RELATIVE TO NET FINANCIAL WEALTH 1991-2003



Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

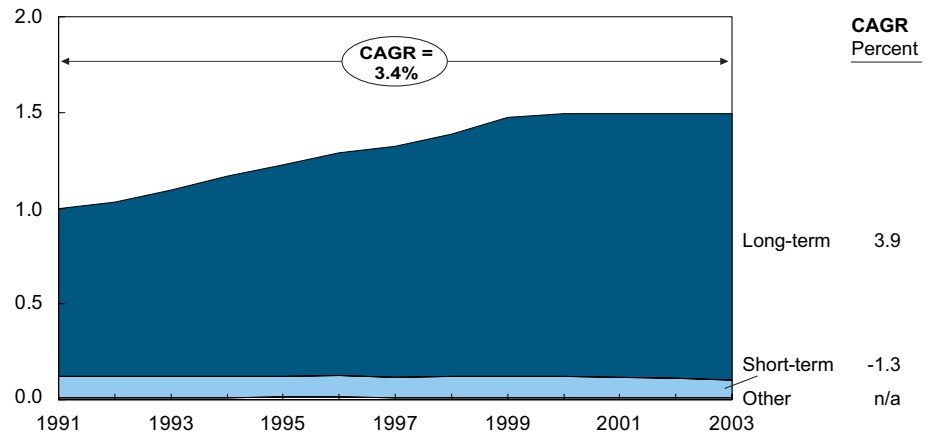
the post-unification era and experienced a similar slowdown in growth from 2000 onward.

- Relative to financial assets, liabilities experienced a relatively milder decline in growth rate, from 5.9 percent during 1960-91 to 3.4 percent in the 1991-2003 period (Exhibit 2).
- More than 90 percent of German household borrowing is in the form of long-term loans, which have grown at 3.9 percent from 1991 to 2003. Short-term loans have actually declined over the same period at -1.3 percent CAGR. Mortgages were the largest and fastest-growing component of the long-term loans, with mortgage loans growing by 4.2 percent and increasing their share of total liabilities from 60 percent in 1991 to 66 percent in 2003 (Exhibits 8 and 9).
- Liabilities accumulation also began to slow in 2000, consistent with the slowdown in financial assets. The slowdown in liabilities was driven mostly by slowdowns in mortgages (Exhibit 9).

Exhibit 8

COMPOSITION OF GERMAN HOUSEHOLD LIABILITIES BY LOAN DURATION 1991-2003

€ Trillions, 2000

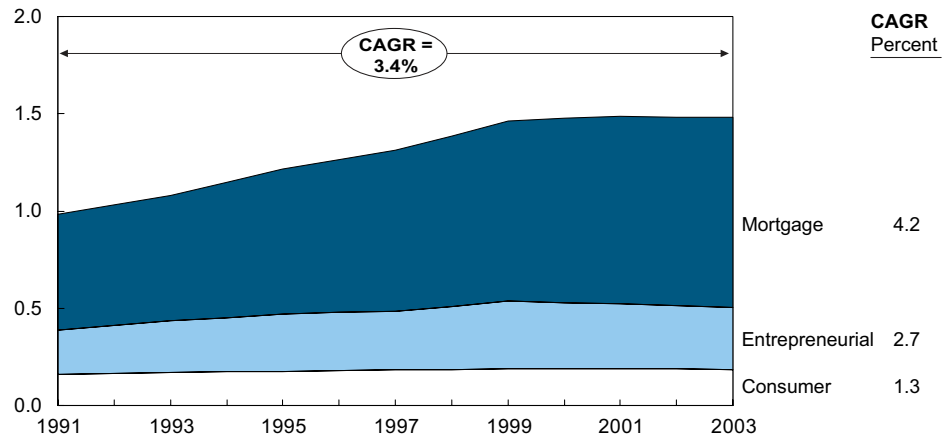


Source: Deutsche Bundesbank

Exhibit 9

COMPOSITION OF GERMAN HOUSEHOLD LIABILITIES BY LOAN TYPE 1991-2003

€ Trillions, 2000

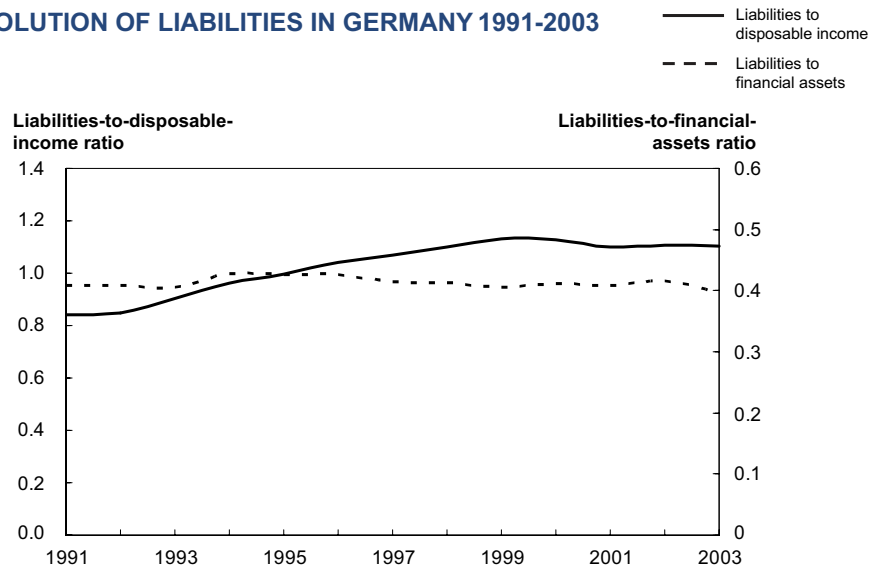


Source: Deutsche Bundesbank

The liabilities-to-income ratio grew faster than the liabilities-to-assets ratio in the 1991-2003 period (Exhibit 10). The evolution of these indebtedness ratios implies that German households are increasing their willingness to take on debt.

Exhibit 10

EVOLUTION OF LIABILITIES IN GERMANY 1991-2003



Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

KEY DEMOGRAPHIC DRIVERS OF CHANGE IN HOUSEHOLD NET FINANCIAL WEALTH

Germany's demographic structure is now passing through an important inflection point: its baby boomers are approaching retirement age and this will have an increasingly negative impact on NFW accumulation in the years ahead. This demographic pressure comes from two sources.

- **Households available to create wealth will be limited** by slowing population growth and reduced household formation
- **Financial asset accumulation will slow** because the falling prime saver ratio will lower average savings per household and limit the pool of money that can be allocated to acquiring financial assets

Slowing population growth will reduce household formation

Falling birth rates will cause the German population to start declining in 2015. The most impacted population age group will be those under 25, a group that has been declining since 1973. The population over 55, on the other hand, will grow between 2003 and 2024. The combination of these two factors will cause a lag between the start of the population decline and the time when we will observe a decline in the number of households.

Birth rates are falling. Between 1960 and 2003 birth rates have fallen by more than half while at the same time death rates remained relatively stable. The resulting decline in the young population is a key driver of the slowing growth in number of households.

Adult population is increasing, with total population declining. While the total German population will begin to decline within the next two decades, the adult population (defined as people above 17) will still increase, with the group 55 and over growing the most at 1.3 percent per year. With an older population characterized by a higher household-to-population ratio than any other age group, the decline in the number of households will lag the decline in total population.

Household formation is reduced. Historically in pre-unification West Germany, the growth in the number of households was at an already low 1.3 percent per annum over the 1960-90 period. With the integration of East Germany in 1991, the combined German household growth rate fell by more than half, to 0.6 percent, and is expected to further slow to 0.3 percent (Exhibit 11).

Lower rates of household formation will constrain aggregate wealth accumulation since there will be fewer households earning income and generating savings.

Financial asset accumulation will be slowed by lower savings per household

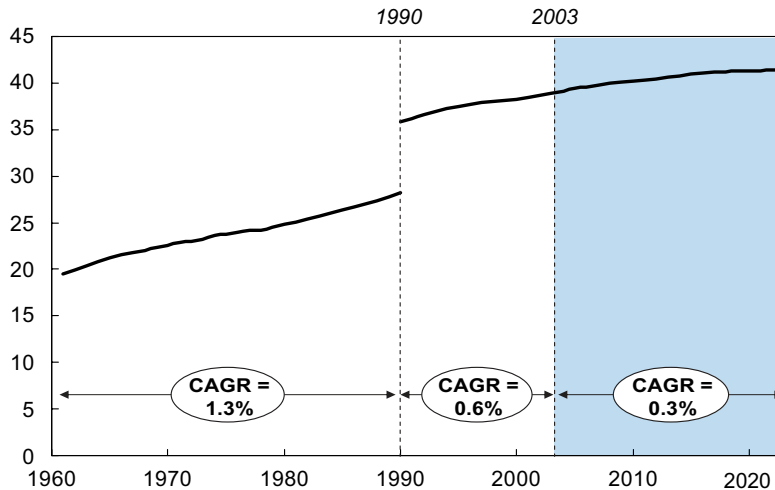
Average savings per household will be reduced going forward because there will be fewer households in their prime saving years.

Prime saver ratio is declining. The prime saver ratio measures the number of households in their peak savings years (defined as the 20-year age bracket with

Exhibit 11

NUMBER OF GERMAN HOUSEHOLDS 1960-2024

Millions



Source: Statistisches Bundesamt; McKinsey Global Institute Household Financial Wealth Model

maximum household savings) relative to the number of elderly households (who save at lower rates or dissave) and therefore, captures the lifecycle effects caused by aging. The ratio of German prime savers to elderly households has just passed an inflection point: after slightly increasing since unification, the prime saver ratio will consistently decline over the next two decades, reaching 0.54 by 2024. This decline will impact the flow of savings from German households as older households save less.

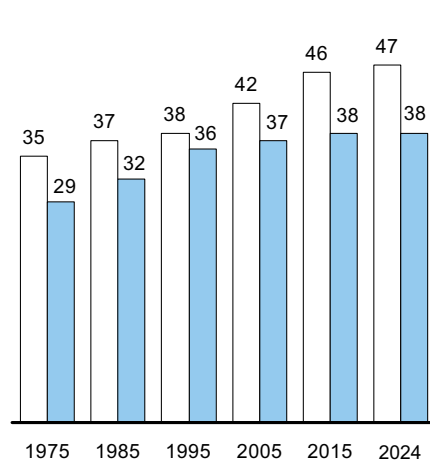
- **The German population is aging rapidly.** With a median age of 42 in 2005, the Germans are already significantly older than the US population, with a median age of 37. Germany is also aging faster than the US, with the German median age shifting to 47 by 2024, while the US median age remains just 38 (Exhibit 12). At the same time, the number of individuals in Germany aged 65 or more will rise from 18 percent in 2003 to 23 percent by 2024.
- **Population aging impacts wealth accumulation through lifecycle savings behavior.** Germany has a traditional "hump-shaped" lifecycle

Exhibit 12

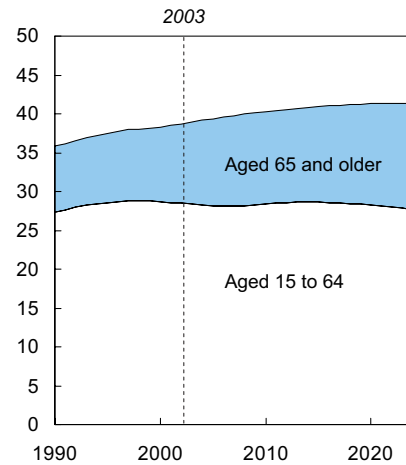
POPULATION AGING TRENDS

Median age of population in Germany and the US 1975-2024
Years

□ Germany
■ US



Age of head of German household 1990-2024
Millions of households



Source: Statistisches Bundesamt; UN World Population Prospects; McKinsey Global Institute Household Financial Wealth Model

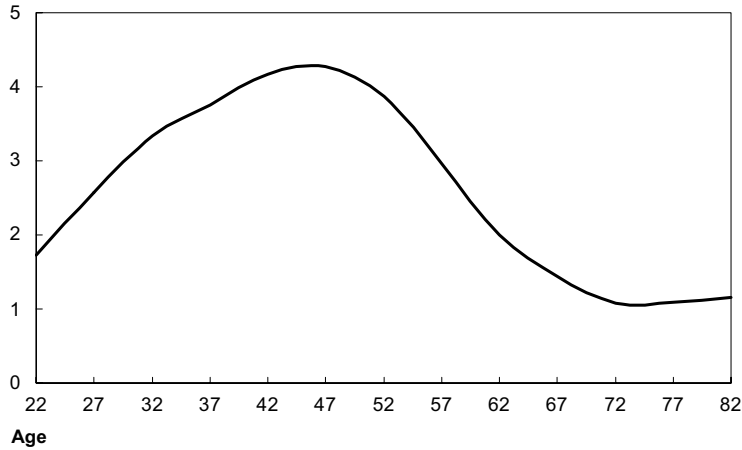
profile. The German household lifecycle savings curve is steeply inclined, reaches a peak in the late 40s, and then rapidly slopes down in the late fifties and retirement years. With income peaking at age 54 and the savings rate hitting the highest point earlier at 41, an average German household experiences peak savings around ages 45-49. This relatively early age for peak savings magnifies the impact of an aging population since the decline in savings occurs at an earlier age than in other countries. Therefore, as the German population ages, it will experience a "lifecycle effect" on savings earlier than in other countries that have peak savings at later ages (Exhibit 13).

While population aging will affect German savings and NFW accumulation in the next two decades, the impact may be appreciably larger after 2024 because of the impending sharp decline in population (Exhibit 14).

Exhibit 13

GERMAN LIFECYCLE SAVINGS CURVE

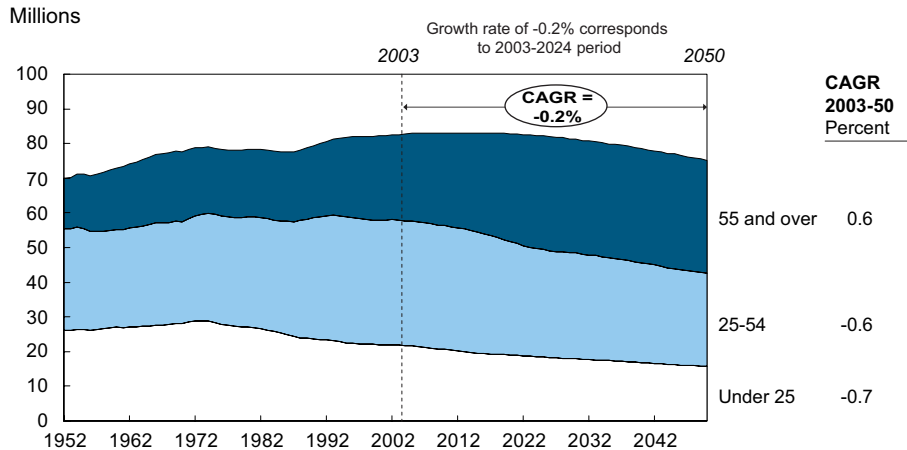
Annual savings per household for representative cohort*
 € Thousands, 2000



* Not calibrated to the national account levels
 Source: Börsch-Supan; McKinsey Global Institute Household Financial Wealth Model

Exhibit 14

GERMAN POPULATION BY AGE GROUP 1952-2050



Source: Statistisches Bundesamt Deutschland

DEMOGRAPHIC IMPACT ON HOUSEHOLD NET FINANCIAL WEALTH GOING FORWARD

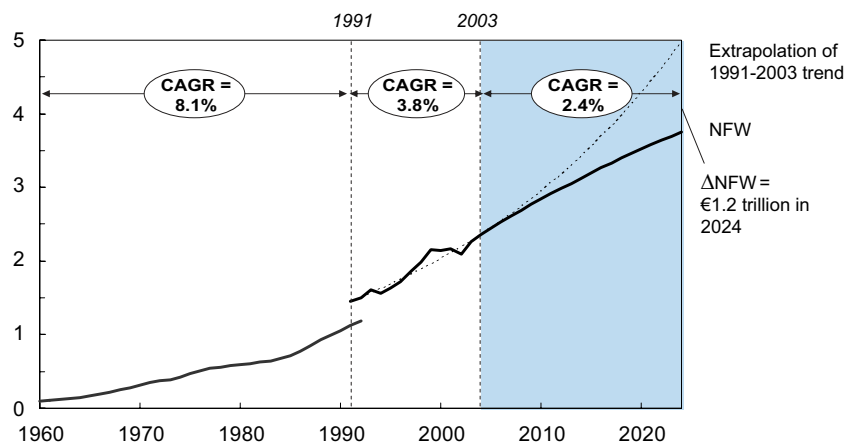
The preceding discussion has set the historical context, and outlined the demographic drivers of household behavior and how they impact savings and NFW accumulation. This section describes the aggregate implications of this microeconomic behavior.

Growth in German NFW will decline. Demographic changes in Germany add up to a stagnating picture for savings and slowing NFW accumulation over the next two decades. With a declining prime saver ratio, Germany is beginning to face a demographic headwind. With declining growth in financial assets and liabilities, growth in German NFW will fall to 2.4 percent annually from 2003 through 2024, ending up some 25 percent or 1.2 trillion below what it would be had historical growth rates persisted (Exhibit 15).

Exhibit 15

GERMAN HOUSEHOLD NET FINANCIAL WEALTH 1960-2024

€ Trillions, 2000



Note: Estimated for the former West Germany between 1960 and 1991
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

The slowing growth of German NFW is primarily driven by lower growth in financial assets. This, in turn, is fueled by a demographically-driven stagnation of savings flows.

Projected financial assets and liabilities

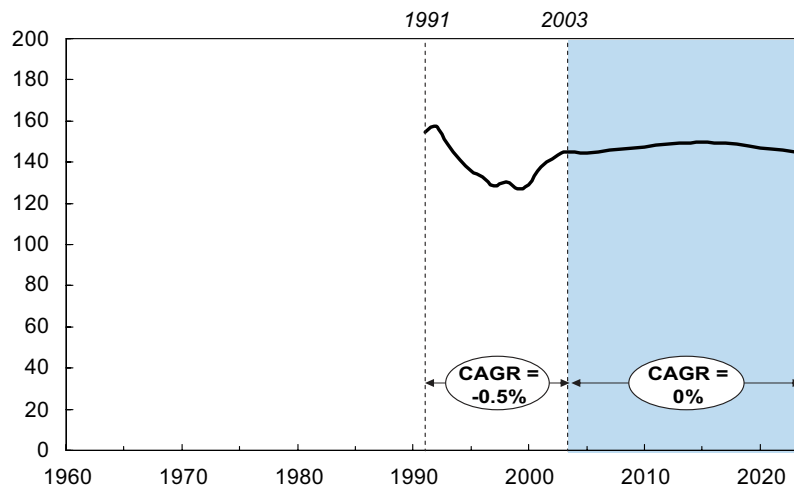
A falling prime saver ratio and slowing household growth will result in a stagnation of savings flows and will drive declines in the rate of financial asset accumulation.

- **Household savings will stagnate.** With the gradual decline in the prime saver ratio, aggregate savings is expected to grow slowly until 2015 and steadily decline afterwards. This will result in a stagnant overall growth rate of 0.0 percent over the next two decades (Exhibit 16).

Exhibit 16

ANNUAL SAVINGS OF GERMAN HOUSEHOLDS 1991-2024

€ Billions, 2000



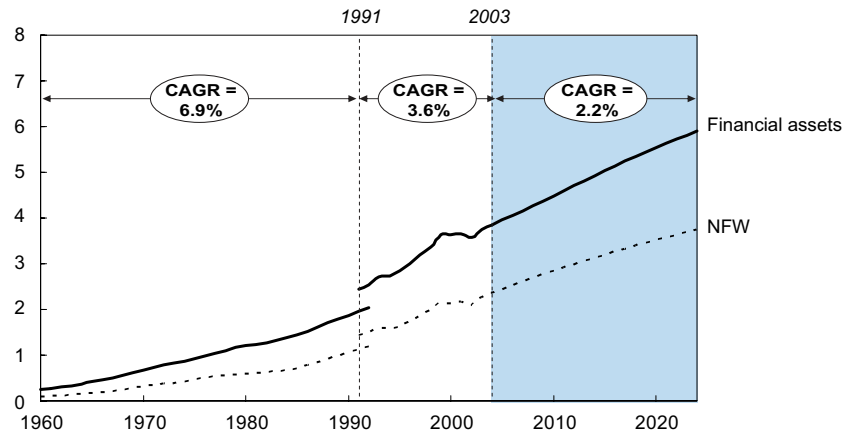
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

- **Financial asset growth will decline.** From 2005 onwards, the demographic pressure in Germany will push the growth rate of financial asset accumulation below historical trends. Our simulation implies that German household financial assets will grow in the next two decades at a slower rate, dropping from 3.6 percent over the 1991-2003 period down to 2.2 percent over the next two decades (Exhibit 17).

Exhibit 17

GERMAN HOUSEHOLD FINANCIAL ASSETS 1960-2024

€ Trillions, 2000



Note: Estimated for the former West Germany between 1960 and 1991
Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

- **Growth of liabilities will slow down.** Overall liabilities are projected to grow at 1.8 percent (Exhibit 18). While the liability-to-income ratio will continue increasing up to 1.5 in 2024, the liability-to-assets ratio will remain fairly constant and slightly lower than in the historical period (Exhibit 19).⁶

NAVIGATING THE DEMOGRAPHIC TRANSITION

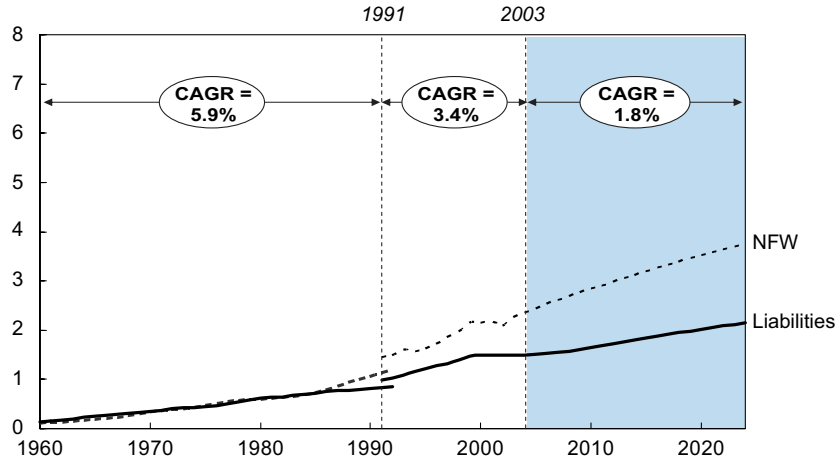
Our baseline projection for Germany shows that, in the absence of dramatic changes in population trends, savings behavior, or rates of financial asset appreciation, the demographic pressure will cause reductions in the growth rate of NFW. Depending on how the economy responds, there may be a number of downside risks to the economy as a whole. For instance, lower savings could imply less accumulation of capital, less growth, and less real domestic income creation. This slowdown would, in turn, reduce corporate earnings and

⁶ In projecting future liabilities growth, we therefore assume a German liabilities-to-income ratio growing at historical trend. With the US benchmark liability-to-income ratio currently at approximately 1.2, our base case makes for a good initial scenario. Our assumption on growth of liabilities-to-income ratio at historical trend will bring this ratio to 1.5 in 2024, which is within the range of the US benchmark. The liabilities to financial asset ratio remains stable.

Exhibit 18

GERMAN HOUSEHOLD LIABILITIES 1960-2024

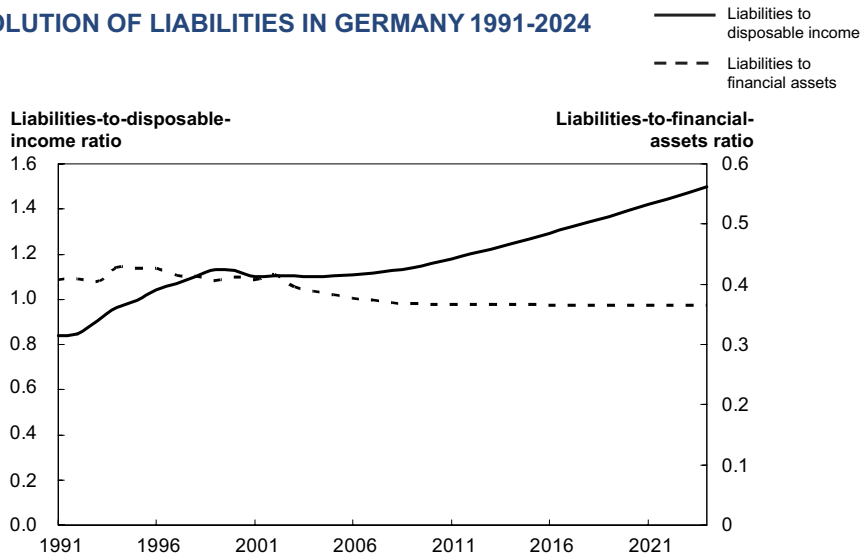
€ Trillions, 2000



Note: Liabilities-to-income ratio growing at historical trend and liabilities to financial assets ratio slightly declining in the projection period; estimated for the former West Germany between 1960 and 1991
 Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

Exhibit 19

EVOLUTION OF LIABILITIES IN GERMANY 1991-2024



Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

government tax revenues, at the same time when Germany will be grappling with fast-rising health care and pension costs. This could inflate government budget deficits, increasing the risk of a rise in real interest rates, the crowding out of private-sector borrowers and further declines in investment.

Our analysis suggests that the household growth rate of NFW will decline and will considerably depart from historical trends. While there are no easy answers to how to effectively mitigate this slow down, there are a number of changes that could potentially counteract the demographic pressure on NFW accumulation. German households and their government will need to take action to increase household savings, reduce government borrowing, and improve rates of financial asset appreciation. These objectives will require coordinated efforts by the public and private sector, sustained over the foreseeable future.

In this section we use sensitivity analysis to test whether changes in the key drivers of our model can meaningfully alter our projections. Our objective is to isolate the high impact drivers that could suggest changes in future policy directions. The results of this exercise are three-fold:

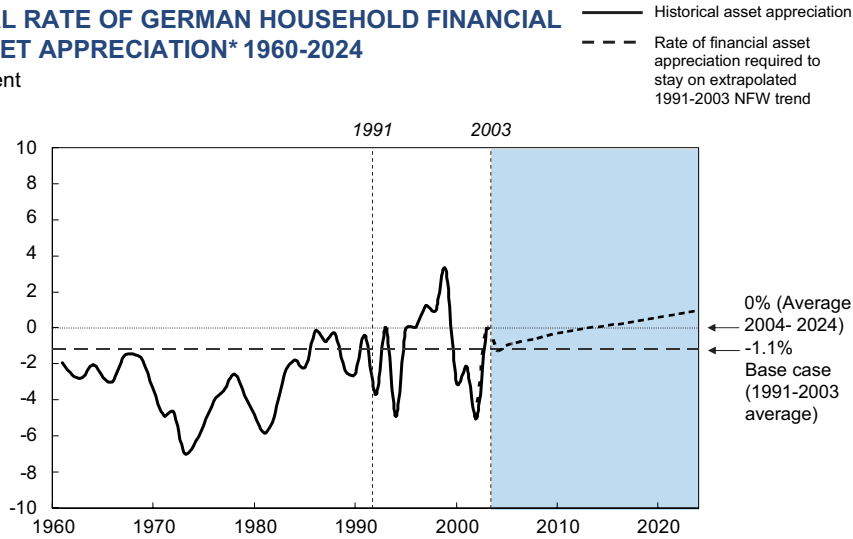
- Raising rates of financial asset appreciation would have a significant impact on NFW accumulation and have the potential to fully counterbalance demographic pressure;
- Policies that change household behavior and *substantially* increase savings could help partially relieve the demographic pressure on NFW accumulation;
- Changes in immigration and birth rates would have little if any impact on NFW accumulation over the next 20 years.

Higher rates of FAA can fully counterbalance demographic pressure. NFW accumulation would be stronger if households were able to achieve higher rates of financial asset appreciation in the future. Our current baseline assumption of -1.1 percent reflects the historical average for the period 1991 through 2003. Increasing the average rate of financial asset appreciation to 0 percent in the forecast period (Exhibit 20) changes our baseline growth rate of 2.4 percent to 3.8 percent – the rate at which NFW accumulated historically – and fully offsets the demographic pressure (Exhibit 21).

Exhibit 20

REAL RATE OF GERMAN HOUSEHOLD FINANCIAL ASSET APPRECIATION* 1960-2024

Percent

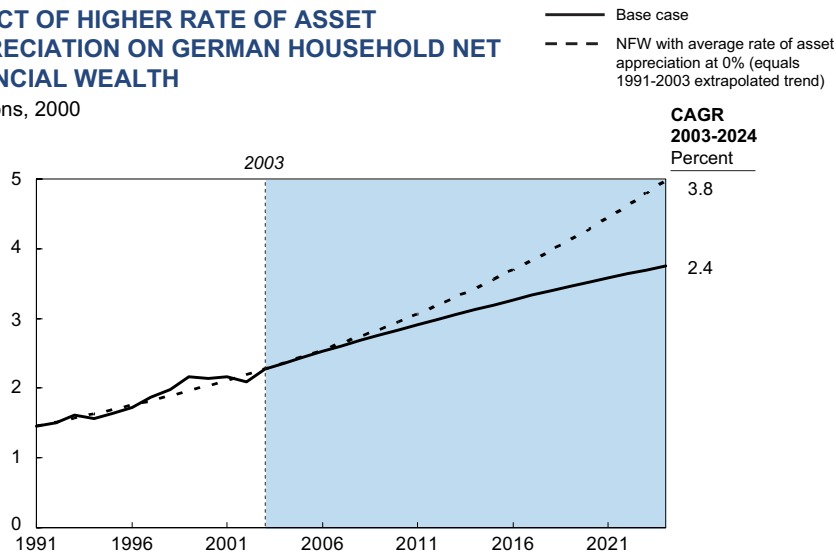


* Calculated on the total stock of financial assets and acquisition of net financial assets
 Note: Estimated for the former West Germany between 1960 and 1991
 Source: Deutsche Bundesbank; McKinsey Global Institute Household Financial Wealth Model

Exhibit 21

IMPACT OF HIGHER RATE OF ASSET APPRECIATION ON GERMAN HOUSEHOLD NET FINANCIAL WEALTH

€ Trillions, 2000



Source: Statistisches Bundesamt Deutschland; McKinsey Global Institute Household Financial Wealth Model

Working off such a large stock of financial assets, the rate of FAA is clearly a high-impact driver of asset accumulation, but difficult to influence. Given that the German market is not as efficient as its US counterpart, and German households historically allocated their financial assets in low-risk, low-return products, an opportunity exists to encourage higher rates of FAA through changes to the financial system and household behavior. (See chapter 1 for a discussion of possible methods to increase rate of FAA.)

Extending peak saving years can fuel increase of NFW. The simulation outcome is moderately sensitive to drastic changes in the shape of the lifecycle savings curve. Prolonging the peak income and saving years of the households by 10 years (Exhibit 22) results in a moderate increase in NFW accumulation (leading to a rate of accumulation of 3 percent) and is not sufficient by itself to fully counterbalance the demographic pressure (Exhibit 23). This sensitivity leads us to believe that changes to the retirement age and other actions that could affect household lifecycle savings behavior, while working in the positive direction to improve the savings flow and NFW accumulation, will not be sufficient to fully counterbalance demographic pressure.

Changing demographics, through higher immigration and birth rates, does not materially impact net financial wealth accumulation in the short or medium term. Increasing birth rates is not effective in increasing net financial wealth over the next 20 years because higher birth rates do not produce prime savers for several decades. Increasing immigration, even at the highest levels projected by government statistics, is not large enough to change overall demographic structure, and thus does not materially affect net financial wealth accumulation.

- **Increased immigration has negligible effect on population trends.**

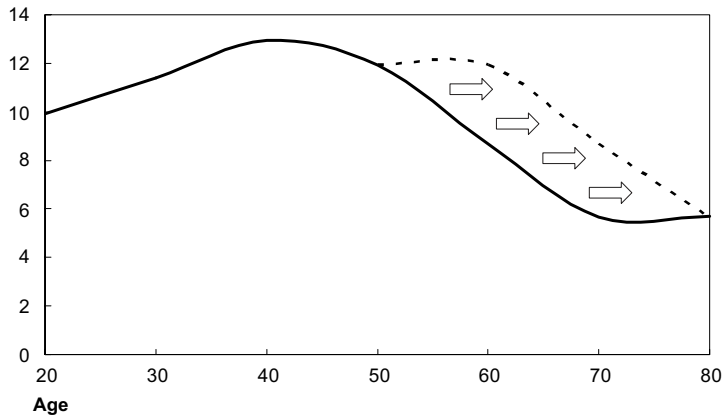
Given that a slowdown in household formation is an important demographic force in the projection period, we tested the impact of increases in immigration. Assuming a higher rate of immigration only marginally increases the number of households participating in wealth creation and has marginal impact on aggregate saving and, ultimately, on the rate of financial asset accumulation. An increase in net immigration by 100,000 people per annum (an additional 2 million people over the next two decades) corresponds to an extra 700,000 households (1.6 percent more households than in the base

Exhibit 22

SENSITIVITY SCENARIOS – IMPACT OF LARGE AND RAPID CHANGE IN SAVINGS BEHAVIOR ON GERMAN HOUSEHOLD SAVINGS RATES*

Percent of disposable income

- Baseline scenario
- - - Scenario with assumed shift in savings behavior



* Representative cohort; not calibrated to the national account levels; roughly corresponds to gradual prolonging peak saving period of the household life cycle by 10 years

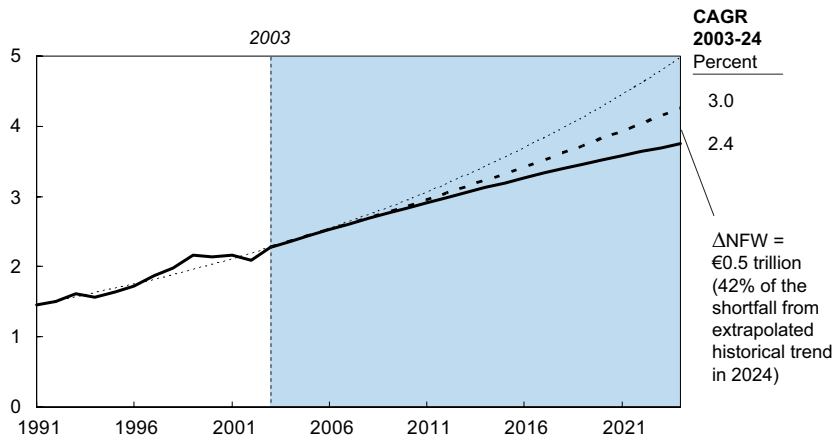
Source: Börsch-Supan; McKinsey Global Institute Household Financial Wealth Model

Exhibit 23

IMPACT OF SAVINGS BEHAVIOR SHIFT ON GERMAN HOUSEHOLD NET FINANCIAL WEALTH

€ Trillions, 2000

- Base case
- - - NFW with savings behavior shift
- Extrapolation of 1991-2003 trend



Source: Statistisches Bundesamt; McKinsey Global Institute Household Financial Wealth Model

case) by 2024. This increases the rate of NFW accumulation by 0.7 percent relative to the base case, which is negligible (exhibits 24-25).

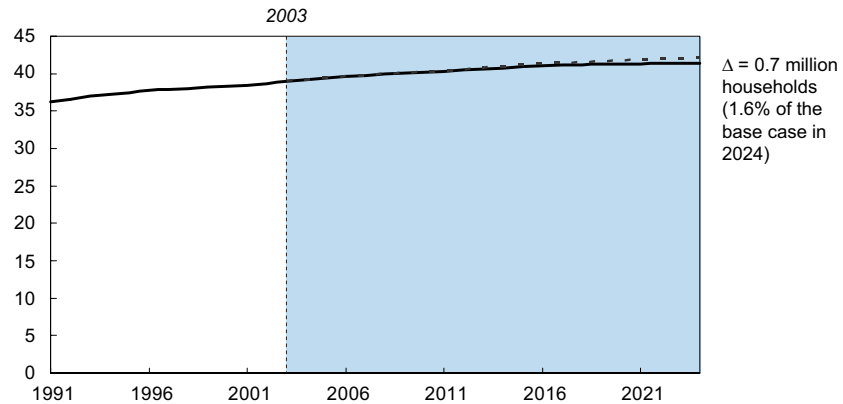
- Increasing birth rates is ineffective for raising 20-year net financial wealth accumulation.** Adopting policies to increase birth rates is another frequently discussed solution to aging. However, given households typically reach their prime saving years between the ages of 35 and 54 in Germany, the impact of higher birth rates on increasing savings (through more prime savers) will be delayed by several decades. Thus, while higher birth rates could provide a long term solution, it does not address the impact of the aging baby boomers on NFW accumulation over the next 20 years.

Exhibit 24

SENSITIVITY SCENARIOS – IMPACT OF INCREASED IMMIGRATION ON NUMBER OF GERMAN HOUSEHOLDS

Millions

— Immigration at 200,000 per annum (base case)
 - - - Immigration at 300,000 per annum (aggressive scenario*)

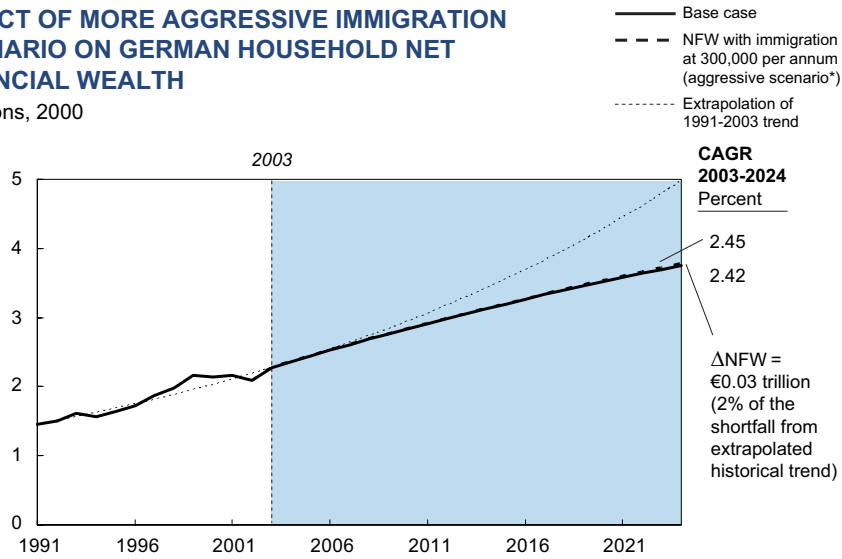


* Most aggressive variant of the three migration variants considered by German Federal Statistical Office
 Source: Statistisches Bundesamt Deutschland; McKinsey Global Institute Household Financial Wealth Model

Exhibit 25

IMPACT OF MORE AGGRESSIVE IMMIGRATION SCENARIO ON GERMAN HOUSEHOLD NET FINANCIAL WEALTH

€ Trillions, 2000



* Most aggressive variant of the three migration variants considered by German Federal Statistical Office
Source: Statistisches Bundesamt; McKinsey Global Institute Household Financial Wealth Model

5. Italy: *Aging but Saving*

SUMMARY OF FINDINGS

Demographic pressure is expected to continue to drive down Italian household savings flows, further slowing the growth rate of household net financial wealth accumulation, with potentially significant implications for economic growth in Italy. Our analysis suggests that, in the absence of dramatic changes in population trends, savings behavior, or rates of financial asset appreciation, Italian household savings will *decline* at 1.7 percent annually over the next two decades, causing a sharp slowdown in the growth of household net financial wealth (NFW), from the historical rate of 3.4 percent over the 1986-2003 period, to 0.9 percent through 2024. By 2024, this slowing growth will cause NFW to fall some 39 percent, or by €1.8 trillion,¹ below what it would have been had the higher 1986-2003 growth rates persisted.²

The demographic transition has been under way in Italy for the past two decades. Since 1986 the median age in Italy has surged 7 years, and over the next two decades it is expected to increase another 9 years, reaching 51 in 2024. It is estimated that there will be over one million people over the age of 90 in Italy by 2024. With its aging population and the number of working-age

1 Unless otherwise noted, all growth rates are expressed in real terms; values are in 2000 euros.

2 In this study we focus on assessing the direction, timing and magnitude of the demographic pressure on household savings and financial wealth accumulation, using country specific demographic forecasts, empirical observations of historical lifecycle and cohort saving behavior, and historical rates of financial asset appreciation (see "Technical Notes" for more details). Our findings should not be interpreted as point forecasts because we do not capture the feedback that will occur as households, markets and other forces adjust to these demographic changes. For ease of exposition, we use "will" (e.g., savings "will" fall) throughout this document to describe our demographically driven projections.

households continuing to grow more slowly than elderly households, the demographic structure of Italy will become increasingly less able to support wealth accumulation, with important implications for both households and the overall economy. For households, NFW accumulation is a good proxy for economic well-being, and slower growth in wealth is likely to mean slower growth in future living standards. For the economy, there will be less household savings to support a fast-growing retiree population and it will become more difficult to support domestic investment and sustain strong economic growth.

To navigate smoothly through this transition and to offset this strong demographic pressure, Italian households and their government will need to take steps to reverse the decrease in saving and to improve the returns that households obtain on their portfolios. Mitigating the demographic forces already at work in Italy will be challenging and will require sustained, coordinated efforts by the public and private sector. The fact that the rest of the developed world is experiencing or is about to encounter similar aging trends means that Italy cannot rely on inflows of foreign savings to make up for its domestic shortfall.³

In this chapter, we explore these issues in greater detail, with a particular focus on the following dimensions:

- The historical evolution of household net financial wealth accumulation in Italy;
- The slowdown in household formation and changes in household behavior which will drive changes in household NFW;
- The impact of demographics on Italian household savings and NFW accumulation over the next two decades;
- Changes that could mitigate the impact of demographic forces, and resulting potential policy directions.

³ As Europe integrates and grows to encompass younger, faster-growing economies to the east, Italy, as an EU and Eurozone member, may benefit from positive Europe-wide trends/effects, including: the positive demographic impact of adding younger countries to the European economy, potentially higher overall growth and higher returns on Euro-denominated financial assets, and easier access to regional savings pools.

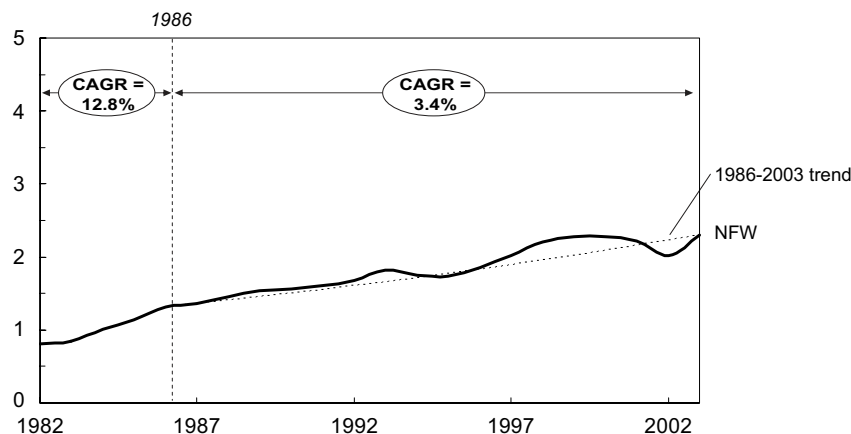
HISTORICAL EVOLUTION OF HOUSEHOLD NET FINANCIAL WEALTH

Since 1982 Italy has been through two distinctly different phases. In the early 1980s, high inflation and high interest rates helped Italian households earn extraordinary income from government bonds, and contributed to rapid, 12.8 percent annual growth in household NFW. As this era was unusual and very different from what followed, we exclude it from further analysis and comparisons. From 1986 to 1996 Italian household NFW accumulated steadily at an average growth rate of 3.4 percent per year. The global technology, media, and telecommunications boom and bust between 1998 and 2002 introduced additional volatility but the average growth rate of NFW remained the same at 3.4 percent throughout the whole 1986-2003 period (Exhibit 1). With a very low overall level of liabilities, changes in Italian household NFW depend mostly on developments in financial assets (Exhibit 2).

Exhibit 1

NET FINANCIAL WEALTH (NFW) OF ITALIAN HOUSEHOLDS 1982-2003

€ Trillions, 2000



Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Basic facts on net financial wealth accumulation

The stock of financial assets held by households can change in two ways: households can purchase new assets and existing asset holdings can be revalued because of changing market prices.

The *net acquisition of financial assets* – purchases less sales – is largely driven by contemporaneous savings out of income.⁴ Total returns on financial assets, as commonly understood, are a combination of realized capital income and unrealized asset appreciation. Realized capital income, including interest and dividends, is by convention counted as personal income, a portion of which is saved.⁵ The revaluation of asset holdings therefore only captures unrealized asset appreciation (or depreciation). All references to *financial asset appreciation (FAA)* constitute these unrealized gains, and are adjusted for inflation.

The stock of financial assets less outstanding liabilities equals the net financial wealth of households (NFW). We focus on measuring the demographic impact on NFW because this metric enables us to build our understanding of the demographic impact on the global capital market. It also helps us understand the impact on households because NFW is a good proxy for overall economic well being (see chapter 1 for discussion).

This section documents the important trends in NFW accumulation by Italian households between 1986 and 2003. We point to demographic effects already operating within the Italian economy and influencing savings flows, as well as historically poor financial asset appreciation as the primary drivers of historical wealth accumulation in Italy.

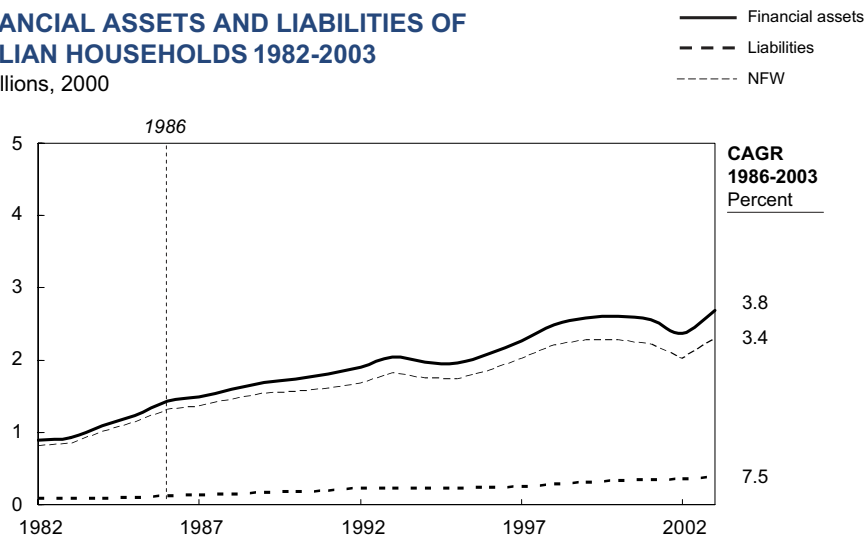
4 See "Technical Notes" for a definition of the relationship between saving out of income as defined in the national accounts, and the net acquisition of financial assets as defined in the flow of funds accounts.

5 Realized capital gains are not counted in the national accounts as savings, see Reinsdorf (2004). We capture the impact of realized capital gains on purchases of new assets because asset accumulation is driven by the net acquisition of financial assets as measured by the flow of funds accounts (see "Technical Notes" for details).

Exhibit 2

FINANCIAL ASSETS AND LIABILITIES OF ITALIAN HOUSEHOLDS 1982-2003

€ Trillions, 2000



Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Household financial assets

Between 1986 and 2003, Italian household financial assets accumulated steadily at an average growth rate of 3.8 percent per year. The impact of the demographic change on savings and Italy's historically low levels of financial asset appreciation underpin Italy's historical trends.

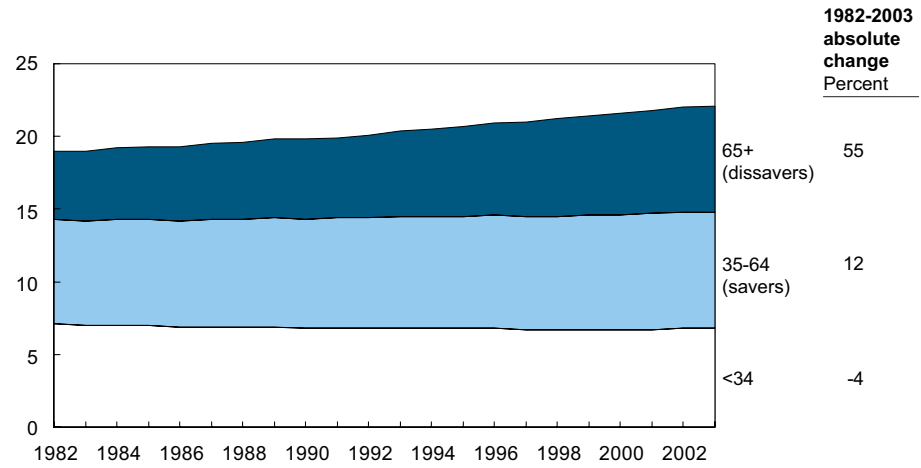
Rapid aging coincided with strong declines in savings flows and net acquisition of financial assets. Italy has experienced massive demographic change in the last two decades. The number of elderly households (65+) increased by a staggering 55 percent between 1986 and 2003 (Exhibit 3). The aging of the population affected wealth accumulation through lifecycle savings behavior (Exhibit 4). Over the same period, Italian households experienced a sharp drop in their savings flows, which declined 5.2 percent per year (Exhibit 5). Furthermore, the primary driver of financial asset acquisition by Italian households was their historically strong savings behavior. Weakening savings thus resulted in dwindling acquisition of financial assets, which declined at the rate of 3.7 percent per year (Exhibit 6).

Financial assets have not appreciated. Historical real rates of financial asset appreciation in Italy have been very low, averaging -1.6 percent between 1991

Exhibit 3

NUMBER OF ITALIAN HOUSEHOLDS BY AGE GROUP 1982-2003

Millions of households

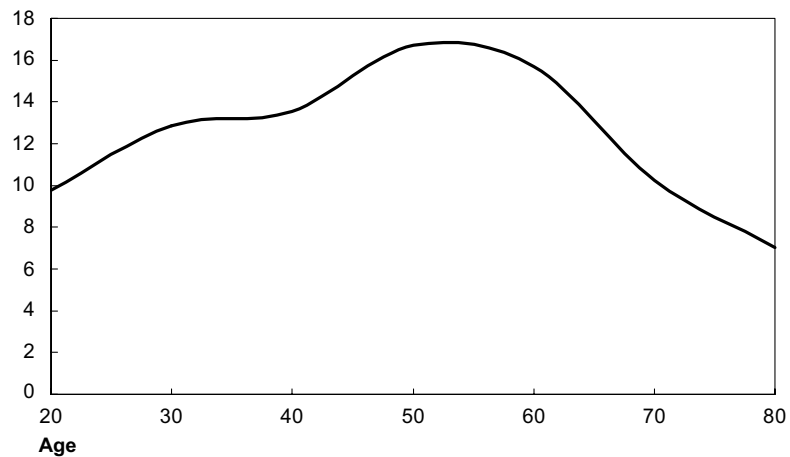


Source: ISTAT; EUROSTAT; McKinsey Global Institute Household Financial Wealth Model

Exhibit 4

ITALIAN LIFECYCLE SAVINGS CURVE

Annual savings per household for representative cohort*
€ Thousands, 2000

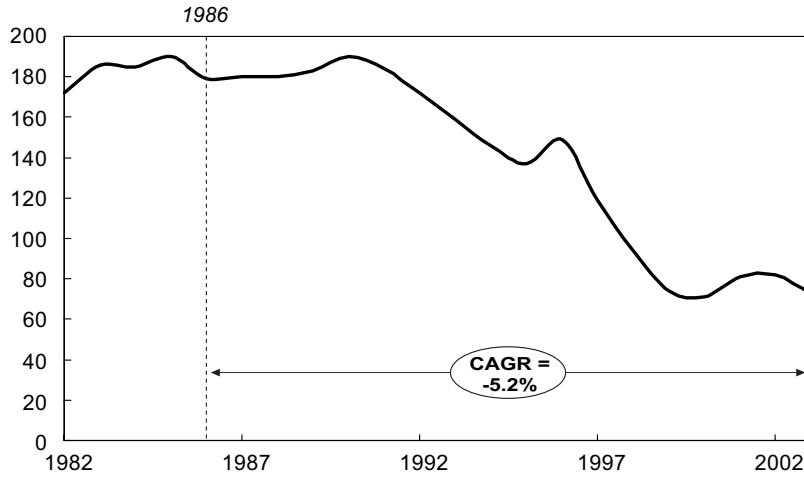


* Not calibrated to the national account levels
Source: Baldini, Onofri, Mazzaferro (2002); Survey of Household Income and Wealth; MGI estimates

Exhibit 5

SAVINGS FLOWS FROM ITALIAN HOUSEHOLDS 1982-2003

€ Billions, 2000

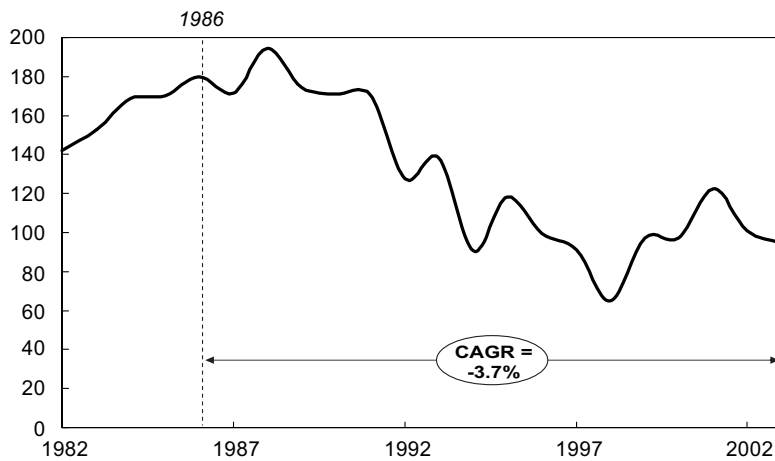


Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Exhibit 6

NET ACQUISITION OF FINANCIAL ASSETS BY ITALIAN HOUSEHOLDS 1982-2003

€ Billions, 2000



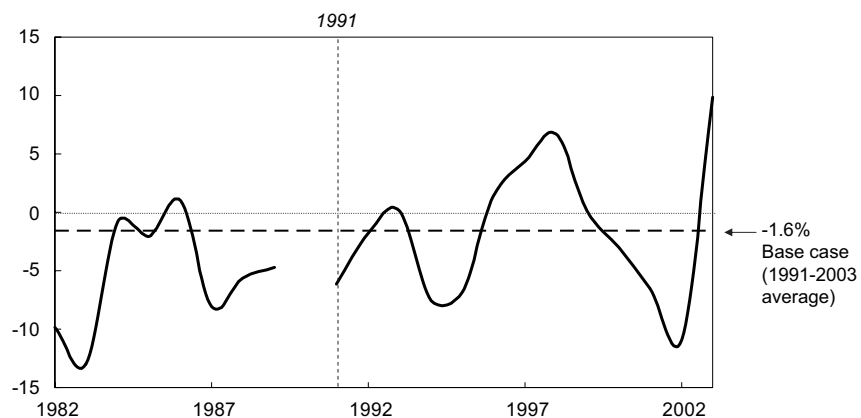
Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

and 2003⁶ (Exhibit 7). To put this in a global perspective, this rate was the highest in the US, where it averaged 0.96 percent historically (1975-2003) while Japan and Germany experienced negative rates.

Exhibit 7

REAL RATE OF ITALIAN HOUSEHOLD FINANCIAL ASSET APPRECIATION* 1982-2003

Percent



* Calculated on the total stock of financial assets and acquisition of net financial assets; estimated for 2003
Note: Data gaps do not allow for calculating rate of FAA in 1990; for data consistency reasons we use average of 1991-2003
Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Low rates of FAA can be explained by Italian households' conservative financial asset class mix, inflation rates, and equity market performance. An important characteristic of Italian household asset allocation is the very large share of real estate, at close to 60 percent of total assets (Exhibit 8). Furthermore, a very large proportion of Italian household financial assets is allocated to deposits and bonds (at 50 percent in 2003 as compared to 21 percent in the US). Equities constitute smaller share of overall financial asset portfolio (Exhibit 9). Given this conservative portfolio allocation, it is not surprising that Italian households have experienced such bleak real gains on their stock of financial assets.

Household liabilities

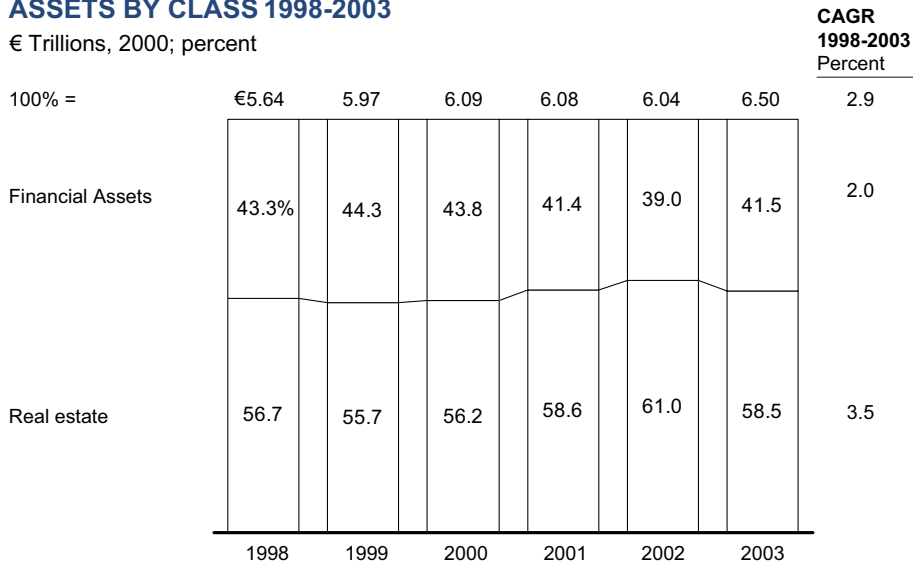
Household liability levels in Italy are unusually low in comparison to other developed economies because of regulatory constraints and behavioral

6 Changes in data methodology prevent us from using a longer time series.

Exhibit 8

COMPOSITION OF ITALIAN HOUSEHOLD ASSETS BY CLASS 1998-2003

€ Trillions, 2000; percent

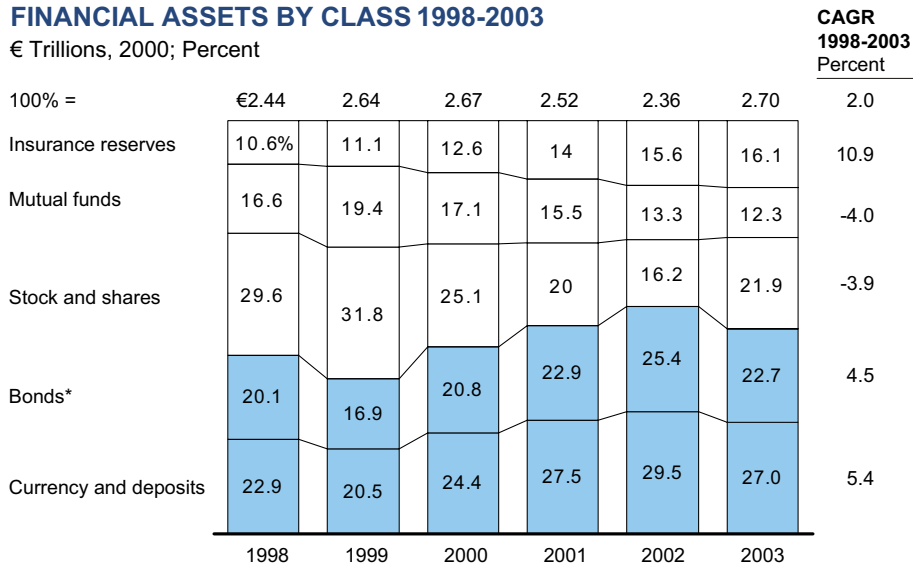


Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Exhibit 9

COMPOSITION OF ITALIAN HOUSEHOLD FINANCIAL ASSETS BY CLASS 1998-2003

€ Trillions, 2000; Percent



* Corporate and government bonds, short-term securities, and account receivables
Source: Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

preferences, and as a result are not a major driver of changes in NFW. A look at the Italian household balance sheet over the period 1986 to 2003 reveals a very low level of household liabilities in comparison to financial assets. Thus, even significant shifts in patterns of liability accumulation are very small relative to the levels of financial assets and are therefore not a major driver of wealth accumulation (Exhibit 2).

It is worth noting that Italian households historically have had limited access to debt and faced very restrictive lending policies, which, combined with an aversion towards incurring debt, resulted in very low levels of household liabilities in Italy. This situation has been changing with the liberalization of regulations in the integrating European market.

KEY DEMOGRAPHIC DRIVERS OF CHANGE IN HOUSEHOLD NET FINANCIAL WEALTH

Italy has been experiencing a significant demographic "headwind" for the past two decades, which will continue to have a negative impact on NFW accumulation in the years ahead. This headwind comes from two sources:

- **Households available to create wealth will be limited** by slowing population growth and reduced household formation;
- **Financial asset accumulation will slow** because falling prime saver ratio will lower average savings per household and the pool of money that can be allocated to acquiring financial assets.

Slowing population growth will reduce household formation

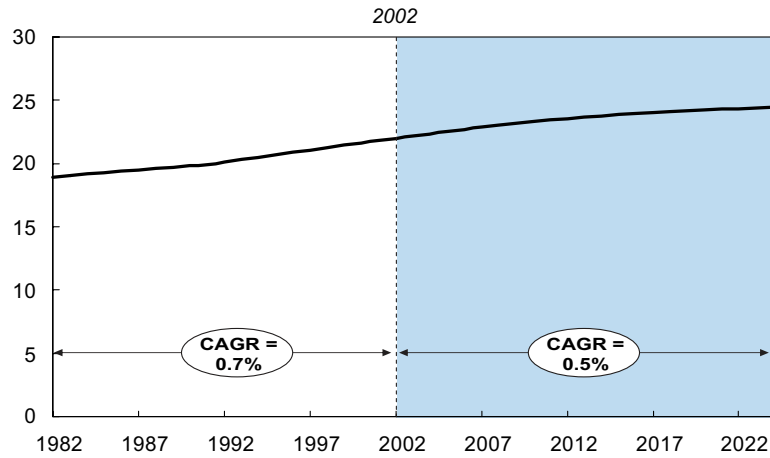
Falling birth rates have caused the population growth rate to decline. The decline in population will abate the growth rate of household formation, from 0.7 percent historically to 0.5 percent in the next two decades (Exhibit 10). Lower rates of household formation will constrain aggregate wealth accumulation since there will be fewer households earning income and generating savings.

The Italian population will start to decline after 2012 (Exhibit 11) but with no immediate effect on the absolute number of households. There will be a time lag between population and household declines. This is because the decline in

Exhibit 10

NUMBER OF HOUSEHOLDS IN ITALY 1982-2024

Millions

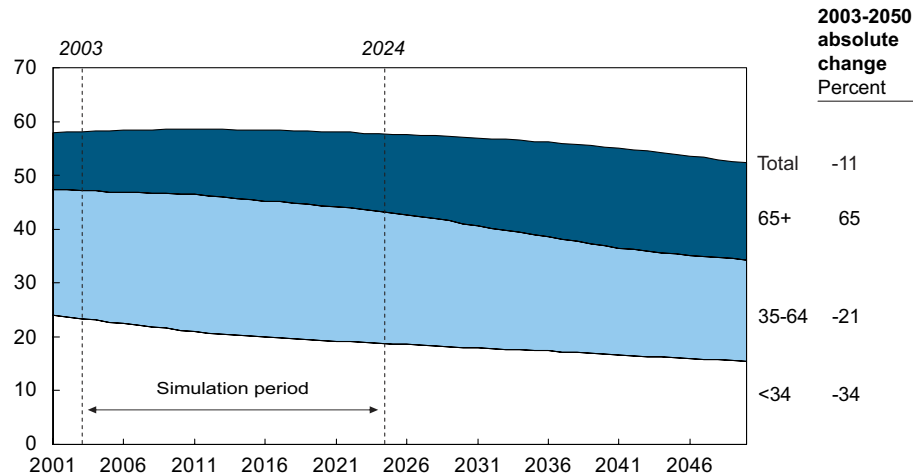


Source: ISTAT; EUROSTAT; McKinsey Global Institute Household Financial Wealth Model

Exhibit 11

ITALIAN POPULATION BY AGE GROUP 2001-2050

Millions



Source: ISTAT; McKinsey Global Institute Household Financial Wealth Model

population is coming from younger age brackets (below 35), which have already declined by 23 percent in the past two decades and will drop by another 19 percent by 2024. The resulting population has actually a *higher* household-to-population ratio, resulting in a slight increase in the number of households, and thus delaying the impact of falling birth rates on the number of households. This decline will have an increasingly significant impact towards the end of our simulation period and beyond it.

Financial asset accumulation will be slowed by lower savings per household

Average household savings will be lower because, going forward, there will be fewer and fewer households in their peak saving years.

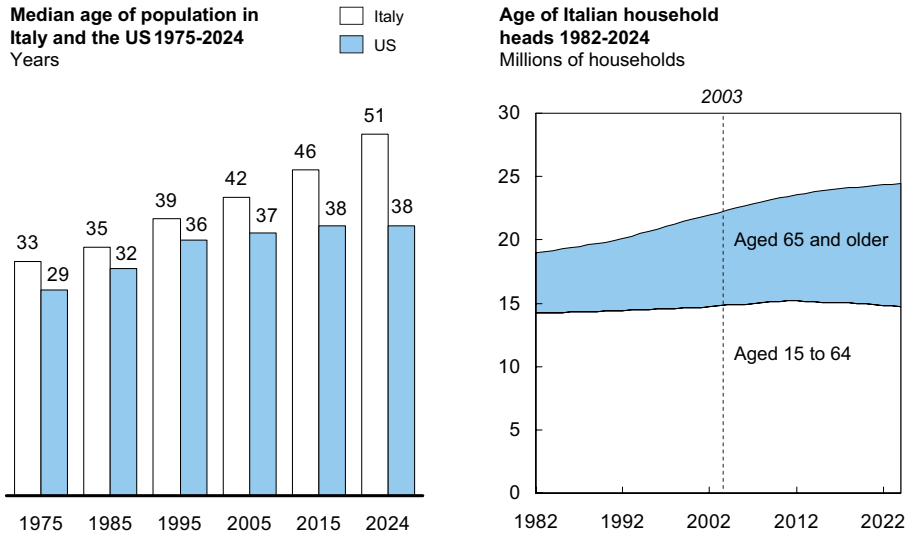
The prime saver ratio is declining. This measures the number of households in their peak savings years (defined as the 20-year age bracket with maximum household savings) relative to the number of elderly households (who save at lower rates). In Italy, the prime saver ratio stood at 1.52 in 1986, declined to 1.10 by 2003, and is expected to continue to fall to 0.99 by 2024. This implies that for the past two decades, the Italian demographic structure has been increasingly less able to support wealth accumulation, and this trend is expected to continue in the future.

The declining prime saver ratio affects wealth accumulation as aging households move out of their peak saving years.

- **The Italian population is aging rapidly.** By 2024, Italy will have the highest median age (51) of the five countries we analyzed (Exhibit 12). Aging in Italy has also been extremely rapid with the median age increasing from 33 in 1975 to 51 in 2024 - a shift of 18 years. The current trend will result in there being over one million people over the age of 90 in 2024.
- **The aging of the population affects wealth accumulation through age-based lifecycle savings behavior.** The Italian lifecycle savings curve generally follows a traditional "hump-shaped" lifecycle pattern observed in many other countries, with savings rising to a peak in middle years and falling off in older years (Exhibit 4). However, there is a significant difference in the behavior of Italian households in

Exhibit 12

POPULATION AGING TRENDS



Source: ISTAT; EUROSTAT; UN World Population Prospects; McKinsey Global Institute Household Financial Wealth Model

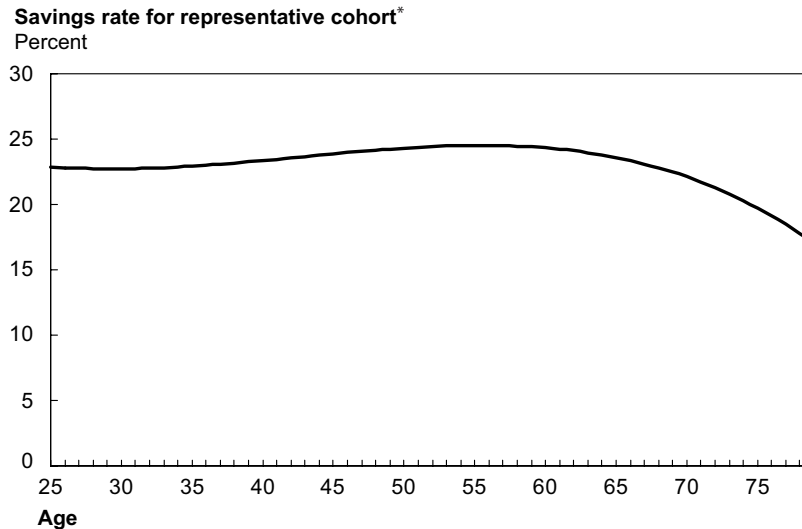
comparison to households from other countries as they do not change their saving behavior as much over their lifetime. As shown on Exhibit 13, the savings rate remains at a fairly constant level regardless of age of the household and shows only very gentle "hump." Consequently, changes in average household savings over the life cycle are very mild relative to other developed economies like the US, Germany, or Japan, and the impact of aging on savings is reduced.

DEMOGRAPHIC IMPACT ON HOUSEHOLD NET FINANCIAL WEALTH GOING FORWARD

The preceding discussion has set the historical context, and outlined the demographic drivers of household behavior and how they affect savings and NFW accumulation. This section describes the aggregate implications of this microeconomic behavior.

Exhibit 13

ITALIAN LIFECYCLE SAVINGS RATE CURVE



* Not calibrated to the national account levels
Source: Baldini, Onofri, Mazzaferro (2002); Survey of Household Income and Wealth; MGI estimates

The demographic changes already under way in Italy point to a continued decline in the growth of savings and NFW accumulation over the next two decades.

Demographic pressure will drive down the rate of growth of Italian household NFW from 3.4 percent over the period 1986-2003, to 0.9 percent going forward. By 2024, this deteriorating growth will have caused Italian household NFW to fall approximately 39 percent, or €1.8 trillion, below what it would have been had the higher historical growth persisted (Exhibit 14).

Projected financial assets

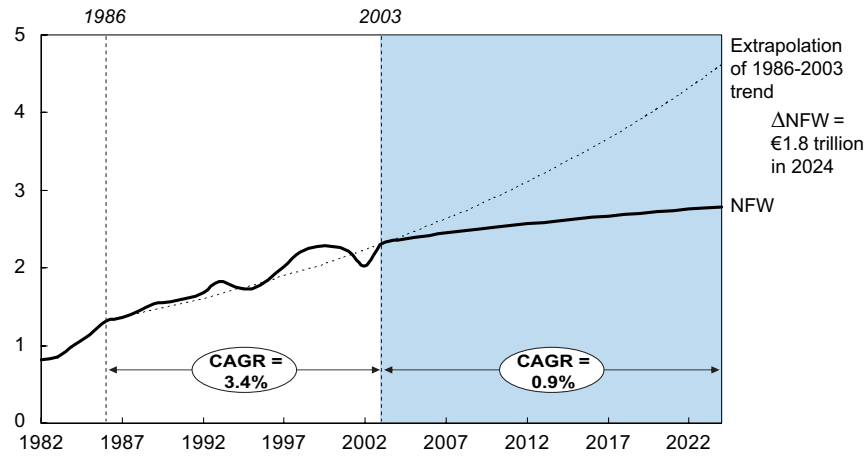
Accumulation of financial assets by Italian households will decelerate over the next two decades, slowing from a historical (1986-2003) growth rate of 3.8 percent to 1.2 percent through 2024 (Exhibit 15). This slowing growth is due to a continuing deterioration in savings flows.

- **Household savings will continue to decline.** Italy experienced approximately 10 years of very substantial declines in the flow of savings from households in the late eighties and nineties (a drop of

Exhibit 14

NET FINANCIAL WEALTH OF ITALIAN HOUSEHOLDS 1982-2024

€ Trillions, 2000

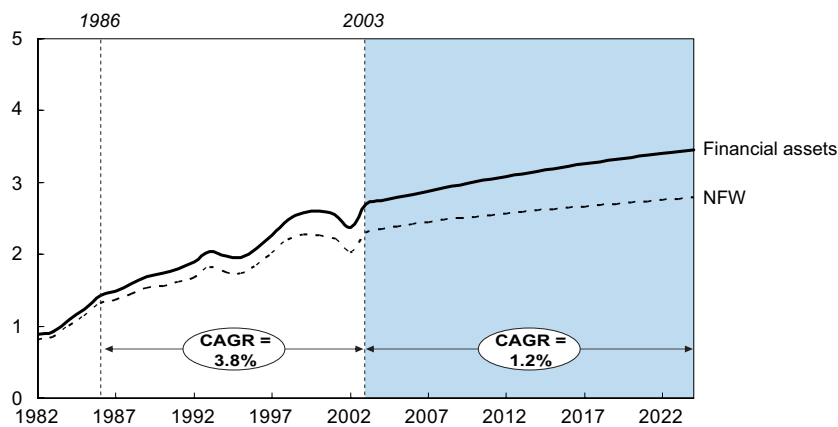


Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Exhibit 15

TOTAL FINANCIAL ASSETS OF ITALIAN HOUSEHOLDS 1982-2024

€ Trillions, 2000

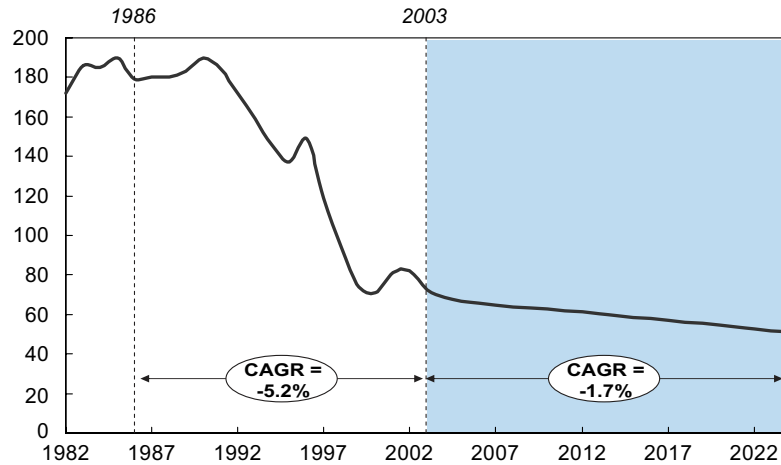


Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Exhibit 16

SAVINGS FLOWS FROM ITALIAN HOUSEHOLDS 1982-2024

€ Billions, 2000



Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

5.2 percent per year). This decline will continue, albeit at a slower rate of 1.7 percent and will result in meager savings flows from households in the next two decades (Exhibit 16).

- **Net acquisition of financial assets will decline.** Reduced savings growth will drive lower levels of financial asset acquisition, which will continue its historical decline, dropping at -0.8 percent per year over the next two decades (Exhibit 17).

Projected liabilities

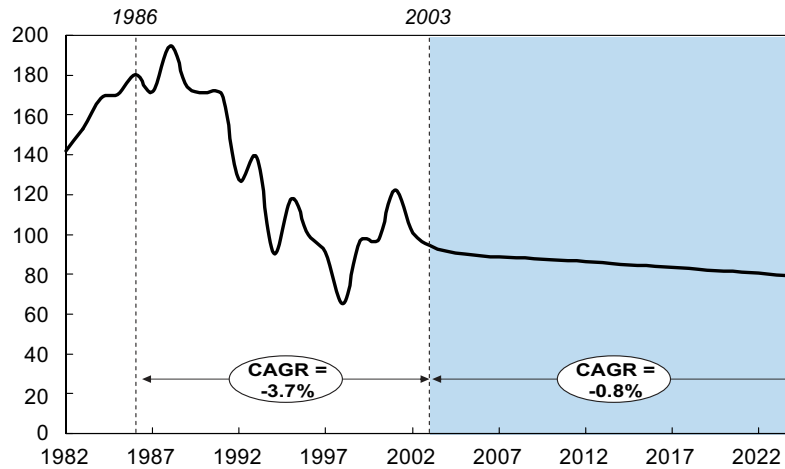
The aggregate impact of liabilities on the growth of NFW is small because of the historically low level of borrowing by Italian households. Growth in the household liabilities will decline from 7.5 percent (1986 to 2003) to 2.6 percent through 2024 (Exhibit 18).⁷

⁷ In projecting future liabilities growth, we therefore assume an Italian liabilities-to-income ratio growing at historical trend. With the US benchmark liability-to-income ratio currently at around 1.2, our 'base case' makes for a good initial scenario. Our assumption on growth of liabilities-to-income ratio at historical trend will bring this ratio to 0.83 in 2024, still well below the US benchmark.

Exhibit 17

**NET ACQUISITION OF FINANCIAL ASSETS
BY ITALIAN HOUSEHOLDS 1982-2024**

€ Billions, 2000

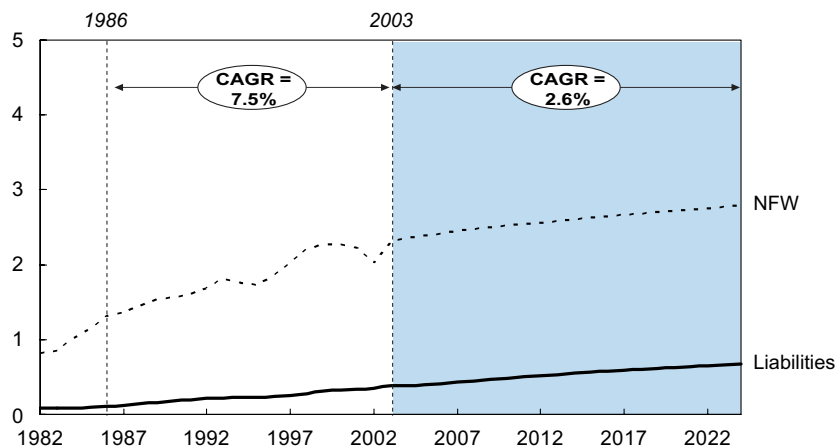


Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Exhibit 18

ITALIAN HOUSEHOLD LIABILITIES 1982-2024

€ Trillions, 2000



Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

NAVIGATING THE DEMOGRAPHIC TRANSITION

Our baseline projection for Italy shows that, in the absence of changes in demographics, savings behavior and financial asset appreciation, demographic pressure will cause a significant reduction in the rate of household NFW accumulation. Depending on how the economy responds, there might a number of downside risks to the economy as a whole. For instance, lower savings could imply less accumulation of capital, less growth, and less real domestic income creation. This slowdown would, in turn, reduce corporate earnings and government tax revenues, at the same time that Italy will be grappling with fast-rising health care and pension costs. This could inflate government budget deficits, increasing the risk of a rise in real interest rates, the crowding out of private-sector borrowers and further declines in investment.

Our analysis suggests that the growth in Italian household NFW will slow dramatically, departing from long-term historical trends. While there are no easy or obvious answers as to how to effectively mitigate this slow down, certain changes could potentially counteract the demographic pressure and moderate its impact on NFW.

In this section we use sensitivity analysis to test whether changes in the key drivers of our model can meaningfully alter our projections. Our objective is to isolate the high-impact drivers which could suggest changes in future policy directions. The results of this exercise are threefold:

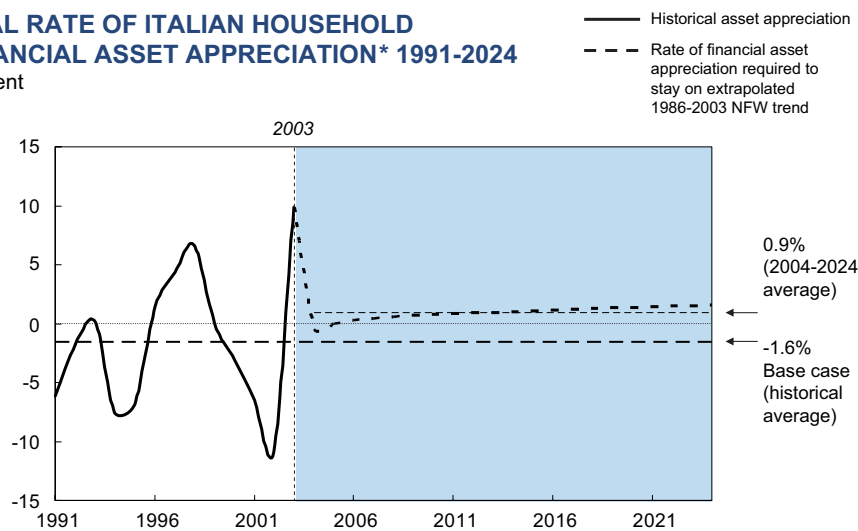
- Raising rates of FAA could meaningfully mitigate demographic pressure on NFW;
- Policies that change household behavior to *substantially* increase savings would have to be quite drastic to help relieve the demographic pressure on NFW accumulation;
- Changes in immigration levels and birth rates would have virtually no impact on NFW accumulation over the next 20 years.

Higher rates of financial asset appreciation can meaningfully mitigate the demographic pressure. NFW accumulation would be stronger in Italy if households were able to achieve higher returns on their stock of financial assets in the future. Our current baseline assumption of average rate of

financial asset appreciation of -1.6 percent reflects the historical average for the period 1992 through 2003. Gradually increasing this rate in the projection period so that it averages 0.9 percent (Exhibit 19) raises the growth rate of our NFW projection from 0.9 percent to 3.4 percent – the rate at which NFW accumulated historically – and fully offsets the demographic pressure (Exhibit 20).

Exhibit 19

REAL RATE OF ITALIAN HOUSEHOLD FINANCIAL ASSET APPRECIATION* 1991-2024
Percent



* Calculated on the total stock of financial assets and acquisition of net financial assets
Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

It is important to put the 0.9 percent target in perspective. US households were able to earn an average return of 0.96 percent between 1975 and 2003 in the world's most sophisticated and transparent market. It would therefore be very challenging for Italy to quickly match that performance. Nevertheless, discovering ways of achieving higher rates of financial asset appreciation will have a very substantial impact on improving the rate of NFW accumulation.

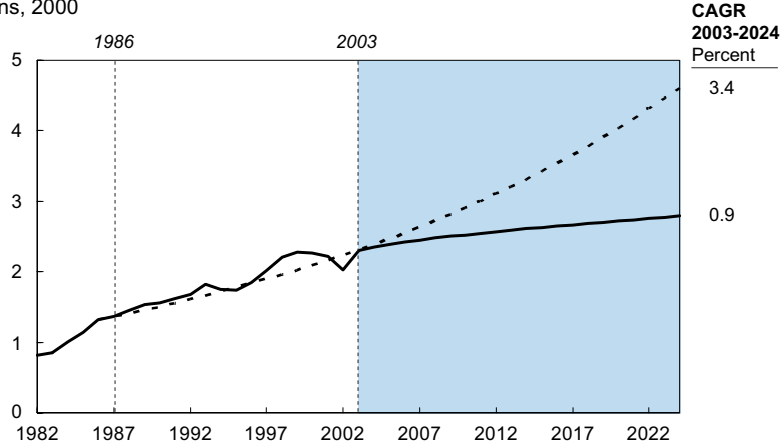
Substantial shifts in savings behavior would have a negligible impact on the rate of NFW accumulation. Changing micro-level savings behavior does not drive meaningful increases in wealth accumulation. Gradually prolonging the peak income and saving years of households by 10 years (Exhibit 21) results in a small increase in NFW accumulation (leading to a growth rate of 0.97 percent) (Exhibit 22). This sensitivity suggests that actions designed to alter lifecycle savings behavior (e.g., changes in retirement age) will have a positive but

Exhibit 20

IMPACT OF HIGHER ASSET APPRECIATION RATE ON ITALIAN HOUSEHOLD NET FINANCIAL WEALTH

€ Trillions, 2000

— Base case
 - - - NFW with average rate of asset appreciation at 0.9% (equals to 1986-2003 extrapolated trend)



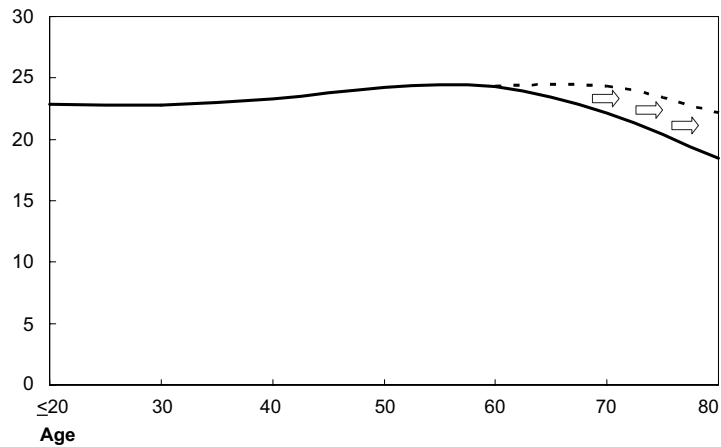
Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

Exhibit 21

SENSITIVITY SCENARIOS – IMPACT OF LARGE AND RAPID CHANGE IN SAVINGS BEHAVIOR ON ITALIAN HOUSEHOLD SAVINGS RATE*

— Baseline scenario
 - - - Scenario with assumed shift in savings behavior

Percent of disposable income



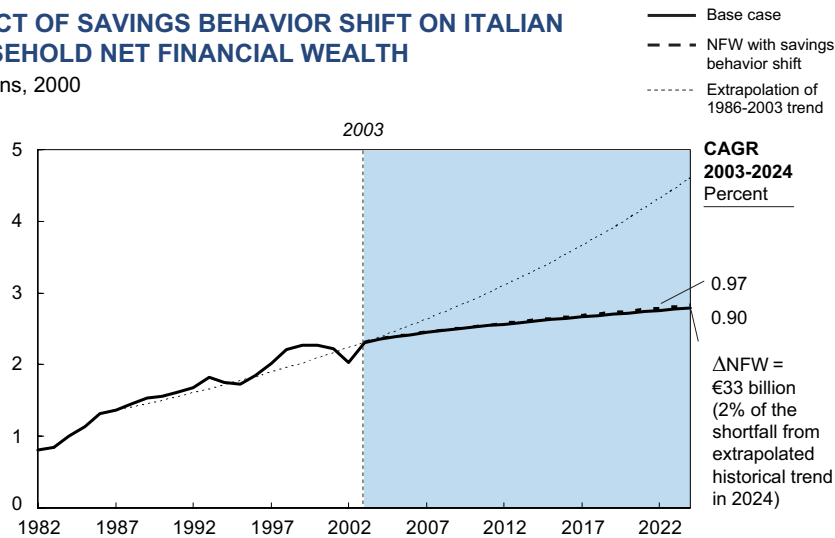
* Representative cohort; not calibrated to the national account levels; roughly corresponds to gradual prolonging peak saving period of the household life cycle by 10 years

Source: Baldini, Onofri, Mazzaferro (2002); Survey of Household Income and Wealth; MGI estimates

Exhibit 22

IMPACT OF SAVINGS BEHAVIOR SHIFT ON ITALIAN HOUSEHOLD NET FINANCIAL WEALTH

€ Trillions, 2000



Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

relatively minor impact on wealth accumulation and therefore have limited potential to counterbalance demographic pressure in Italy. This sensitivity shows much greater impact in countries, such as the US, where saving rates fall sharply as households enter retirement. By contrast, Italy's relatively flat saving curve means that prolonging the peak saving years has only a modest impact.

Changing demographics, through higher immigration and birth rates, does not materially affect net financial wealth accumulation in the short or medium term.

Increasing birth rates is not effective in increasing net financial wealth over the next 20 years because higher birth rates do not produce prime savers for several decades. Increasing immigration, even at the highest levels projected by government statistics, is not large enough to change overall demographic structure, and thus does not materially affect net financial wealth accumulation.

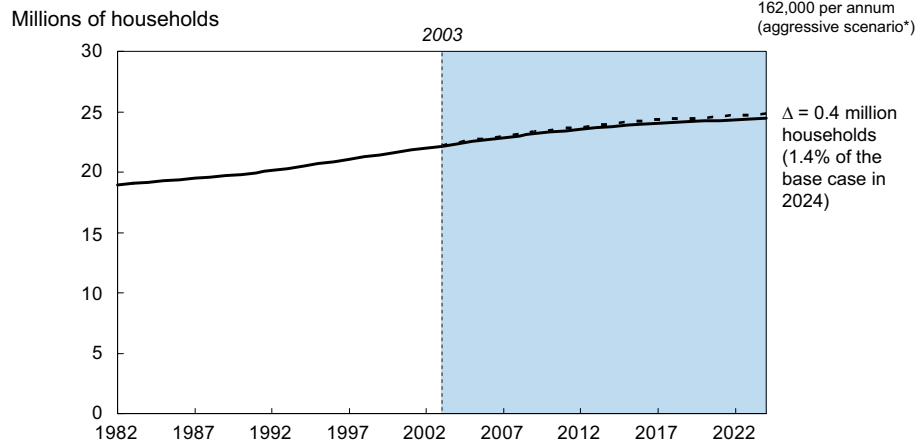
- **Increased immigration has negligible effect on population trends and wealth accumulation.** While immigration is much discussed as a potential solution to aging, even the most aggressive immigration scenarios in Italy do not materially change a country's demographic structure over 20 years. For example, assuming the higher variant of official immigration projections (e.g., increase net international

immigration by 43,000 people per annum, or 800,000 people over the next two decades) only marginally increases the total number of Italian households (Exhibit 23). As a result it has only a marginal impact on aggregate savings and on growth in household NFW, increasing the baseline growth rate from 0.91 percent to 0.94 percent (Exhibit 24).

- Increasing birth rates is ineffective for raising 20-year net financial wealth accumulation.** Adopting policies to increase birth rates is another frequently discussed solution to aging. However, given households typically reach their prime saving years between the ages of 45 and 64 in Italy, the impact of higher birth rates on increasing savings (through more prime savers) will be delayed by several decades. Thus, while higher birth rates could provide a long term solution, it does not address the impact of the aging baby boomers on NFW accumulation over the next 20 years.

Exhibit 23

SENSITIVITY SCENARIOS – IMPACT OF INCREASED IMMIGRATION ON NUMBER OF ITALIAN HOUSEHOLDS

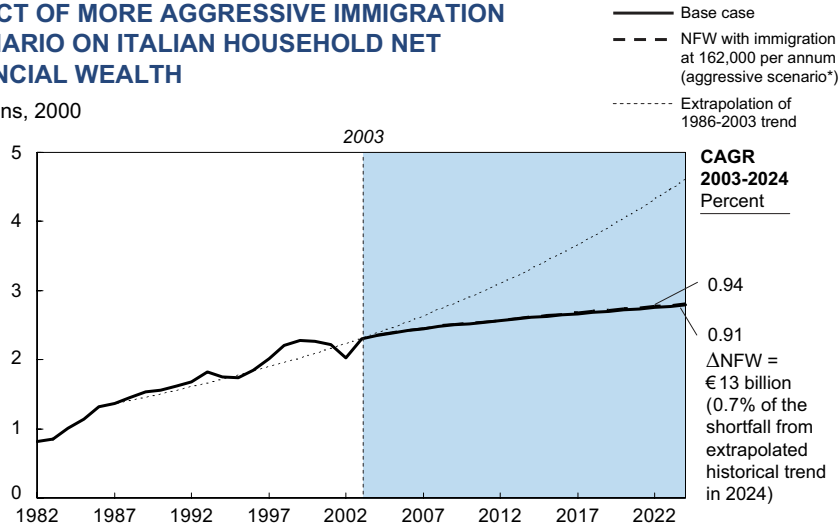


Source: ISTAT; EUROSTAT; McKinsey Global Institute Household Financial Wealth Model

Exhibit 24

IMPACT OF MORE AGGRESSIVE IMMIGRATION SCENARIO ON ITALIAN HOUSEHOLD NET FINANCIAL WEALTH

€ Trillions, 2000



Source: EFIC Personal Financial Assets database; Bank of Italy; McKinsey Global Institute Household Financial Wealth Model

6. UK: Counting on the Market

SUMMARY OF FINDINGS

Over the next two decades, demographic trends are expected to have a limited impact on the evolution of UK household savings and net financial wealth accumulation. This finding contrasts with other developed countries and is mainly a result of unique UK household savings behavior.¹ Our analysis suggests that – in the absence of changes in household age structure, savings behavior or returns on financial assets – the growth in net financial wealth (NFW) of UK households will be slightly lower than in the historical period but will remain at a robust level. The annual real growth of household NFW is expected to decline from an impressive 5.1 percent over the 1975-2003 period, to a still healthy 3.2 percent between 2003 and 2024.^{2,3} While this slowdown is meaningful in the UK context, it is much milder than in other OECD countries. At 3.2 percent, our estimate of the annual growth rate of UK household NFW is two times higher than in the US for the same period. If we compare the UK with

1 Readers are advised that we used a peer-reviewed but counter-intuitive lifecycle savings curve where older households save more. This choice of lifecycle curve causes NFW growth to be much higher than in other countries. Our results therefore are contingent upon the veracity of the lifecycle savings curve. For more details see "Technical Notes."

2 Unless otherwise noted, all growth rates quoted henceforth are in real terms. Values are quoted in 2000 British pounds.

3 In this study we focus on assessing the direction, timing and magnitude of the demographic pressure on household savings and financial wealth accumulation, using country specific demographic forecasts, empirical observations of historical lifecycle and cohort saving behavior, and historical rates of financial asset appreciation (see "Technical Notes" for more details). Our findings should not be interpreted as point forecasts because we do not capture the feedback that will occur as households, markets and other forces adjust to these demographic changes. For ease of exposition, we use "will" (e.g., savings "will" fall) throughout this document to describe our demographically driven projections.

countries with a much bleaker demographic picture, the UK situation appears even more positive.

The UK is now passing through a relatively mild demographic transition. Compared to other countries, the decline of household growth will be limited, largely a result of higher historical birth rates. Higher birth rates will also lead to a relatively moderate aging trend, with the median age increasing by only 3 years over the next two decades. The impact of aging on savings is further muted by the fact that the UK's life cycle savings curve does not follow a typical "hump shape", but rather an "S" shape with a slight increase in savings in old age. Finally, savings flows are very low in the UK (e.g., average savings rate of 4 percent between 1975 and 2003), which minimizes the impact of savings on the overall evolution of NFW. To fully understand the implications of the demographic transition for NFW accumulation, the impact of all these microeconomic forces must be considered and translated into results meaningful for the overall economy.

The slight decrease in the number of households, the mild aging, and the unique shape of the lifecycle saving curve result in a robust projected growth rate of NFW relative to other countries. Therefore, the UK must confront a different set of issues than other countries in dealing with the demographic transition. The UK must consider the consequences of historical and future low savings, notably for retirement purposes. An additional challenge for the UK is to maintain the relatively high rate of financial asset appreciation, which is expected to be an important driver of the growth in NFW.

The UK can increase NFW accumulation if UK households and their government take actions to increase saving, reduce borrowing, and work to further improve the returns that households obtain on their portfolios. These objectives will be difficult to achieve and will require sustained coordinated efforts by the public and private sector.

In the rest of this chapter, we explore these issues in further detail, with a particular focus on the following dimensions:

- The historical evolution of household net financial wealth accumulation in the UK.

-
- Demographic drivers of changes in UK household net financial wealth.
 - Results of our analysis on UK household net financial wealth accumulation over the next 20 years.
 - Changes that could increase net financial wealth accumulation, and resulting potential policy directions.

HISTORICAL EVOLUTION OF HOUSEHOLD NET FINANCIAL WEALTH

The scope of our historical perspective is the post-oil crisis period (1975-2003). Within this time frame, NFW grew at an average annual rate of 5.1 percent and went through two phases (Exhibit 1):

- In the **buildup phase** (1975-1999), NFW rose at an average annual rate of 7.2 percent. Between 1975 and 1994, the rate of annual growth was 5.8 percent, very close to the (1975-2003) trend. Then, between 1994 and 1999, NFW rose at an impressive annual rate of 12.4 percent, mostly as a result of the technology, media and telecommunications bubble.
- In the **correction phase** (1999-2003), NFW decreased dramatically. In fact, between 1999 and 2002, U.K. households lost 30 percent of their net financial wealth, which fell below the 1975-2003 trend.⁴ However, it appears that the correction is now mostly complete, as the rate of growth of NFW was 11 percent in 2003.

This section documents the shifting pattern of NFW accumulation by UK households by considering the evolution of financial assets and liabilities. We point to savings and financial asset appreciation as important drivers of financial asset accumulation in the UK. For liabilities, the rapid growth in mortgage lending is the key driver of historical growth. Given the interdependency between household liabilities and the value of household real estate, we close this section by shedding some light on the evolution of real estate in the assets portfolio of households.

⁴ We note that the bursting of the bubble affected UK households much more mildly than did the oil crisis. Indeed, in that period they lost more than 50 percent of their inflation adjusted financial wealth.

Basic facts on net financial wealth accumulation

The stock of financial assets held by households can change in two ways: households can purchase new assets and existing asset holdings can be revalued because of changing market prices.

The *net acquisition of financial assets* – purchases less sales – is largely driven by contemporaneous savings out of income.⁵ Total returns on financial assets, as commonly understood, are a combination of realized capital income and unrealized asset appreciation. Realized capital income, including interest and dividends, is by convention counted as personal income, a portion of which is saved.⁶ The revaluation of asset holdings therefore only captures unrealized asset appreciation (or depreciation). All references to *financial asset appreciation (FAA)* constitute these unrealized gains, and are adjusted for inflation.

The stock of financial assets less outstanding liabilities equals the net financial wealth of households (NFW). We focus on measuring the demographic impact on NFW because this metric enables us to build our understanding of the demographic impact on the global capital market. It also helps us understand the impact on households because NFW is a good proxy for overall economic well being (see chapter 1 for discussion).

Household financial assets

Between 1975 and 2003, the annual growth rate of financial assets was 5.4 percent (Exhibit 2). As for NFW, UK households' financial assets followed a buildup and a correction phase. During the buildup phase (1975-1999), the annual growth rate averaged 6.8 percent. This means that, in real terms, the stock of financial assets was almost multiplied by 5. When the bubble burst, this growth ended and UK households lost 18 percent of their financial assets between

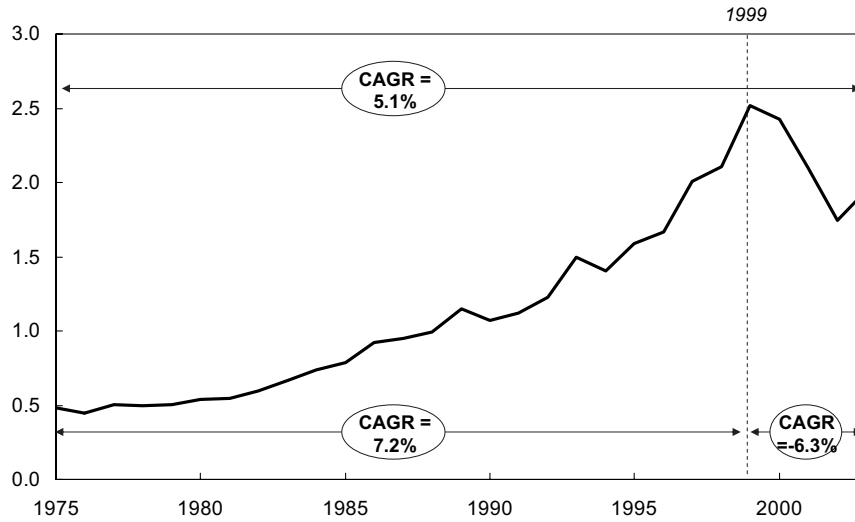
5 See "Technical Notes" for a definition of the relationship between saving out of income as defined in the national accounts, and the net acquisition of financial assets as defined in the flow of funds accounts.

6 Realized capital gains are not counted in the national accounts as savings, see Reinsdorf (2004). We capture the impact of realized capital gains on purchases of new assets because asset accumulation is driven by the net acquisition of financial assets as measured by the flow of funds accounts (see "Technical Notes" for details).

Exhibit 1

UK HOUSEHOLD NET FINANCIAL WEALTH 1975-2003

£ Trillions, 2000

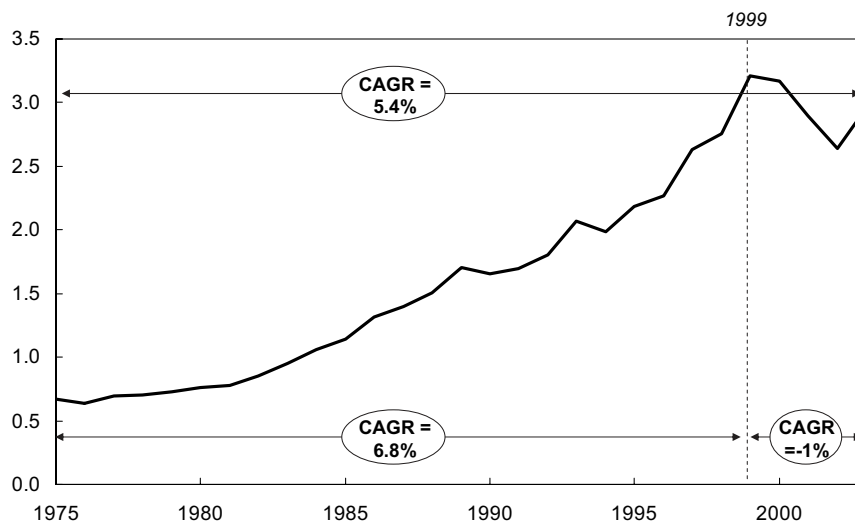


Source: ONS (Blue Book, UK StatBase)

Exhibit 2

UK HOUSEHOLD FINANCIAL ASSETS 1975-2003

£ Trillions, 2000



Source: ONS (Blue Book, UK StatBase)

1999 and 2002. As with NFW though, financial assets did well in 2003, growing by almost 12 percent, and recuperating most of the previous loss.

Because returns are typically a function of asset allocation, we look at the evolution of the mix of financial assets through time. This allows us to spot the increasingly important role played by financial asset appreciation. Moreover, we point to savings as an important driver of financial assets growth but we note that it is insufficient to understand future asset accumulation.

The role of financial asset appreciation in financial asset accumulation has increased. As noted above, the returns that households receive on their portfolio can play an important role in long-term asset growth. UK households have relied heavily on shares in public and private companies and in mutual funds (i.e., equity⁷) and on pension instruments (life insurance and pension fund reserves). This strategy paid off during the buildup phase (Exhibit 3). Indeed, between 1982 and 1999, the annual rates of growth for equity (as defined above) and pension instruments were 11.7 and 10 percent, respectively. The bursting of the bubble in 1999 affected household portfolios, but the damage was limited, as the annual rate of growth of financial assets was -2.1 percent between 1999 and 2003. The stock of financial assets held through shares and mutual funds did decrease by 11.7 percent on an annual basis between 1999 and 2003. However, the annual decrease for the stock of financial assets held through pension instruments – by far the largest component – was only 1.9 percent. Moreover, currency and deposits, which constituted 19 percent of total financial assets in 1999, grew at annual rate of 6.1 percent during the correction phase.

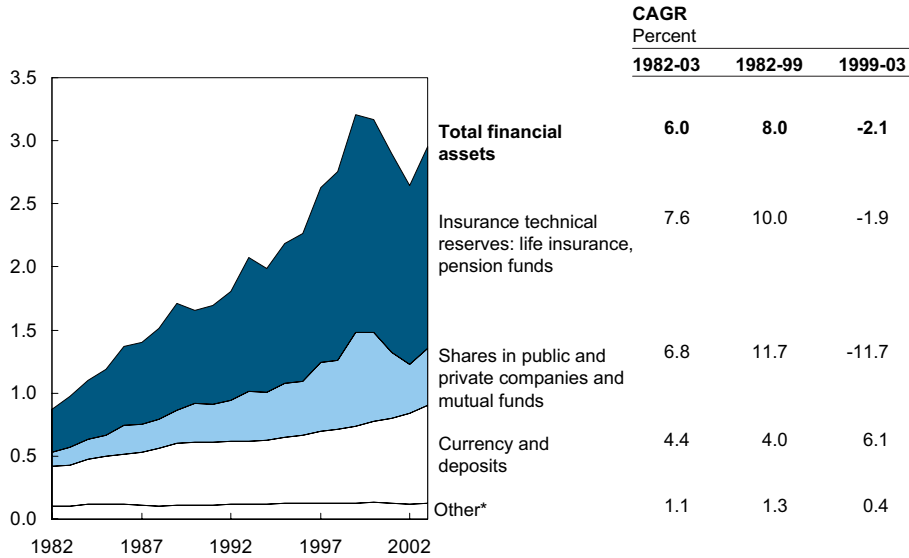
The proportion of equity, strictly defined as shares in private and public companies and in mutual funds, has varied relative to the stock of financial assets between 13 and 23 percent in the last 20 years (Exhibit 4). After the bursting of the bubble in 1999, this share dropped and stands today at 15.3 percent of financial assets. Though the view of equity that this suggests is interesting, it is also misleading when it comes to understanding the role of financial asset appreciation in the growth of financial assets. Indeed, it does

⁷ We have included mutual funds in the equities category. Indeed, equities represent an overwhelming share of the portfolios of UK mutual funds (between 75 and 90 percent in the last 20 years).

Exhibit 3

UK HOUSEHOLD FINANCIAL ASSETS BY CLASS 1982-2003

£ Trillions, 2000

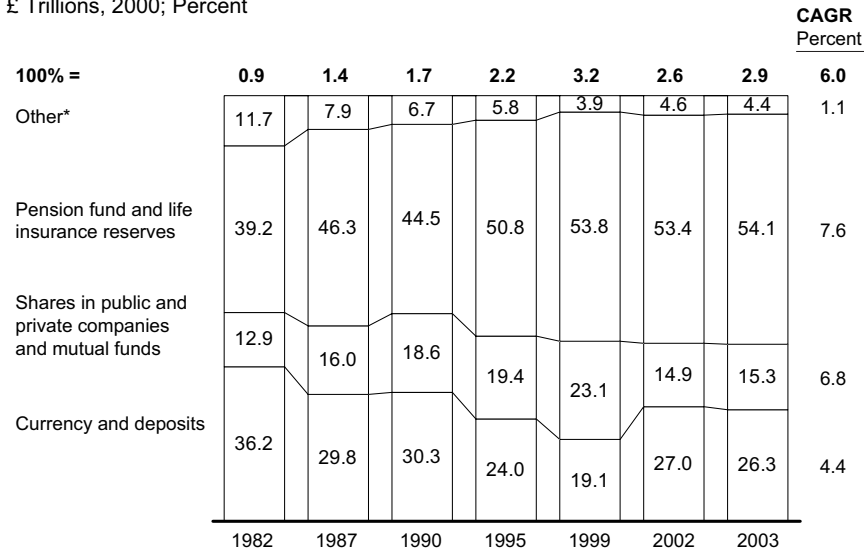


* Includes other accounts receivable, securities other than shares and loans
Source: ONS (Blue Book, UK StatBase)

Exhibit 4

COMPOSITION OF UK HOUSEHOLD FINANCIAL ASSETS

£ Trillions, 2000; Percent



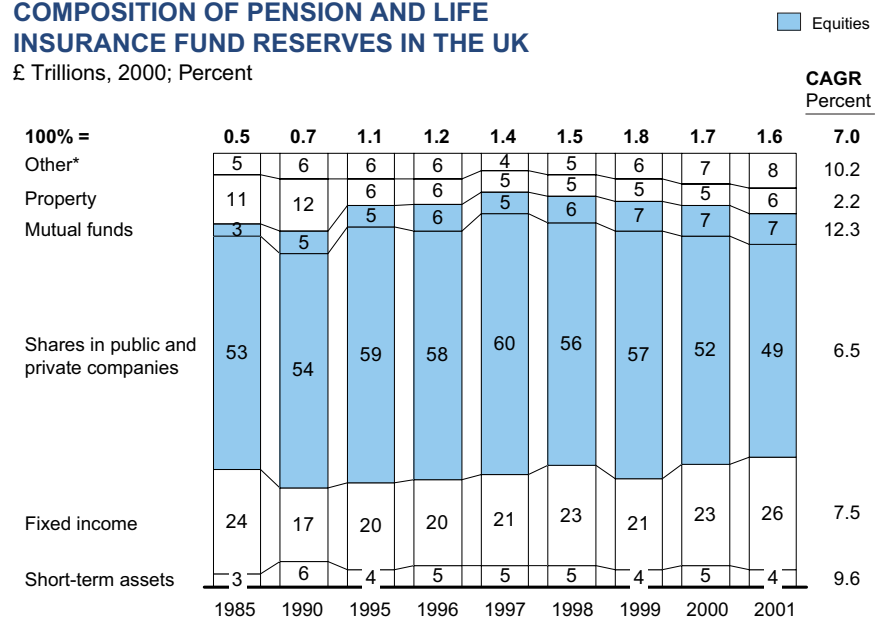
* Includes other accounts receivable, securities other than shares and loans
Note: Some numbers do not add to 100% due to rounding error
Source: ONS (Blue Book, UK StatBase)

not take into account the equity held through pension instruments, which have been by far the largest instrument through time – between 39 percent of financial assets in 1982 and 54 percent in 2003 (Exhibit 4). Examining the type of financial assets held through pension instruments reveals that equity is the main component – with a share varying between 56 and 65 percent (Exhibit 5). These decompositions show that in fact equity represents, directly or indirectly, around 50 percent of UK household financial assets (Exhibit 6). The higher returns typically produced by equity mean that not only equity in the UK is important in terms of size and growth through acquisitions but also in terms of growth through appreciation.

Exhibit 5

COMPOSITION OF PENSION AND LIFE INSURANCE FUND RESERVES IN THE UK

£ Trillions, 2000; Percent



* Includes other accounts receivable, securities other than shares and loans
 Note: Some numbers do not add to 100% due to rounding error
 Source: Asset Management Database 2004 (McKinsey)

Consistent with the high share of equity, the 1975-2003 average rate of financial asset appreciation in the UK was relatively high, at 0.87 percent (Exhibit 7). In fact, UK returns were the second highest among the countries we studied, just behind the US. As their stock of financial assets rises, UK households become increasingly subject to the asset appreciation rate. If we combine this evolution with the lowering savings rates (Exhibit 8), we understand

Exhibit 6

COMPOSITION OF HOUSEHOLD FINANCIAL ASSETS IN THE UK

£ Trillions, 2000; Percent

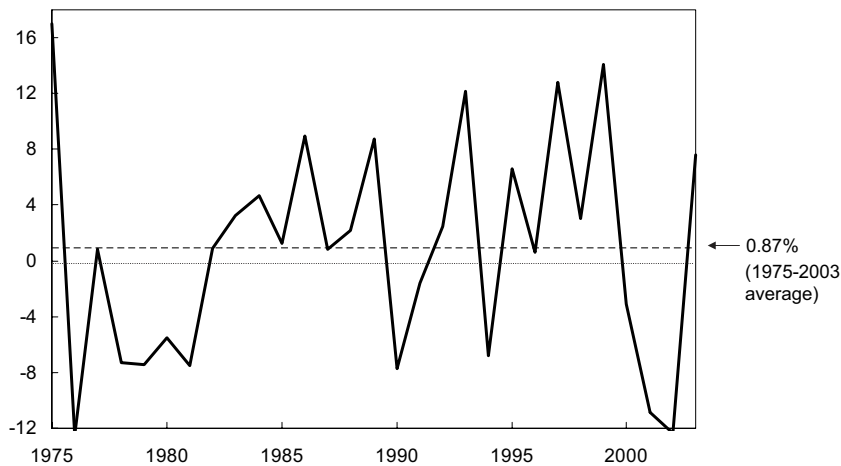
	1985	1990	1995	1996	1997	1998	1999	2000	2001	CAGR Percent
100% =	1.2	1.7	2.2	2.3	2.6	2.8	3.2	3.2	2.9	5.7
Other*	15	13	10	10	8	8	9	9	10	3.4
Equities	39	44	51	51	54	52	56	53	47	7.0
Fixed income	14	9	13	13	13	15	13	14	16	6.8
Currency and deposits	33	33	26	26	24	24	21	23	26	4.1

* Includes other accounts receivable, securities other than shares and loans
 Note: Some numbers do not add to 100% due to rounding error
 Source: Asset Management Database 2004; ONS (Blue Book, UK StatBase)

Exhibit 7

REAL* RATE OF UK HOUSEHOLD FINANCIAL ASSET APPRECIATION 1975-2003

Percent



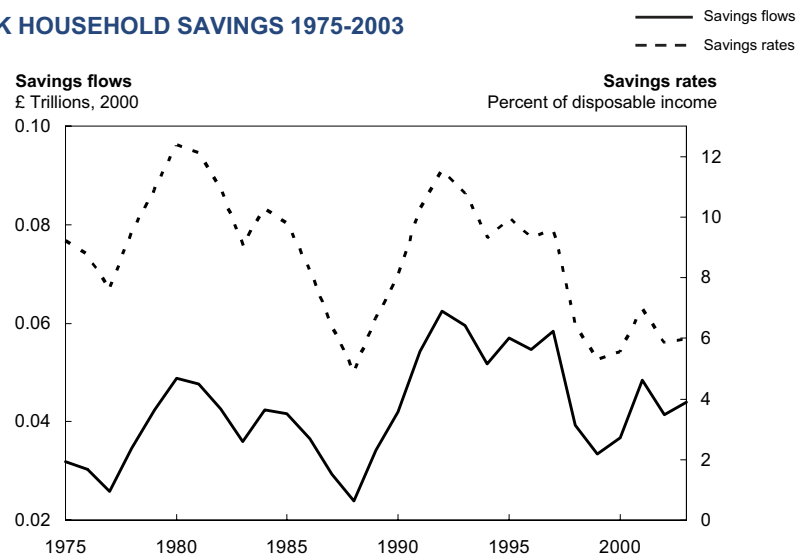
* Personal consumption deflator used as inflation factor
 Source: ONS (Blue Book, UK StatBase)

that in the UK, the traditional notion of "saving out of income" is strongly complemented by the notion of "saving through asset appreciation."

Household savings and changes in financial liabilities drive net acquisition of financial assets. Data seems to indicate that savings have been slowly increasing in real terms in the last 30 years but not as much as income, as reflected by the decline in the savings rate (Exhibit 8). Similarly, the net acquisition of financial assets (NAFA) has increased marginally in real terms (with the exception of a clear shock in 2002-03), but its share of income has been shrinking (Exhibit 9).

Exhibit 8

UK HOUSEHOLD SAVINGS 1975-2003



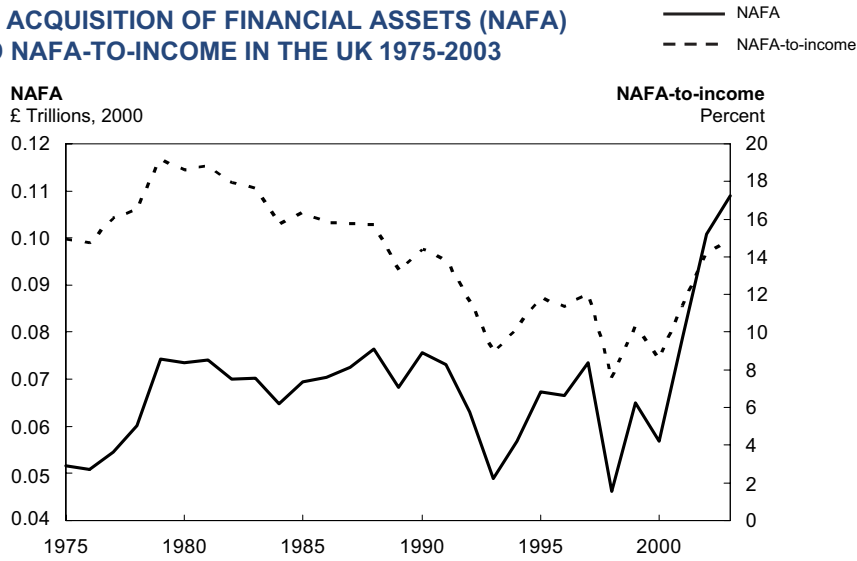
Source: ONS (Blue Book, UK StatBase)

Though saving out of income remains an important driver of the net acquisition of financial assets, the latter is driven by a number of other factors, including changes in household liabilities.⁸ We will comment the evolution of liabilities later on. However, we can already illustrate its importance in determining NAFA by noting that the boost in NAFA in 2002-03 does not seem to be due to savings, which were relatively stable, but to a strong change in liabilities (Exhibit 10). Correspondingly, the sharp increase in savings between 1990 and 1992 was not reflected in NAFA because at the same time there was a sharp decrease in liabilities acquisition.

⁸ See "Technical Notes" for an explanation of the relationship between savings out of income and net acquisition of liabilities, on one hand, and net acquisition of financial assets, on the other.

Exhibit 9

**NET ACQUISITION OF FINANCIAL ASSETS (NAFA)
AND NAFA-TO-INCOME IN THE UK 1975-2003**

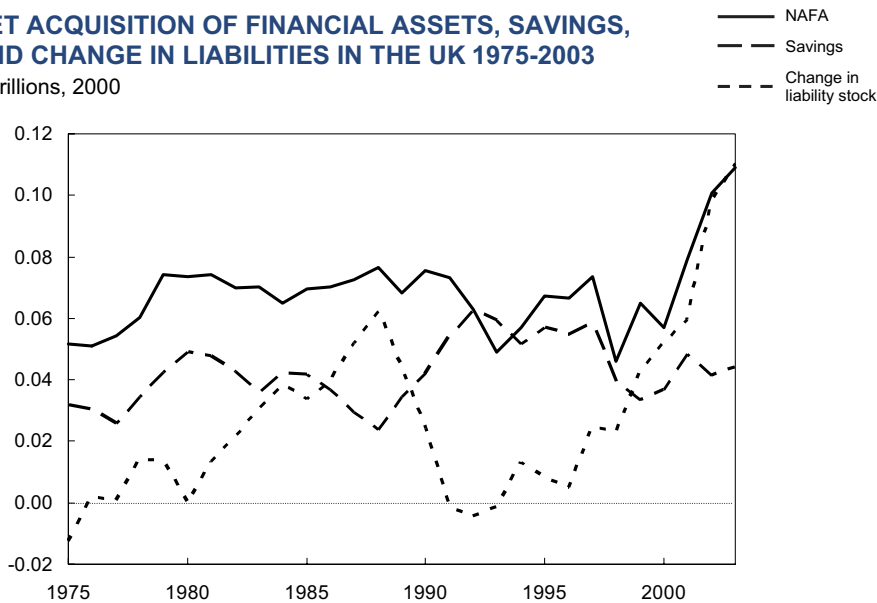


Source: ONS (Blue Book, UK StatBase)

Exhibit 10

**NET ACQUISITION OF FINANCIAL ASSETS, SAVINGS,
AND CHANGE IN LIABILITIES IN THE UK 1975-2003**

£ Trillions, 2000



Source: ONS (Blue Book, UK StatBase)

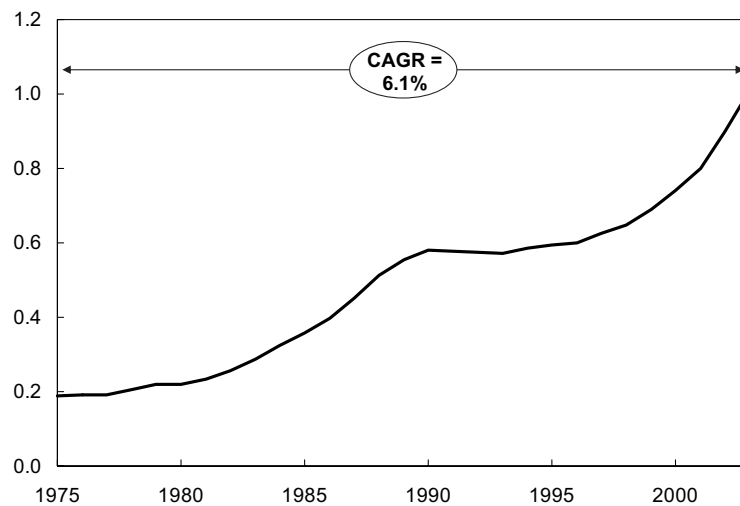
Household liabilities

The increasing sophistication of financial markets has eased many of the borrowing constraints that households formerly faced. New products – from providing mortgages and credit cards to borrowers with impaired credit or limited funds for a down payment, to enabling homeowners to tap accumulated equity – have provided a greater access to credits markets for households. As a result, just as for the asset side of the balance sheet, the liabilities side has experienced significant growth since 1975 (Exhibit 11). In fact, at 6.1 percent, the average annual growth rate is higher for liabilities than for assets.

Exhibit 11

UK HOUSEHOLD LIABILITIES 1975-2003

£ Trillions, 2000



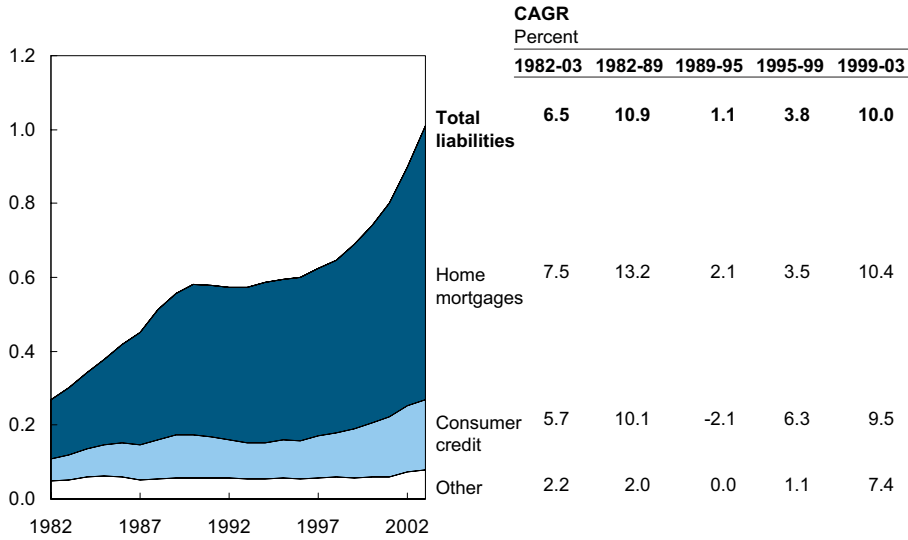
Source: ONS (Blue Book, UK StatBase)

Analyzing the mix of liabilities (Exhibit 12) reveals that between 1982 and 2003, mortgage debt – by far the largest component of the mix – has played the premier role in explaining the growth of liabilities. In that period, the stock of mortgages outstanding more than quadrupled in real terms, while consumer credit more than tripled. In fact, despite varying growth rates, we can see that mortgage debt has been the main contributor to total liabilities growth throughout the whole 1982-2003 period (Exhibit 13).

Exhibit 12

COMPOSITION OF UK HOUSEHOLD LIABILITIES 1982-2003

£ Trillions, 2000

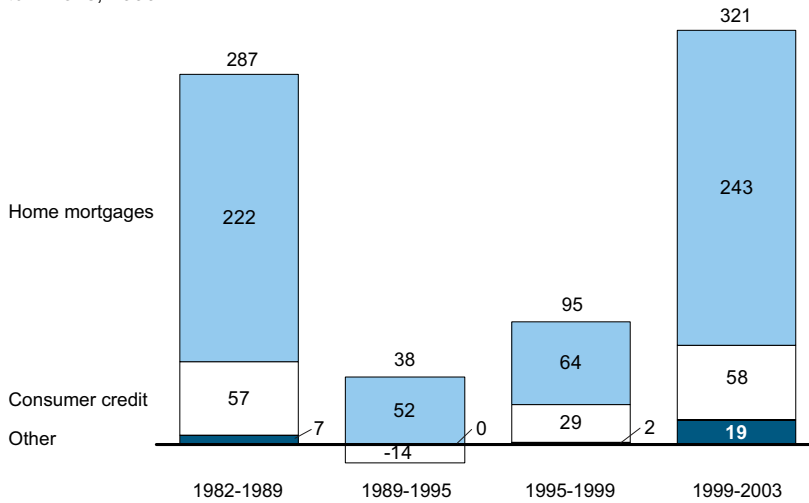


Source: ONS (Blue Book, UK StatBase)

Exhibit 13

CHANGE* IN UK HOUSEHOLD LIABILITIES BY TYPE

£ Billions, 2000



* Change in liability by type from year-end to year-end of each period
Source: ONS (Blue Book, UK StatBase)

The growth of mortgage liabilities is tightly linked to the value of real estate. Comparing the value of real estate held by households and home mortgage liabilities between 1982 and 2003 allows us to identify three key areas (Exhibit 14):

- Between 1982 and 1989, real estate value and mortgage liabilities rose rapidly. Leverage varied between 20 and 23 percent.
- Then, between 1990 and 1995, the real estate bubble burst while mortgage liabilities stagnated. Consequently, leverage soared to a maximum of 35 percent.
- Finally, since 1996, real estate prices and mortgage liabilities have been rising rapidly again. However, the rise in mortgage liabilities has not been as pronounced as the rise in the value of real estate. Therefore, leverage has gradually descended to 27 percent today.

In the first era, both mortgage debt and consumer credit had double digit growth rates (13.2 and 10.1 percent respectively) (Exhibit 12). The second era was characterized by the stagnation of all liabilities despite lowering or low interest rates (Exhibit 15). Indeed, mortgage debt and consumer credit had growth rates of 2.1 and -2.1 percent respectively (Exhibit 12). In fact, the crisis was wider and its start coincided with the recession of the early nineties (Exhibit 16). Growth picked up in consumer credit since the beginning of the third era, four years before it did in mortgages. Indeed, annual growth in the former was 6.3 percent between 1995 and 1999 versus only 3.5 percent for the latter. Finally, 1999 to 2003 was a period of strong growth for both consumer credit and mortgages (9.5 and 10.4 percent of annual growth respectively).

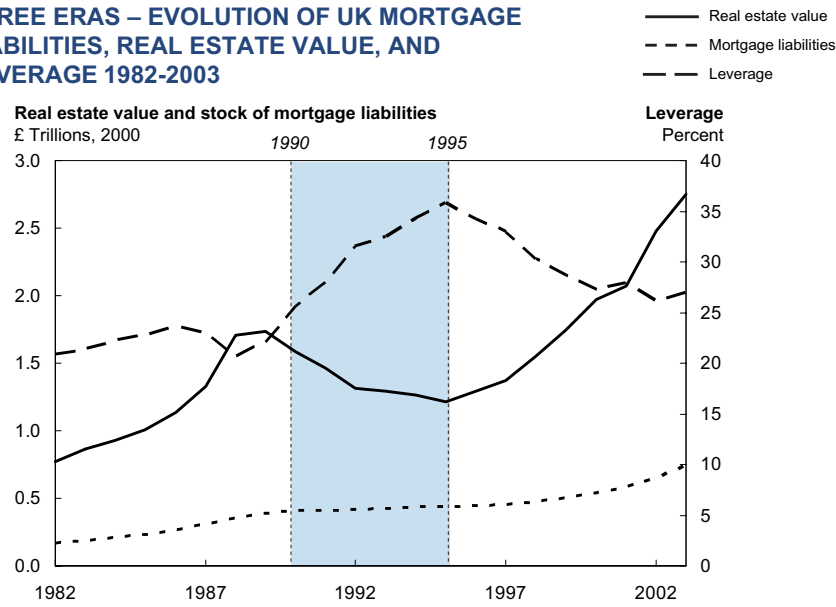
Household real estate assets

Real estate has always represented a large proportion of overall household assets and has potentially impacted the saving behavior of households.

Real estate has always represented an important part of total household assets. As for liabilities, three eras can be identified in the evolution of UK household real estate assets in the last 20 years. The UK has witnessed two periods of high growth in real estate value (1982-89 and 1996-2003), and an important period of decline (1990-95; Exhibit 14).

Exhibit 14

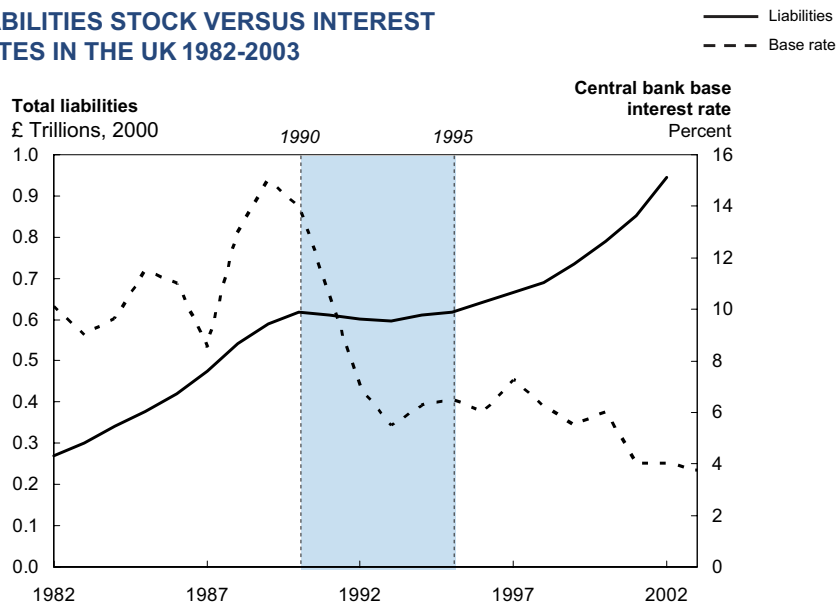
THREE ERAS – EVOLUTION OF UK MORTGAGE LIABILITIES, REAL ESTATE VALUE, AND LEVERAGE 1982-2003



Source: ONS (Blue Book, UK StatBase)

Exhibit 15

LIABILITIES STOCK VERSUS INTEREST RATES IN THE UK 1982-2003



Source: ONS (Blue Book, UK StatBase)

Exhibit 16

GROWTH OF UK REAL GDP 1982-2003

Percent



Source: ONS (Blue Book, UK StatBase)

In relation to total household assets, the stock of real estate assets has always been a major element. In 1982, it represented almost 45 percent of total household assets and the share kept increasing during the 1980s thanks to a steep rise in real estate prices (Exhibit 17). Then, the share dropped and remained low throughout the nineties. In the first part of the decade, the drop and the subsequent low share were due to the bursting of the real estate bubble. In the second part of the decade, the lower share of real estate could be attributed to the market bubble, which boosted the financial assets of UK households. Since the bursting of the bubble in 1999, the share of real estate assets in total assets increased back to its levels of the 1980s.

Real estate appears to have an impact on savings behavior.⁹ The evolution of real estate value is connected to financial assets accumulation. Indeed, academic research has shown that the wealthier a household is, the less its propensity to save. This is known as the "wealth effect." Moreover, the wealth

⁹ We have already discussed the major role of real estate wealth of households in determining the evolution of their liabilities.

Exhibit 17

DISTRIBUTION OF UK HOUSEHOLD ASSETS BY CLASS 1982-2003

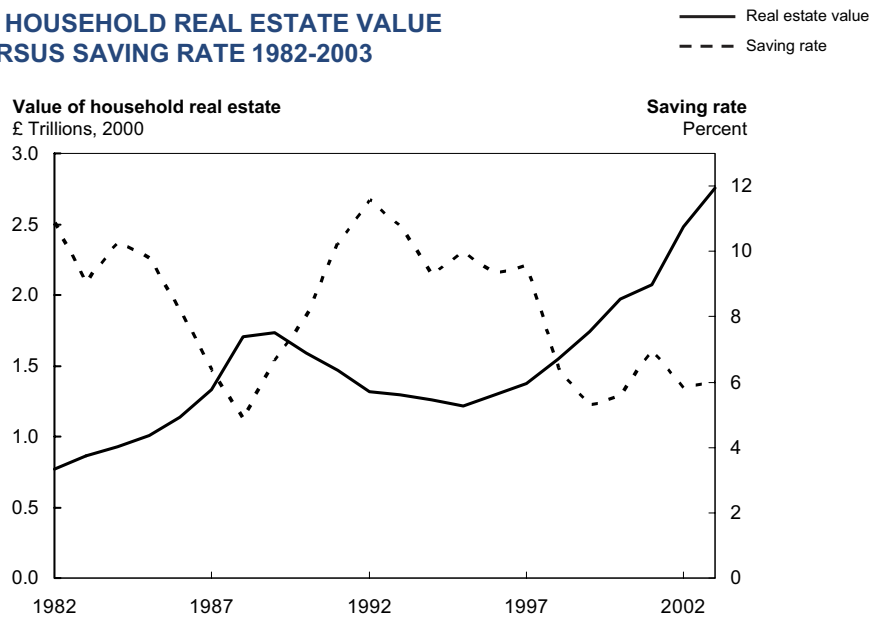
£ Trillions, 2000; Percent

	1982	1987	1990	1995	1999	2003	CAGR Percent
100% =	2.0	3.1	3.6	3.7	5.5	6.2	5.5
Other financial assets	5.0	3.6	3.0	3.4	2.4	2.1	1.1
Pension fund reserves	16.9	21.0	20.2	30.1	32.5	25.6	7.6
Shares and mutual funds	5.6	7.3	8.4			7.2	6.8
Currency and deposits	15.6	13.5	13.7	11.5	14	12.4	4.4
Other non-financial assets*	12.2	8.6	8.2	14.2	11.5	7.0	2.8
				5.5	5.2		
Real estate	44.6	46.0	46.5	35.3	34.5	45.7	5.6

* Does not include consumer durables
 Note: Some numbers do not add to 100% due to rounding error
 Source: ONS (Blue Book, UK StatBase)

Exhibit 18

UK HOUSEHOLD REAL ESTATE VALUE VERSUS SAVING RATE 1982-2003



Source: ONS (Blue Book, UK StatBase)

effect seems to be stronger in the case of tangible wealth. If we look at the evolution of savings rates and real estate value, it seems that this effect holds for the UK, too (Exhibit 18). It is important to note that even though we recognize that the wealth effect can be an interesting element, we did not incorporate it explicitly in our model.

DEMOGRAPHIC DRIVERS OF CHANGE IN HOUSEHOLD NET FINANCIAL WEALTH

The UK is expected to experience a mixed impact from demographics on net financial wealth accumulation. The impact of demographics mainly comes from two sources:

- **Households available to create wealth will be limited**, because of slowing household formation
- **Marginally higher, but still low, average savings per household**, because of aging population and an S-shaped lifecycle savings curve.

Changes in family structure will reduce household formation

In the U.K., the annual growth in the number of households will decline from a historical (1981-2003) average rate of 0.9 percent to a forecasted (2003-24) average rate of 0.6 percent (Exhibit 19).

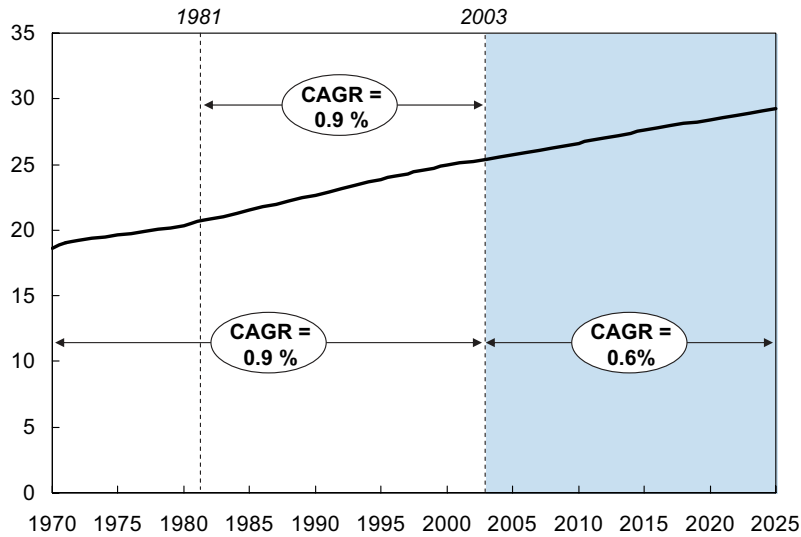
This decline is not due to the population at the age of forming a household (i.e., over 20 years old) as its annual growth was 0.5 percent between 1981 and 2003 and will actually rise to 0.53 percent in the forecast period.¹⁰ The slowing growth of the number of households rather comes from changes in family size. Indeed, household size declined faster in the past than it is expected to decline in the future (Exhibit 20). Lower rates of household formation will constrain aggregate wealth accumulation since there will be fewer households earning income and generating savings.

¹⁰ This healthy growth in the adult population has been supported by relatively high historical birth rates in comparison to other European countries.

Exhibit 19

NUMBER OF HOUSEHOLDS IN THE UK 1970-2025

Millions

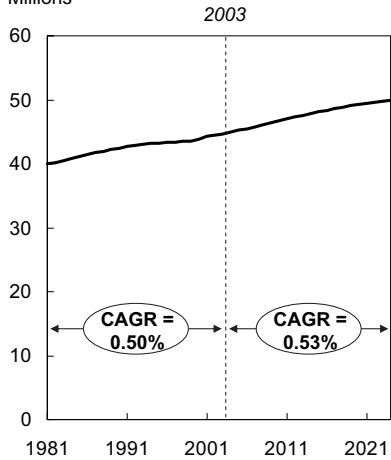


Source: ONS; Government Actuary, Office of the Deputy Prime Minister (ODPM); Scottish Executive; MGI estimates

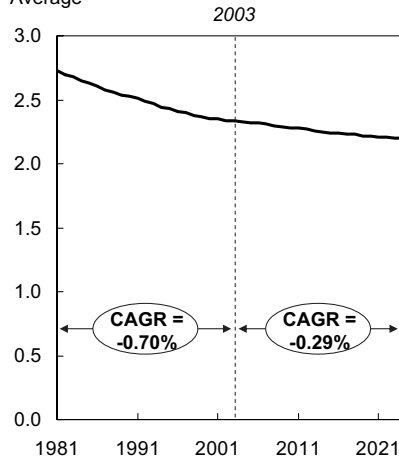
Exhibit 20

AGING AND HOUSEHOLD SIZE TRENDS IN THE UK 1981-2024

Population over 20 years old
Millions



Household size
Average



Source: ONS; Government Actuary, ODPM; Scottish Executive; MGI estimates

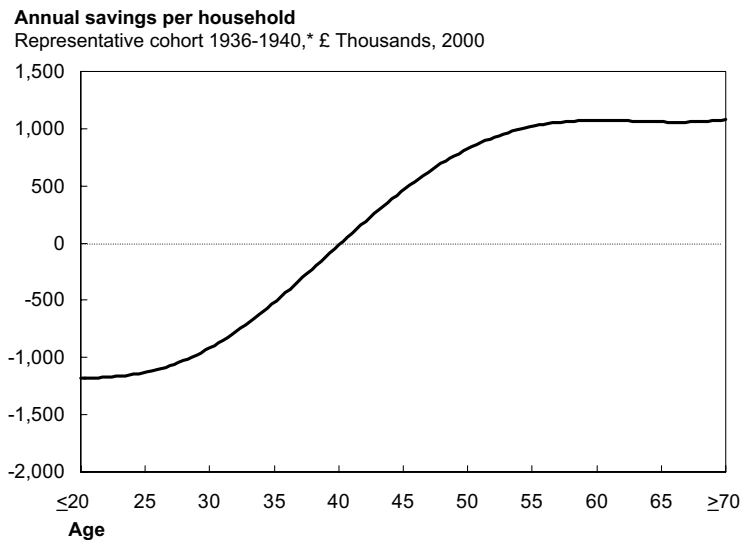
Marginally higher savings per household are still low, and will not boost wealth accumulation

Population aging is expected to have a slight positive impact on average savings per household in the UK thanks to the unique lifecycle savings curve, which increases with age. However, this impact is expected to be moderate or even marginal because of limited aging and very low savings levels.

- **Age-based lifecycle savings behavior impacts savings and wealth accumulation.** The peculiar S-shaped lifecycle savings curve found in the U.K. means that aggregate household savings out of income should slightly increase as households grow older (Exhibit 21).

Exhibit 21

LIFECYCLE SAVINGS CURVE FOR THE UK



* Data available for 1936-40 cohort aged 37-57; life-cycle curve estimates based on 1974-1995 data for 13 5-year cohorts born between 1906-1970
Source: Banks and Rohwedder (2003), MGI analysis

The savings curve is the difference between the income and consumption profiles (and hence it shows additional savings flows, not accumulated assets; Exhibit 22).¹¹ In early ages, strong

¹¹ The savings curve we use is the residual of the income and consumption curves, as published by Banks and Rohwedder. We used a "representative cohort" (i.e., the generation born between 1936 and 1940) for all cohorts. The general assumption is that the shape of the curve (i.e., the distribution) describes well all generations. We then make adjustments to levels in order to reach national accounts data.

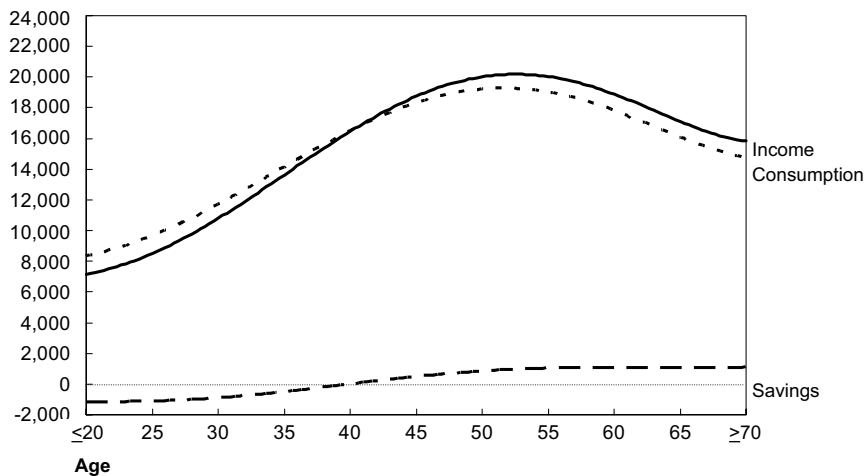
dissaving is common in the UK, as households consume more than they earn. This is facilitated by rather low borrowing constraints. Dissaving gradually diminishes and, after several years, turns into saving. Income and consumption lifecycle curves both peak between the ages of 50 and 55. Then, both curves follow a similar fall, which stabilizes savings in old ages.

Exhibit 22

LIFECYCLE MEAN HOUSEHOLD INCOME, CONSUMPTION, AND SAVINGS IN THE UK

Annual savings per household

Representative cohort (1936-40),* £ Thousands, 2000



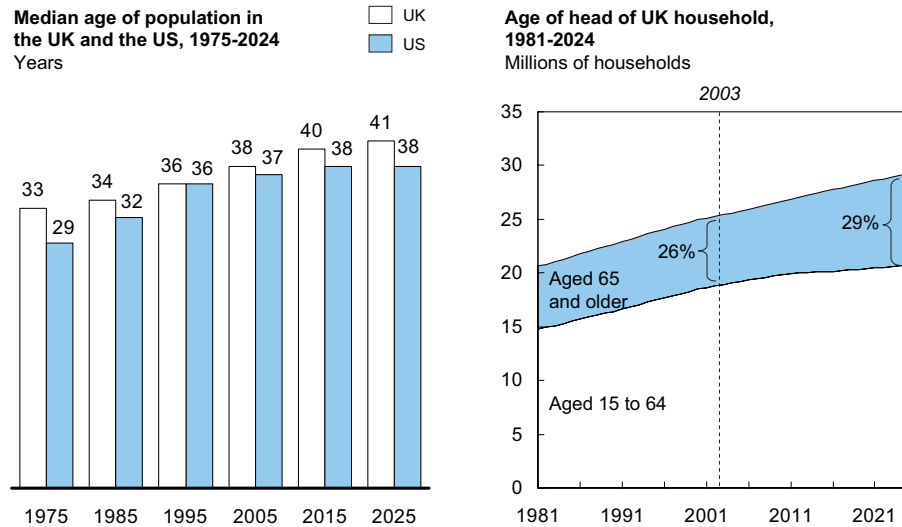
* Data available for 1936-40 cohort for ages 37-57; life-cycle curve estimates based on 1974-1995 data for 13 5-year cohorts born between 1906-1970
Source: Banks and Rohwedder (2003); MGI analysis

- **UK households are very slowly moving into higher saving years.** The median age will rise to 41 by 2025, which is only 3 years older than in 2005. At the same time the share of households headed by an individual older than 65 will slowly rise from 26 percent in 2003 to 29 percent over the same period (Exhibit 23).

Overall, we do not expect the increase in average savings per household to be dramatic because aging is limited and savings levels remain very low.

Exhibit 23

POPULATION AGING TRENDS 1975-2024



Source: ONS; Government Actuary, ODPM; Scottish Executive; MGI estimates

RESULTS OF OUR ANALYSIS ON UK HOUSEHOLD NET FINANCIAL WEALTH ACCUMULATION GOING FORWARD

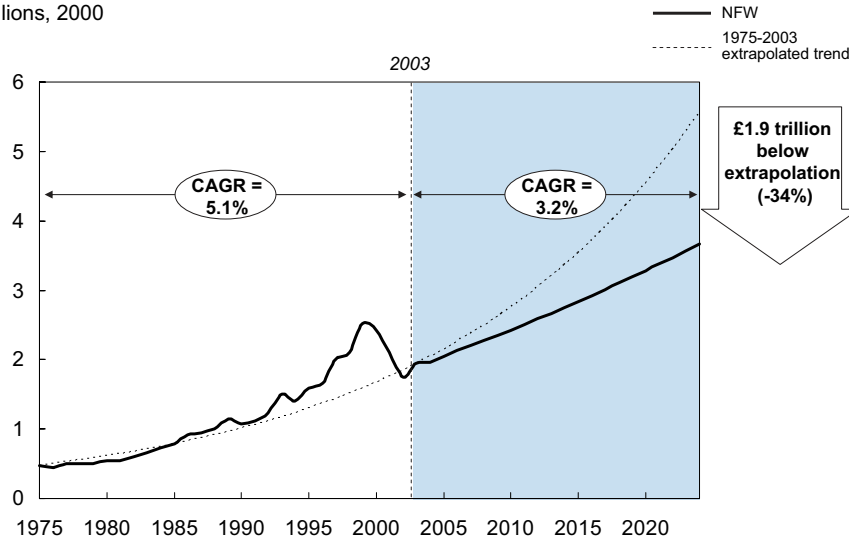
The foregoing discussion has set the historical context, outlined the demographic drivers of household behavior, and explicated how these drivers impact savings and NFW accumulation. This section describes the aggregate implications of this microeconomic behavior.

The demographic changes described above should have a limited impact on savings and NFW accumulation over the next 20 years. We therefore expect the rate of NFW accumulation to remain at a healthy level. Our analysis suggests that the annual real growth rate of household NFW will decline from 5.1 percent over the 1975-2003 period, to 3.2 percent between 2003 and 2024. This slowing growth would cause UK household NFW to fall some 34 percent, or by £1.9 trillion, below what it would have been, had the 1975 to 2003 growth rates persisted (Exhibit 24). We strongly emphasize that these are estimates of magnitude and direction, not specific point forecasts of the future.

Exhibit 24

NET FINANCIAL WEALTH OF UK HOUSEHOLDS 1975-2024

£ Trillions, 2000



Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

While this slowdown is meaningful in the UK context, it is much milder than in the other countries we have analyzed in this report. Indeed, at 3.2 percent, our estimate of the annual growth rate of UK household NFW is twice as high as in the US for the same period. A comparison with countries with a much bleaker demographic picture reveals that the UK situation is in fact quite positive. For instance, in Japan, not only will NFW growth decrease but it is expected to turn negative.

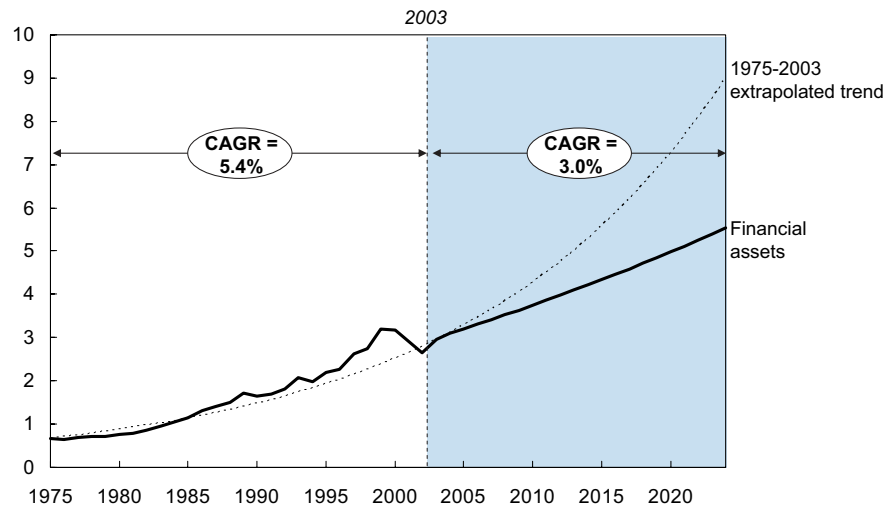
Projected financial assets

Our analysis suggests that accumulation of financial assets by UK households should decline from a historical growth rate of 5.4 percent (1975-2003) to 3 percent (2003-24; Exhibit 25). This decline is expected even though we maintain the rate of FAA at the average of the historical period. This slowing growth would cause UK household financial assets to fall some 34 percent, or by £1.9 trillion, below what it would have been, had the 1975 to 2003 growth rates persisted. Savings and net acquisition of financial assets should slightly increase but not sufficiently for inducing historical rates of financial asset accumulation.

Exhibit 25

FINANCIAL ASSETS OF UK HOUSEHOLDS 1975-2024

£ Trillions, 2000



Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

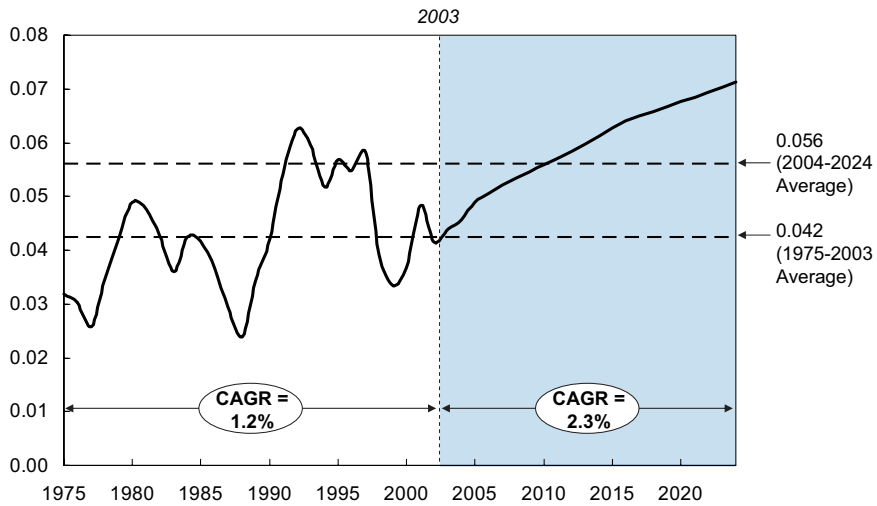
- **Household savings should slightly increase.** Population aging is expected to have a positive impact on savings. This is a counterintuitive outcome, which contrasts with other countries where savings will stagnate or even decline. The peculiar shape of the UK lifecycle savings curve, which increases with age, is the main reason for this surprising result. We expect savings flows to increase at an annual rate of 2.3 percent and to average £ 56 billion a year throughout the forecast period (Exhibit 26). This compares with savings in the past that averaged £ 42 billion and that grew at a slower rate.
- **Household net acquisition of financial assets (NAFA) should slightly increase.** We expect NAFA to average £ 88 billion a year throughout the forecast period (Exhibit 27). This compares with annual NAFA in the past that averaged £ 68 billion.¹²

¹² Because of recent shocks in the UK's net acquisition of financial assets (NAFA), the comparison of future and past growth of NAFA is problematic. As the level of annual NAFA is more important than its growth in order to determine the growth of financial wealth, we do not try to analyze the trend.

Exhibit 26

UK HOUSEHOLD SAVINGS 1975-2024

£ Trillions, 2000

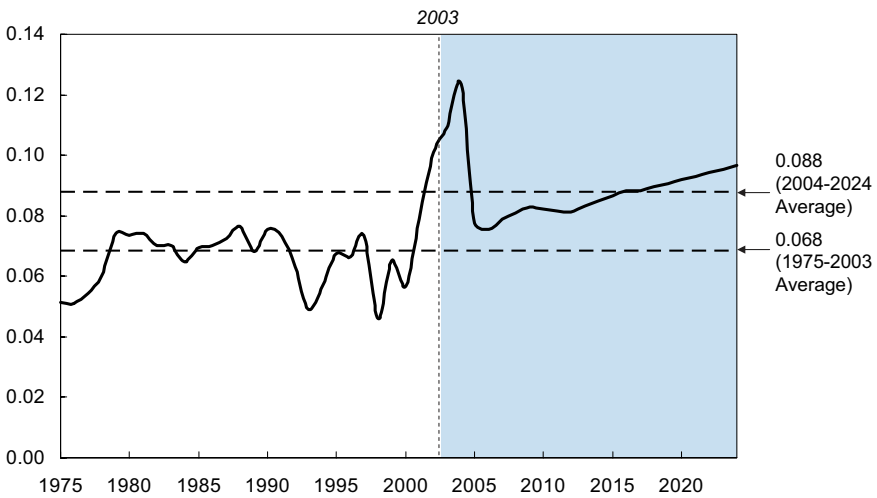


Source: ONS (Blue Book, UK StatBase); Government Actuary, ODPM; Scottish Executive; McKinsey Global Institute Household Financial Wealth Model

Exhibit 27

NET ACQUISITION OF FINANCIAL ASSETS BY UK HOUSEHOLDS 1975-2024

£ Trillions, 2000



Source: ONS (Blue Book, UK StatBase); Government Actuary, ODPM; Scottish Executive; McKinsey Global Institute Household Financial Wealth Model

Projected liabilities

We expect annual growth in liabilities to decline from a historical rate of 6.1 percent (1975-2003) to 3 percent (2003-24) (Exhibit 28). The UK liabilities forecast relies on an estimated, empirically based relationship of liabilities to income (i.e., the "liabilities-to-income ratio"), which we outline in the technical note. Since household income varies over the lifecycle, this method of estimating household liabilities enables us to reflect the impact of population aging upon household liability accumulation. Between 1975 and 2003, the liability-to-income ratio grew at an average annual rate of 3 percent. Between 2003 and 2024, the liability-to-income ratio grows at a lower rate of 1.5 percent (Exhibit 29).¹³

NAVIGATING THE DEMOGRAPHIC TRANSITION

Our baseline projection for the UK provides us with a likely evolution of net financial wealth and its components. A reduction in the growth of NFW seems unavoidable if nothing changes. Depending on how the economy responds to these changes, this could pose a number of downside risks to the economy as a whole. For instance, lower savings could imply less accumulation of capital, less growth, and less real domestic income creation. This slowdown would reduce corporate earnings and government tax revenues, at the same time that the UK will be grappling with fast-rising health care costs. This could in turn exacerbate government budget deficits, increasing the risk of a rise in real interest rates, the crowding out of private-sector borrowers and further declines in investment.

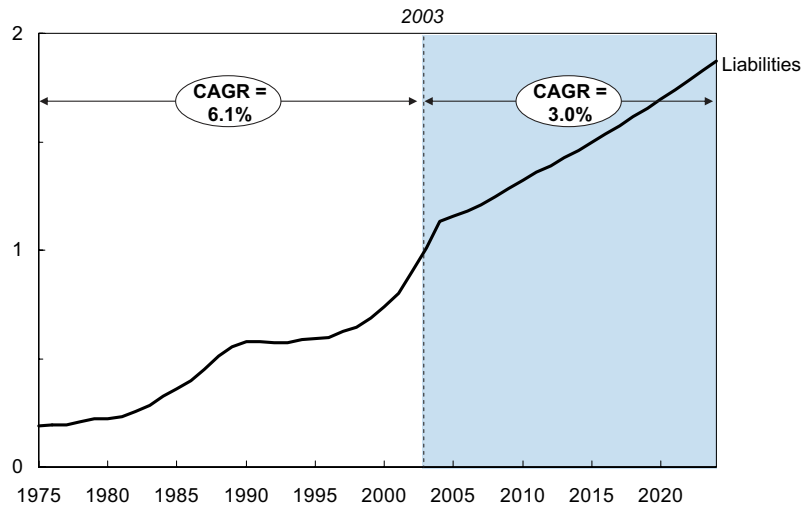
In order to increase the rate of NFW accumulation meaningfully, UK households and their government will need to take action to increase household savings, reduce borrowing and, if possible, further raise rates of FAA. These objectives will require coordinated efforts by the public and private sector, sustained over foreseeable future.

¹³ We discuss the sensitivity of NFW to changes in the assumed relationship between liabilities and income below. A declining liability to income ratio is reasonable for two reasons: 1) the levels of indebtedness in the UK are already very high. In fact, with one of the highest liabilities-to-income ratios (at 1.4), the problem of over-indebtedness of households is widely discussed in the UK. 2) It has been suggested that much of the past growth in liabilities is due to events unlikely to be repeated, such as the generalization of home ownership by UK households (and their financing through mortgage loans).

Exhibit 28

FINANCIAL LIABILITIES OF UK HOUSEHOLDS 1975-2024

£ Trillions, 2000

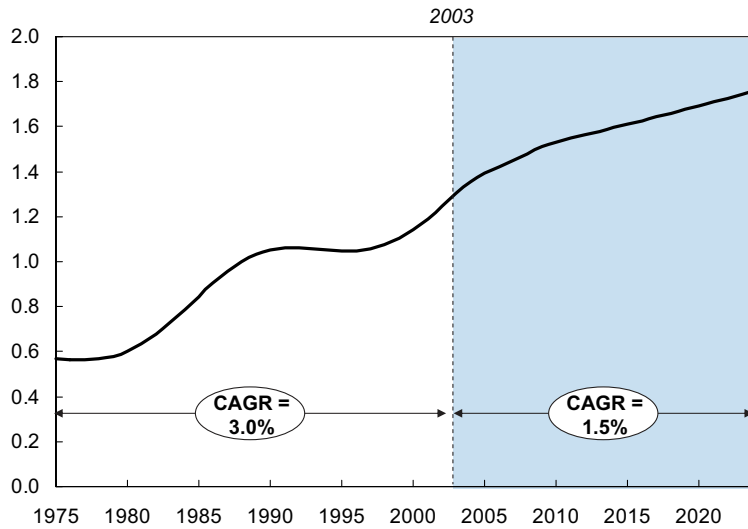


Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

Exhibit 29

LIABILITIES-TO-INCOME RATIO IN THE UK 1975-2024

Ratio



Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

In this section we use sensitivity analysis to test whether changes in the key drivers of our model can meaningfully alter our projections. Our objective is to isolate the high impact drivers, which could suggest changes in future policy directions. The results of this exercise are threefold:

- Raising rates of FAA would have a significant impact on NFW accumulation, but more than a doubling of the already very high rate is required;
- Changes in household behavior towards liability accumulation could have a sizeable but limited impact on NFW accumulation;
- Changes in immigration and birth rates would have little – if any – impact on NFW accumulation over the next 20 years.

Changes in the rate of FAA can significantly impact the growth of NFW. In order to complete our projection of household financial wealth accumulation, we needed to incorporate an estimate of the average rate of financial asset appreciation going forward. The estimate we used as the base case for the simulation, 0.87 percent, was the average of the historical period (1975-2003) (Exhibit 30).

If the rate of financial asset appreciation increases gradually and averages 2.2 percent over the next 20 years, we will remain on the extrapolation of the 1975-2003 trend (Exhibit 31). This rate is 2.5 times higher than the current average appreciation rate. While promising in its impact as a positive lever, such an increase is challenging to achieve, at best.

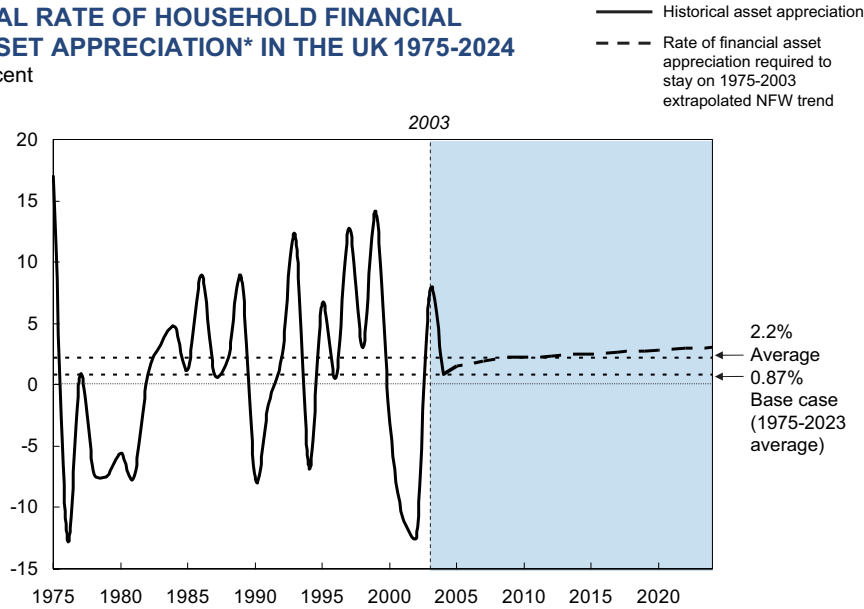
Given the efficiency of UK capital markets and UK households' aggressive asset allocation relative to other countries, the country has already experienced high rates of FAA.¹⁴ This high rate of FAA is already one of the main reasons of the country's relatively good position. The further increase necessary to maintain the historical growth of NFW in the future would be challenging from a policy perspective and is probably not realistic. (see the chapter 1 for a discussion).

A decrease in the rate of liabilities accumulation could have a sizeable but limited impact on the growth of NFW. For the purpose of our forecast, we

¹⁴ As a reminder, over the last 20 years, UK households have held the majority of financial assets, directly or indirectly, through equity.

Exhibit 30

REAL RATE OF HOUSEHOLD FINANCIAL ASSET APPRECIATION* IN THE UK 1975-2024
Percent

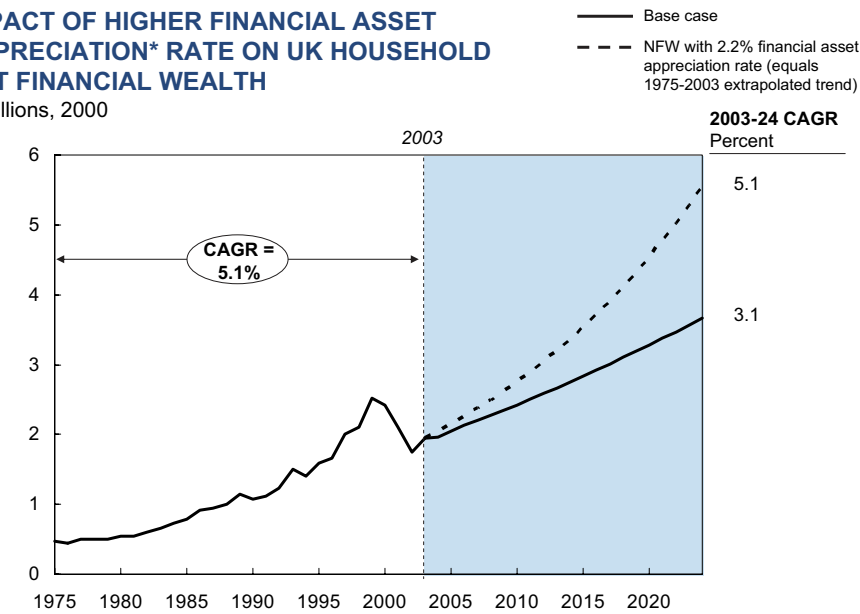


* Calculated on the total stock of financial assets
Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

Exhibit 31

IMPACT OF HIGHER FINANCIAL ASSET APPRECIATION* RATE ON UK HOUSEHOLD NET FINANCIAL WEALTH

£ Trillions, 2000



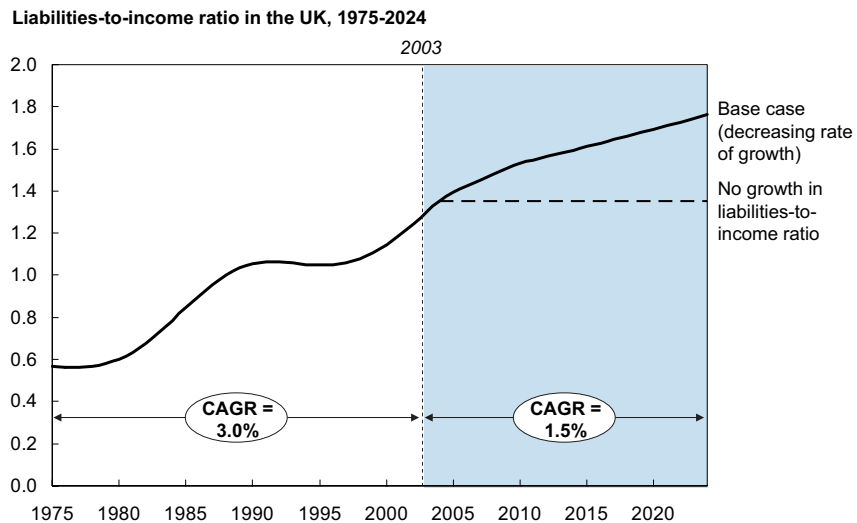
* Calculated on the total stock of financial assets
Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

linked the level of liabilities with the level of income. Between 1975 and 2003, the liability-to-income ratio grew at an average annual rate of 3 percent and stands currently at approximately 1.4. We halved this growth rate for the forecast period. It is possible, however, that the response from households or from the government to the increasing level of indebtedness will be stronger than we hypothesized. If this occurs, the growth of the liabilities-to-income ratio could be even lower than in our base case.

In order to account for these potential behavioral and policy changes, we examined a scenario in which liabilities would continue growing, but only at the same rate than income (Exhibit 32). This scenario, in which we leave the liability-to-income ratio constant, is probably a lower bound. Nevertheless it would only close the shortfall between the baseline and the extrapolated historical trend by 13 percent (Exhibit 33). In terms of annual growth rates of NFW, it implies an increase from 3.1 to 3.4 percent.

Exhibit 32

SENSITIVITY SCENARIOS – ZERO GROWTH IN LIABILITIES-TO-INCOME RATIO AFTER 2003



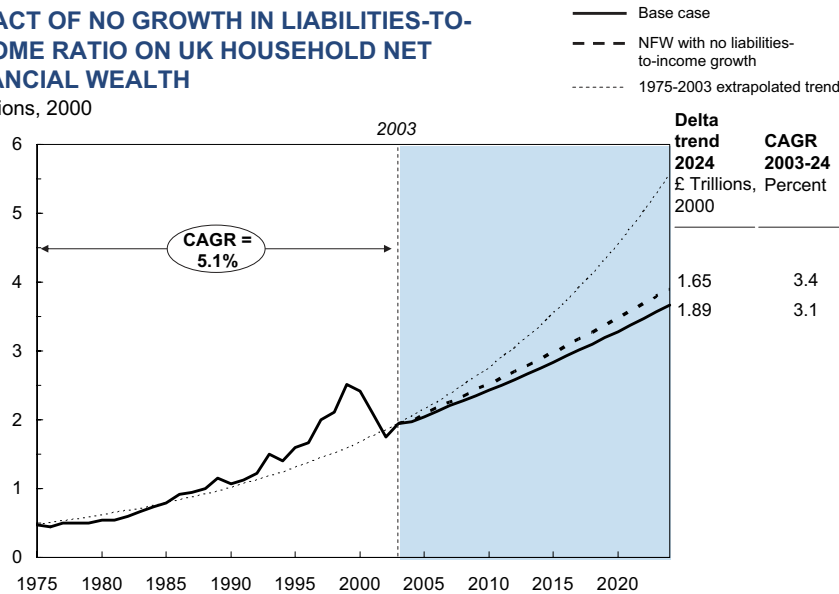
Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

Changing demographics, through higher immigration and birth rates, does not materially impact net financial wealth accumulation in the short or medium term. Increasing birth rates is not effective in increasing net financial wealth over the next

Exhibit 33

IMPACT OF NO GROWTH IN LIABILITIES-TO-INCOME RATIO ON UK HOUSEHOLD NET FINANCIAL WEALTH

£ Trillions, 2000



Source: ONS (Blue Book, UK StatBase); McKinsey Global Institute Household Financial Wealth Model

20 years because higher birth rates do not produce prime savers for several decades. Increasing immigration, even at the highest levels projected by government statistics, is not large enough to change overall demographic structure, and thus does not materially impact net financial wealth accumulation.

- Immigration has a negligible impact on the growth of NFW.** Given that a slowdown in household formation is an important demographic force in the projection period, we tested the impact of increases in immigration. Our baseline scenario incorporates the official principal population forecast, which assumes 103,000 net immigrants per year. We used official data detailing the number of additional persons by age for the "high migration variant" relative to the base case (i.e., an additional 70,000 net migrants per year). This allowed us to build a good estimate of the implied addition of households by age between 2003 and 2024 (Exhibit 34).

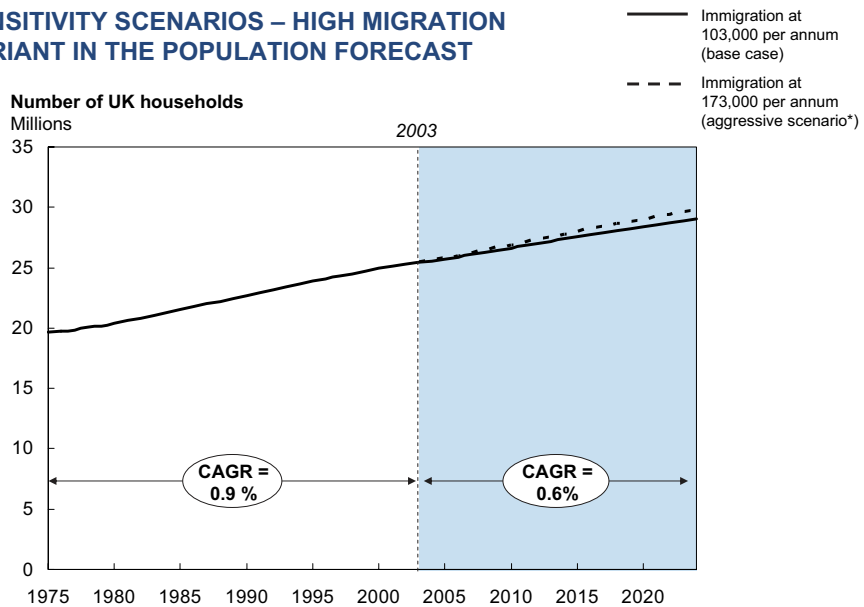
Allowing for this new influx of households proved marginal in curbing the decline in net financial wealth growth. In fact, the model even implies a 4 percent increase in the shortfall by 2024. In terms of

annual growth rates of NFW, the high immigration scenario implies a decrease from 3.1 to 3.0 percent (Exhibit 35). This counterintuitive result is driven by the fact that the majority of immigrants are young and, in the UK, young households tend to dissave. On the basis of the UK lifecycle savings curve, immigrants should have negative savings for all, or most, of the time considered in our forecast period (2003-24). Moreover, those who are old enough to have positive savings in the scope of the model will have children at the age of forming a household. Again, such young households are supposed to have negative savings.

- Increasing birth rates is ineffective for raising 20-year NFW accumulation.** Adopting policies to increase birth rates is a frequently discussed solution to aging. While higher birth rates are clearly a strong long term solution, they should not, however, be viewed as an option to reverse the decline in the growth of NFW in the next 20 years. Indeed, only after two or three decades will new births translate in new households.

Exhibit 34

SENSITIVITY SCENARIOS – HIGH MIGRATION VARIANT IN THE POPULATION FORECAST



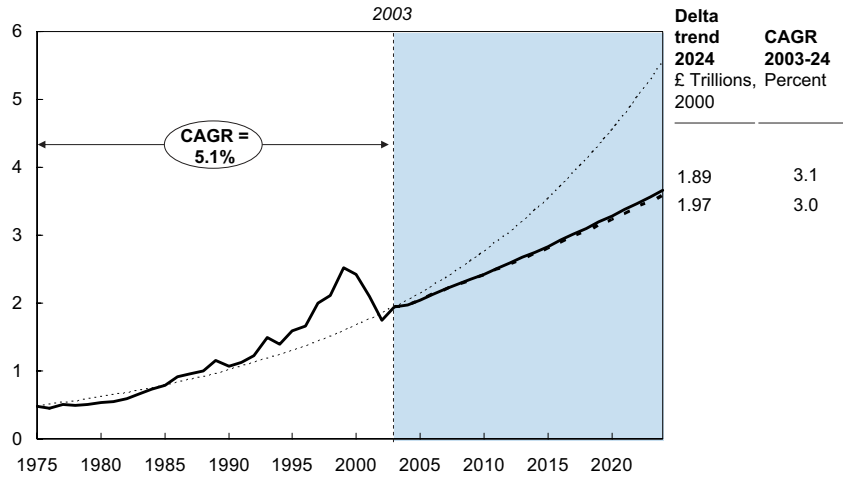
* As defined by the ODPM (official statistical body for households projections in England)
Source: ONS; Government Actuary, ODPM; Scottish Executive; MGI estimates

Exhibit 35

IMPACT OF USING HIGH MIGRATION VARIANT ON UK HOUSEHOLD NET FINANCIAL WEALTH

£ Trillions, 2000

- Base case
- - - Immigration at 173,000 per annum
- 1975-2003 extrapolated trend



Source: ONS; Government Actuary, ODPM; Scottish Executive; MGI estimates

Technical Notes

The objective of these technical notes is to provide an overview of our model structure, and discuss the key drivers. We have not attempted to be exhaustive, but rather to highlight the critical inputs and assumptions built into our projections. This technical note has eight sections:

- **Guiding principles** outlines the high-level rationale for our approach.
- **Demographic drivers** discusses the key demographic inputs to the model.
- **Lifecycle curves** outlines how we estimate our lifecycle curves in some countries, and use published research in others.
- **Liabilities** discusses how liabilities are modeled.
- **Aggregation, calibration, and accumulation** shows how we aggregate from household information, calibrate model predictions to actual historical observations, and predict asset accumulation.
- **Historical benchmarking** discusses how we test our models' ability to simulate historical observations.
- **Country projections** outlines our key assumptions, and discusses our effort to benchmark against external projections.
- **Projections of the Japanese current account** describes a simple model that can be used to understand how the demographic transition might impact external balance.

GUIDING PRINCIPLES

Use a microeconomic approach to pick up demographic effects. While there are a number of possible approaches to modeling household financial wealth accumulation, we have explicitly chosen to model household behavior. We believe that a microeconomic modeling approach is well suited to pick up the macroeconomic impact of the demographic shifts under way and thus provide a robust measure of the demographic pressure on wealth accumulation.

Use partial-equilibrium analysis to assess the magnitude of demographic pressures on wealth accumulation. Consistent with the project's focus, we adopted a partial-equilibrium approach to quantifying the impact of demographics on wealth accumulation. In reality, demographic pressures will interact with other economic forces to produce actual observed outcomes. This approach reinforces the importance of treating the model results as directional estimates rather than point estimates.

Use different modeling approaches based on objectives and data availability. We have chosen to construct our models based on the most readily available data (subject to our objectives) for each country. As data quality, granularity, and availability differs across countries, some differences in model capabilities arise (e.g., cohort-based analysis in the US and Japan and cohort-adjusted age group analysis in Italy, Germany and the UK). However, we believe that the benefit in building the most robust model and developing the most granular story possible within each country outweighs any minor inconsistencies in approach across countries. We document the important differences in modeling approach in these technical notes.

DEMOGRAPHIC DRIVERS

Historical demographics

The lifecycle-driven approach is based on household income, consumption and savings by household age.¹ We obtained the historical household by age group information from the relevant statistical agencies in each country (see “Data Appendix”). For Germany, Italy, and the UK, this data was sufficient for historical calculations. For the Japan and the US, we created estimates of household cohorts based upon the household age group data.

¹ Throughout this appendix, household age refers to the age of the head of household.

For example, in Japan, we have 5-year cohorts. Because we observe households in these cohorts only every fifth year, we estimate the intervening years with linear interpolation. Once the cohort-level household time series are constructed in this way, we use a Hodrick-Prescott filter to create a smoothed series. We then aggregate across all cohorts, and proportionally constrain the sum of cohorts to the published aggregate in each year.

As cohorts are defined by a specific time interval that reflects the year of birth of the household head (10-year interval in the US and a 5-year interval in Japan), age is potentially ambiguous. We define age as the median age in each cohort-year cell.

Demographic projections

In Japan and the UK, we have official household projections by age group.² For Japan, we construct the cohort projections in the same way as we constructed the historical estimates.

In the US, Germany and Italy, we did not have access to official projections of households by age group. To construct our projections, we used historical ratios of households to population and the available official population by age group projections to estimate households by age group. Thus, our estimations capture the recent decrease in household size, but do not extrapolate this trend going forward. For the US, similar to Japan, we constructed the cohort projections in the same way as the historical estimates. For Germany and Italy we based our simulation on the households by age group projections without constructing birth cohorts.

LIFECYCLE CURVES

In Japan and the US, we have estimated historical lifecycle curves based on household survey data. For Germany, Italy and the UK, we used published estimates of the lifecycle curves.

Estimating cohort specific lifecycle curves

Deaton (1985), Deaton and Paxson (1994), Attanasio (1998), Börsch-Supan (2003), among others, discuss in detail how to estimate cohort specific lifecycle

² In the UK, projections were available in 5-year intervals. Linear interpolation was used to construct intervening years.

curves using the "synthetic panel" approach. In addition, we commissioned Orazio Attanasio to estimate these curves for the US and followed his procedure in Japan.

More specifically, Japan and the US conduct annual cross sectional household surveys that collect a wide range of data including income, spending, and household age. In any year, the average income and spending for households in a specific age cohort can be calculated. By repeating this calculation for a series of annual surveys, it is possible to construct a synthetic panel data set, which follows cohort income and spending patterns as they age. With this synthetic panel, we estimated cohort-specific lifecycle curves using cohort fixed effects, and a fifth order polynomial in age.

Thus, we estimated equations of the form³

$$x_t^c = d_c + f(a_t^c) + u_t^c$$

where x_t^c is the variable of interest (e.g., average disposable income) for cohort c at time t ; d_c is a cohort fixed-effect; $f(a_t^c)$ is a fifth-degree polynomial in age (a_t^c); and u_t^c is a residual term.

By applying the above procedure, we obtained specific lifecycle curves for income and consumption and calculated the implied lifecycle curves of savings for different cohorts. Our estimates indicate a significant negative cohort effect on savings, which can be explained by different behavioral and economic factors.

For example, it has been suggested that negative cohort effects on savings are the result of lower birth rates (e.g., future cohorts do not need to save as much for education). Since our cohort data includes results up to the present, however, it incorporates such trends and thus only future *discontinuities* in cohort behavior could impact the model's results.

Before we can implement this procedure, we must recognize that the aggregate income and spending totals implied by the appropriately weighted survey data are significantly below the aggregate benchmarks recorded in the National

³ It is well known that in this type of synthetic panel specification, all trends in the data are captured by lifecycle and cohort effects. Linear time trends cannot be separately identified since age, time and cohort are linearly related. Any time effects are implicitly assumed to be orthogonal to the deterministic trends represented by age and cohort effects.

Income and Product Accounts.⁴ Furthermore, the downward bias inherent in the survey data has grown over time, particularly for household spending. This is meaningful when modeling aggregate wealth accumulation, because the evolution of wealth depends importantly on the level of household savings. Moreover, aggregate savings implied by the survey data does not pick up the long-term secular decline in savings witnessed in both Japan and the US.

In any year, if we assume that the distribution of income and spending across cohorts is accurately reflected by the survey, we can adjust for this bias by proportionally shifting the cohort household averages so that they aggregate to the NIPA benchmark. More specifically, we multiplied all cohort averages in a given year by the ratio of the NIPA average to the survey average.

This ensures that cohort-specific lifecycle curves estimated using the adjusted survey data will reflect the actual levels of income and spending in the economy.⁵

Leveraging existing research

In our Italy and Germany models we used an average lifecycle curve across cohorts to compute the income and savings for specific age groups. These curves were obtained from published country-specific studies; see Baldini, Mazzaferro, and Onori (2002) and Börsch-Supan (2004). We capture the cohort and time trend by shifting these curves over time using historical trends of income and savings growth. We then follow methodology similar to the one used in the US and Japan, that is, we assume that the distribution of income and spending across age groups is reflected by the survey, and we adjust for measurement discrepancy by proportionally shifting the household age group averages so that the total aggregates to the NIPA benchmarks.

In our UK model we used an average lifecycle curve across cohorts for income and consumption, based on Rohwedder and Banks (2003). We then constructed the savings patterns as a residual. The alignment with NIPA data was achieved through the calibration process (see next page).

4 See Garner et al. (2003).

5 Note that since all trends are captured in the synthetic panel by cohort and lifecycle effects, this adjustment will affect the size of the cohort effects, and the shape of the lifecycle curves. These adjusted cohort and lifecycle effects capture the aspects of household savings behavior required to model wealth accumulation.

LIABILITIES

Depending on the country, we capture lifecycle borrowing behavior either directly through lifecycle liabilities curves, or indirectly through the impact of lifecycle income.

In Japan, cohort-specific lifecycle liability curves were estimated in the same way as the income and spending curves described above.

In the US, we used information from the 1997 Survey of Consumer finance to construct a lifecycle curve which reflects the liability to income ratio across household age groups. Assuming this distribution is constant over time, we can calculate liabilities for each cohort based on their age and lifecycle income. Since we know that aggregate liabilities, and the aggregate liability to income ratio has been rising over time, we also constructed an aggregate liability to income trend using the HP filter. This trend was then combined with an indexed version of the distribution to ensure that the average liability to income ratio across cohorts approximates the economywide average in every year.

In Italy, we used a representative cohort average lifecycle liability curve and shift it over time to reflect growth trend in income and indebtedness.

In Germany and the UK, the only information we had available was the aggregate liabilities to income trend. Therefore, liabilities were not calculated at the household age group level, but rather computed as the product of the liability income series and the aggregate income generated from our lifecycle curves.

Across countries, we tested our assumptions on liability to income ratios and liabilities trends by checking the consistency of the liability to financial asset ratio and by confirming it with our local experts.

AGGREGATION, CALIBRATION, AND ACCUMULATION

Whether the model is based on household cohorts (Japan and the US), or household age groups (Germany, Italy, and the UK), the aggregation of household income, spending, and saving behavior is very similar.

To compute income per cohort in Japan and the US, we multiply the average household income in each cohort times the number of households in that cohort. The same is done for consumption. In the European countries, household age group income (and consumption for the UK) is computed in the same way. These household level predictions are then aggregated.

After aggregation, we "calibrate" our income and consumption predictions to actual historical observations using log-linear regressions. The objective of this calibration exercise is to capture the relationship between our lifecycle-based predictions, and observed income and consumption. In the US and Japan, the calibration mostly captures that part of real income and consumption growth that have not been picked up by the trends implicit in lifecycle and cohort effect estimates. In the European countries, the calibration primarily captures those gains in real income and consumption that are not explained by changes in the distribution of households, and helps correct for the use of a constant lifecycle curve.

In Japan and the US, savings is taken as the difference between calibrated income and consumption at the cohort level. To do this, we first distribute the calibrated values down to the cohort level using the un-calibrated income and spending shares. In the UK, savings is taken as the difference between calibrated income and consumption at the household level. In Germany and Italy, savings is the product of calibrated income and age-specific savings rates at the household level. The distribution from the calibrated values to the household level is handled similarly. In all cases, aggregate savings is the sum of the individual contributions.

In the US, numerous studies have found that households modulate their spending based on changes in the level of their wealth.⁶ This so-called "wealth effect" implies that increases in the value of household assets raises spending and decreases savings. The empirical evidence suggests that households respond differently to changes in financial versus real estate wealth: a dollar increase in financial wealth, increase spending by 3 to 5 cents, and a dollar increase in real estate wealth increase spending by 5 to 8 cents. We incorporate these twin wealth effects in the US model, assuming a marginal propensity to consume out of the changes in wealth to be 0.03 for financial wealth, and 0.05 for real estate wealth. Forecasts for household real estate wealth are obtained from Economy.com.

To understand how aggregate savings affects the accumulation of financial assets, it is necessary to understand the relationship between savings and the

⁶ See, for example, Davis and Palumbo (2001), Case, Quigley, and Shiller (2001) and Benjamin, Chinloy, and Jud (2003).

net acquisition of financial assets. In general,

$$I_t^F + I_t^T = S_t + \Delta L_t + CCA_t + CD_t + \varepsilon_t$$

where I_t^F is the net acquisition of financial assets, I_t^T is the net acquisition of tangible assets, S_t is aggregate savings of households, ΔL_t is the change in aggregate financial liabilities, CCA_t is capital consumption allowances, CD_t is the net acquisition of consumer durables, and ε_t captures measurement error.

As we are focusing on financial rather than tangible assets, the relationship of interest is the following quasi-identity

$$I_t^F \cong S_t + \Delta L_t$$

This shows that the net acquisition of financial assets is closely related to the sum of savings and the change in liabilities. This quasi-identity can be modeled effectively with a linear regression.

Aggregate liabilities are calculated differently across countries. For Japan, the process is the same as that for income and spending. For the US, we aggregate the liabilities calculated at the cohort level (described above) and calibrate to the historical aggregates. For the European countries, liabilities are calculated as the product of the aggregate liabilities to income trend and calibrated income.

The accumulation of assets then follows from the well known identity:

$$A_t^F = (1 + FAA_t)A_{t-1}^F + I_t^F$$

where A_t^F is the stock of financial assets and FAA_t is the rate of financial asset appreciation.⁷ Assets are accumulated at the aggregate level because we assume that all households receive the same average rate of financial asset appreciation.⁸

Net financial wealth is determined as the difference between financial assets and liabilities.

7 As noted in the main text, we have adopted the standard convention that realized capital income, including interest, and dividends, are counted as part of personal income, a portion of which is saved by households. Thus, FAA_t is unrealized asset appreciation.

8 With all households receiving the same rate of financial asset appreciation, bequests will not affect asset accumulation, outside of the small effect that the estate tax will have.

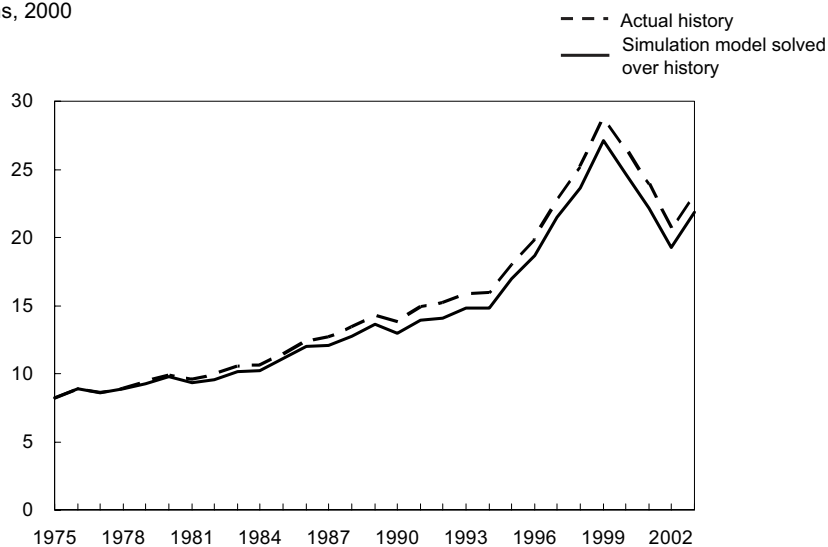
HISTORICAL BENCHMARKING

To assess the performance of our country models, we ran historical simulations, assuming the *actual* rate of financial asset appreciation. In all cases, the calibrated models produced paths of savings, net acquisition of financial assets, and asset accumulation that tracked history well (exhibits 1-5).

Exhibit 1

US MODEL – PERFORMANCE OVER HISTORY*

\$ Trillions, 2000



* Assuming actual rates of financial asset appreciation
Source: Flow of funds; Team analysis; MGI Household Financial Wealth Accumulation Model

COUNTRY PROJECTIONS

In addition to the demographic projections discussed above, additional assumptions were required to predict NFW accumulation. As discussed in each country chapter, the impact of these assumptions has been tested with sensitivity analysis. In addition to sensitivity analysis, we have compared our predictions to external benchmarks of key macroeconomic aggregates.

Key projection assumptions

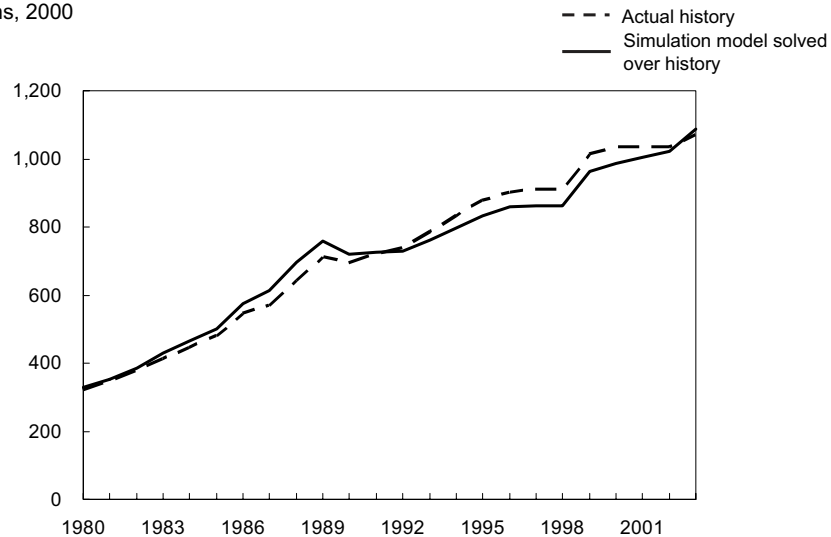
As we note in our guiding principles above, we use different modeling approaches for each country based on our objectives and data availability. There are of course many common elements across the models including some common assumptions:

- **Rate of financial asset appreciation.** We do not make an attempt to model the rate of financial asset appreciation. For each country, a baseline assumption is taken, that is consistent with historical observations, and this assumption is held constant throughout the projection period.
- **Liabilities-income trend.** We use historical behavior to predict the liabilities-income trend in each country.
- **Life cycle curves.** We use the historical lifecycle curves in the projection period. For the US and Japan, these curves vary by cohort. For the European countries, the lifecycle curves remain constant.
- **Cohorts outside the survey.** For Japan we assume that cohorts who first appear during the projection period have the same cohort effects as the last cohort observed during history (born 1971-75). In the US, we have chosen the cohort previous to the last observed (born 1955-64) because for the final cohort (born 1965-74) we had only 10 years of observations, 5 of which occurred during the stock market bubble.

Exhibit 2

JAPAN MODEL – PERFORMANCE OVER HISTORY*

¥ Trillions, 2000

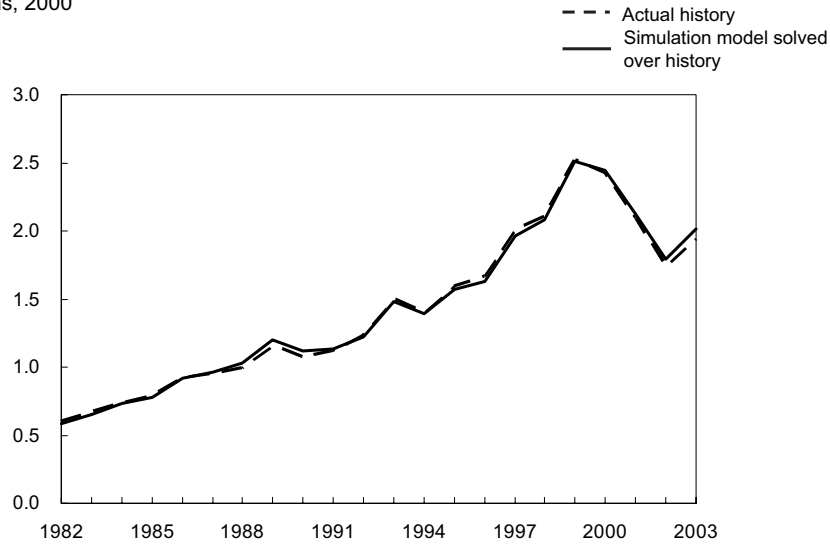


* Assuming actual rates of financial asset appreciation
 Source: ESRI, Cabinet Office, Government of Japan; Bank of Japan; Family Expenditure Survey, 1975-2000, Japan; McKinsey Global Institute Household Wealth Model

Exhibit 3

UK MODEL – PERFORMANCE OVER HISTORY*

£ Trillions, 2000

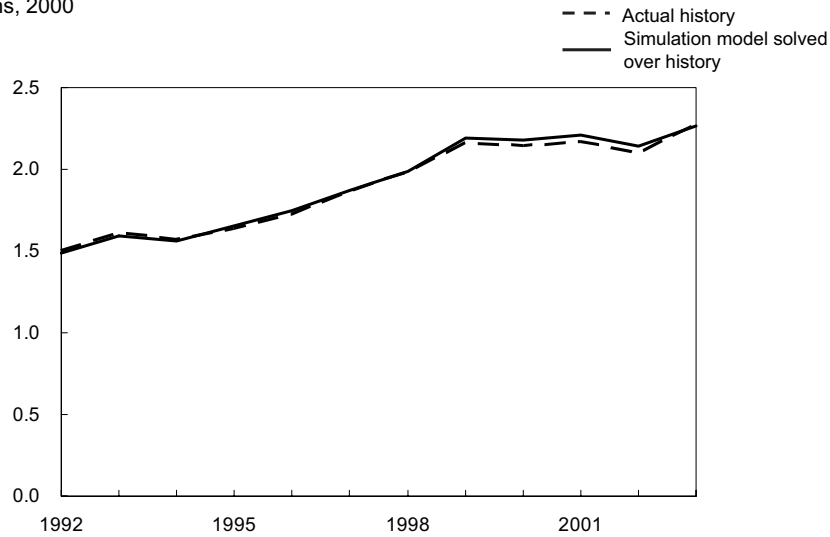


* Assuming actual rates of financial asset appreciation
Source: ONS; Team analysis; MGI Household Financial Wealth Accumulation Model

Exhibit 4

GERMAN MODEL – PERFORMANCE OVER HISTORY*

€ Trillions, 2000

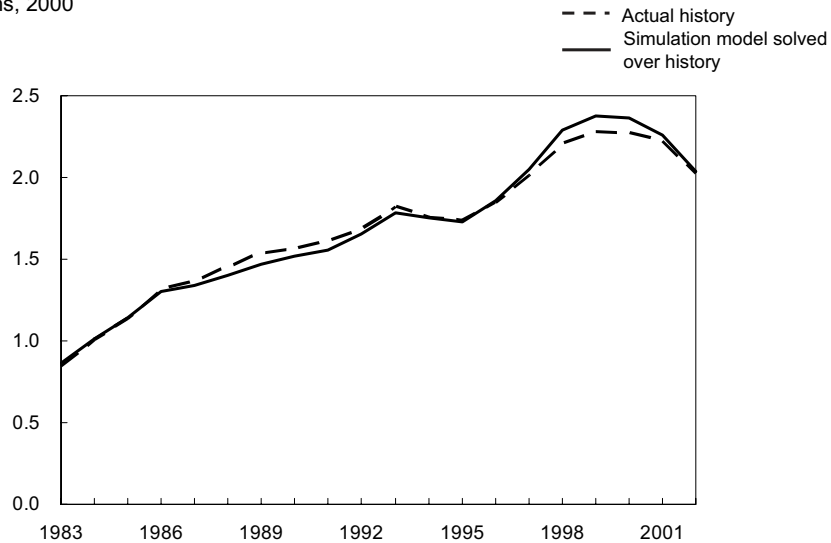


* Assuming actual rates of financial asset appreciation
Source: Deutsche Bundesbank; Team analysis; MGI Household Financial Wealth Accumulation Model

Exhibit 5

ITALIAN MODEL – PERFORMANCE OVER HISTORY*

€ Trillions, 2000



* Assuming actual rates of financial asset appreciation
Source: Deutsche Bundesbank; Team analysis; MGI Household Financial Wealth Accumulation Model

External benchmarking

The country models are built using annual data, so that the last historical data point is 2003. For all countries, we have partial-year 2004 information for many of our model variables. Thus, the first step in creating each country projection was to use the 2004 partial-year information to fine-tune and help benchmark our starting points.

Over the next 20 years, our country models predict a slowdown in the growth of income and consumption. This was expected, given the demographic changes we have sought to capture. The magnitude of the slowdowns relative to historical trends are, however, large enough, that we want to investigate whether the projected slowdowns are "reasonable," and what is the net impact on savings and NFW accumulation of this slower growth. Our hypothesis is that the net impact will be limited as long as the slowdowns in income and consumption growth are similar. We make comparisons to external benchmarks and use sensitivity analysis to investigate these issues. In what follows we focus on the analysis we performed for the US and Japan.

It is worth noting that our calibration equations (discussed above) play an important role in modeling future growth. For the calibration equations to effectively capture future trends, the relationship between the household distribution, lifecycle curves, and the aggregates must, strictly speaking, remain close to what it was over history. We recognize that the cohort and age distribution of households after 2003 is different than in the previous twenty years. Furthermore, the lifecycle curves remain fixed going forward, and future cohorts in the US and Japan are assumed to behave like previous cohorts. All of these factors will impact the predictions of our calibrated relationships.

Selecting and external benchmark. External benchmarks must be selected carefully, since most projections available from external sources are from "demand driven" or extrapolation based forecasting models which almost certainly do not adequately capture the impact of demographic change (if they do at all). Because of this, we have chosen where possible to use potential GDP as our outside benchmark, and consider historical and projected shares of income and consumption relative to potential. The primary reasons we made this choice are that potential GDP (Exhibit 6):

Exhibit 6

EXPLANATION OF POTENTIAL GDP

	Description
What does potential GDP measure?	<ul style="list-style-type: none"> • Potential GDP provides a measure of sustainable growth • It abstracts from business cycle fluctuations • It is an estimate of the maximum growth rate that can be sustained without increasing inflation • All factors of production are assumed to operate at long-term trends
Why is potential GDP a useful benchmark?	<ul style="list-style-type: none"> • Potential GDP is a supply-side measure of growth which explicitly accounts for changes in demographics through labor input • Do not have to model potential demand side developments • Consistent with our objective of modeling secular long-term trends
How did we estimate potential GDP?	<ul style="list-style-type: none"> • We have followed the OECD "production function approach" using a Cobb-Douglas (CD) form • We used OECD estimates of the Non Accelerating Inflation Rate of Unemployment (NAIRU), which is a critical input • Trend of total factor productivity growth is a critical assumption

Source: Team analysis; Giomo et. al. (1995)

- Provides a measure of sustainable growth that abstracts from business cycle fluctuations and is therefore aligned with our objective of modeling long-term trends;
- Is a supply-side measure of growth which explicitly accounts for changes in demographics through labor input; and
- Can be estimated using a well established consistent methodology.

For Japan, there was no available forecast for potential GDP. Because of the severity of the demographic transition now underway, and the importance of Japan in the global capital market, we constructed our own estimate of potential GDP for benchmarking purposes. For the US, estimates of potential GDP are published by the Congressional Budget Office, and potential GDP growth is available from Macroeconomic Advisors.

Benchmarking Japan projections. Our model of potential GDP for Japan follows closely the OECD methodology described by Giorno et al. (1995) (Exhibit 7). We also leverage the work of Hayashi and Prescott (2002, 2003), and Jorgenson and Motohashi (2003, 2004). We follow Hayashi and Prescott and assume that output in Japan can be effectively modeled using a Cobb-Douglas production function.⁹

$$Q_t = A_t K_t^\alpha (h_t E_t)^{(1-\alpha)}$$

where Q_t is real GDP, A_t is total factor productivity (TFP), K_t is the aggregate real capital stock, E_t is aggregate employment, h_t is hours per employee, and α is capital's income share.¹⁰

Before we can construct our estimate of potential GDP, we must estimate historical trend TFP. This is done by computing TFP as a residual from the production function in the usual way, and setting trend TFP (A_t^{TR}) equal to the HP filtered value of this residual. Similarly, we must also compute trend labor input, LN_t^{TR} , assuming that the economy is at "full employment." We express trend labor input as:

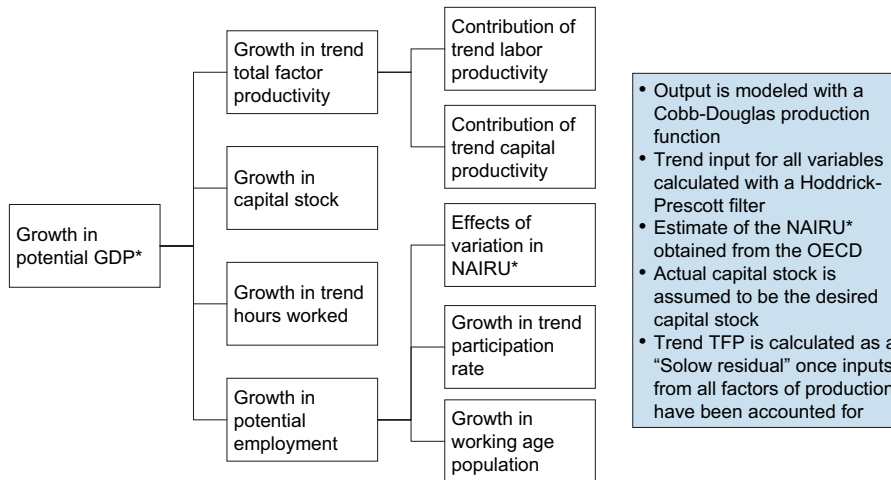
$$LN_t^{TR} = h_t^{TR} \left[(1 - NAIRU_t) P_t^{TR} N_t \right]$$

9 The OECD uses a CES production function in their model of potential GDP for Japan, see Giorno et al (1995) and Turner, Richardson and Rauffet (1996).

10 We follow the methodology in Hayashi and Prescott to compute the capital income share.

Exhibit 7

JAPAN – ESTIMATE OF POTENTIAL GDP FOLLOWS OECD METHODOLOGY



* Non Accelerating Inflation Rate of Unemployment
 Source: Giorno C., P. Richardson, D. Roseveare, P. van den Noord (1995); “Estimating potential output, output gaps and structural budget balances,” OECD Economic Department Working Paper, n°157; Team analysis

where h_t^{TR} is the HP filtered trend of hours, $NAIRU_t$ is the non-accelerating inflation rate of unemployment (obtained from the OECD), P_t^{TR} is the HP filtered trend in the age 15 to 64 participation rate, and N_t is the population aged 15 to 64. Assuming the capital stock is at its desired level, potential GDP, Q_t^{POT} , can now be estimated as:

$$Q_t^{POT} = A_t^{TR} K_t^{\bar{\alpha}} (LN_t^{TR})^{(1-\bar{\alpha})}$$

where $\bar{\alpha}$ is capital's average income share between 1975 and 2002.¹¹ Consistent with our buildup and slowdown phases, the growth of potential GDP is cut more than half after 1989 (Exhibit 8). Furthermore, our estimate shows that Japan was producing below potential during the mid 1980s and for most of the 1990s¹² (Exhibit 9).

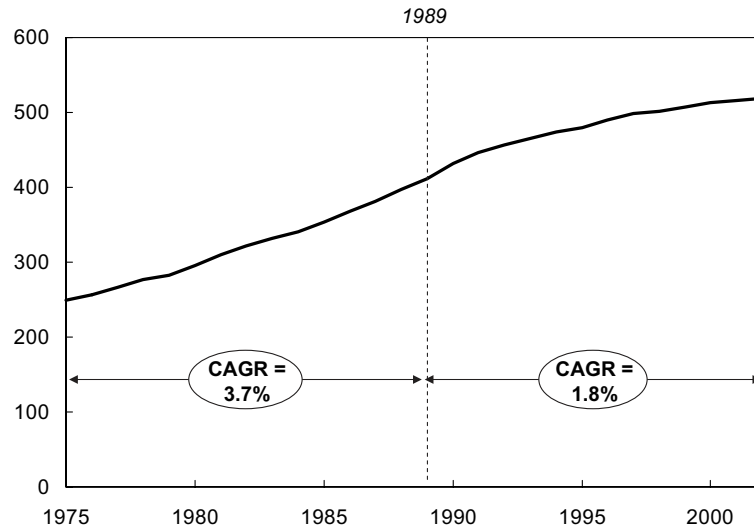
11 We use capital stock data from 1975 through 2002 since data are not available for 2003.

12 Our estimate of historical potential tracks the OECD estimate closely.

Exhibit 8

JAPAN – POTENTIAL GDP

¥ Trillions, 2000

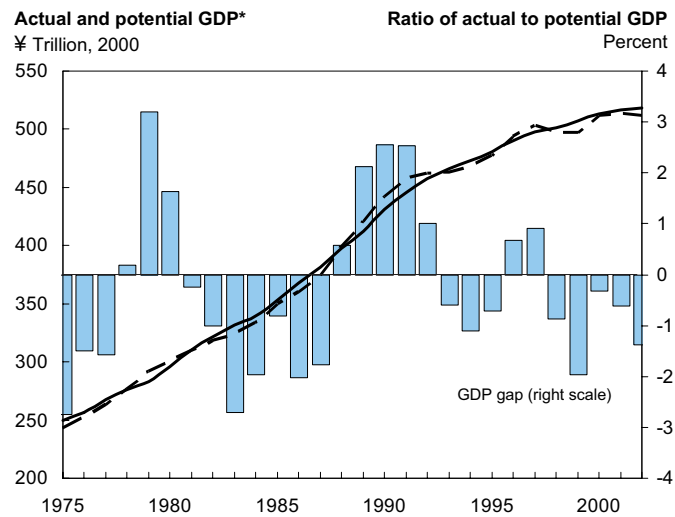


Source: ESRI; Cabinet Office, Government of Japan

Exhibit 9

JAPAN – POTENTIAL VERSUS ACTUAL GDP

— Potential GDP (left scale)
 - - - Actual GDP (left scale)



Source: ERSI; OECD Economic Outlook No. 75; MGI estimate

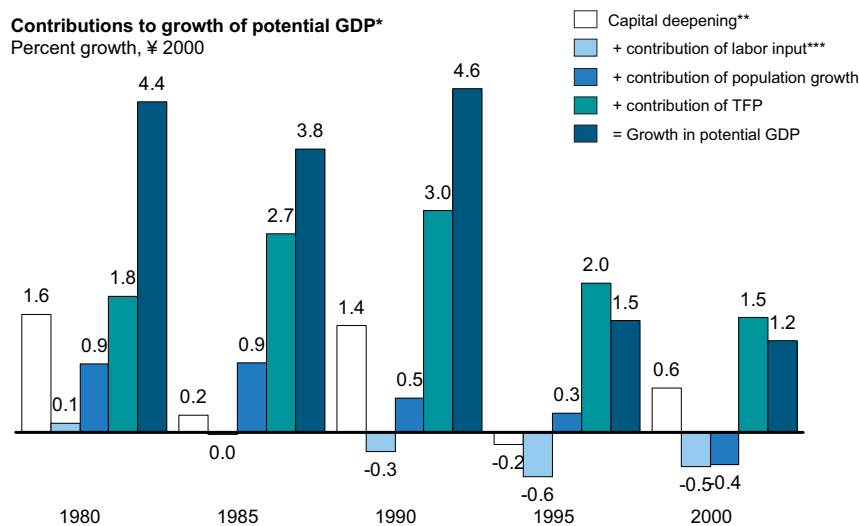
It is useful to express potential output in per-capita terms, but in a form that also includes the capital output ratio.¹³

$$\frac{Q_t^{POT}}{N_t} = (A_t^{TR})^{1/(1-\bar{\alpha})} (L_t^{TR})^{1-\bar{\alpha}} \left(\frac{K_t}{Q_t^{POT}} \right)^{\bar{\alpha}/(1-\bar{\alpha})}; L_t^{TR} = h_t^{TR} [(1 - NAIRU_t) P_t^{TR}]$$

Taking logarithmic differences and rearranging, allows us to decompose historical potential GDP growth into four components: TFP growth, labor input growth, population growth, and the growth in capital intensity. It is clear from this decomposition that population has been a net negative for growth since 1995 (Exhibit 10).

Exhibit 10

JAPAN – DECOMPOSITION OF POTENTIAL GDP GROWTH



* Growth rates are approximate, calculated using change in logarithms for growth accounting exercise
 ** Increase in capital output ratio
 *** Captures changes in the NAIRU (OECD estimate), participation rates, and average weekly hours
 Source: ERSI; OECD Economic Outlook No. 75; MGI estimate

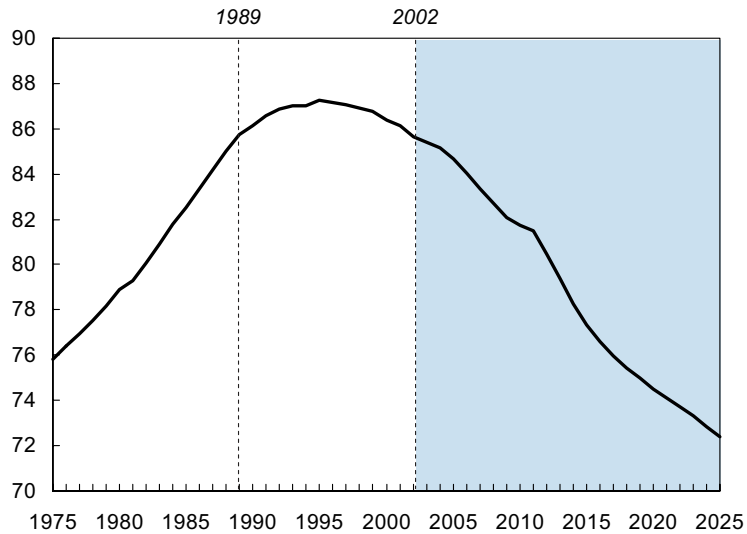
To project potential GDP, we use the official projections for the population aged 15 to 64 (Exhibit 11), and make assumptions about the future evolution of trend TFP, trend labor input, and the capital output ratio:

13 This is equivalent to, but differs in appearance from, the usual growth accounting formulation. See Hayashi and Prescott (2002, 2003).

Exhibit 11

JAPAN – POPULATION AGED 15-64

Millions



Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; Team estimate

- Trend TFP growth is assumed to continue at 1.0 percent annually, which is near its growth rate in the most recent history¹⁴ (Exhibit 12).
- The three components of trend labor input are all assumed to remain at their 2002 values. Holding the NAIRU constant follows the OECD; weekly hours and participation rate are assumed to stabilize (exhibits 13-15).
- We assume that capital intensity continues to increase at 0.51 percent annually, matching its 1989 to 2002 pace (Exhibit 16).

We expect potential GDP to average 1.1 percent growth annually between 2002 and 2024 (Exhibit 17). The persistence of the post-1995 slower growth and the swings in growth going forward are primarily due to continued shrinking of the

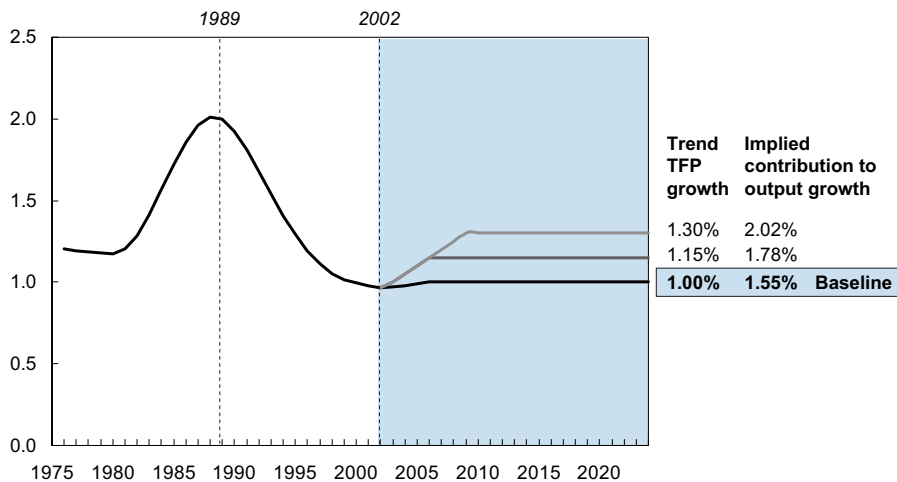
¹⁴ See Jorgensen and Motohashi (2003, 2004) for a more disaggregated analysis of TFP growth. In their 2003 paper, they find that TFP increased 1.0 percent per year between 1995 and 2000 in their calculation that uses official price data (as we have).

15 to 64 population (Exhibit 18). As to the impact of our other assumptions: allowing weekly hours to continue to decline would slow growth further; official projections expect the participation rate to slowly drop over time, which would slow growth as well; increasing trend TFP would boost growth, but there does not seem to be a reasonable justification for such an increase; similarly, it is difficult to justify a higher path for increases in capital intensity.

Exhibit 12

JAPAN – ALTERNATIVE TREND TFP GROWTH ASSUMPTIONS

Percent



Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

To benchmark the output of our NFW accumulation model, we consider the projected ratios of income, consumption, and saving relative to potential GDP. Our projected shares are largely consistent with historically observed trends (exhibits 19-21). The only exception might be the jump in the consumption share around 2015. The source of this jump is twofold: the positive cohort effect on consumption, and the substantial weakening of potential GDP growth are the same time (exhibits 22-23).

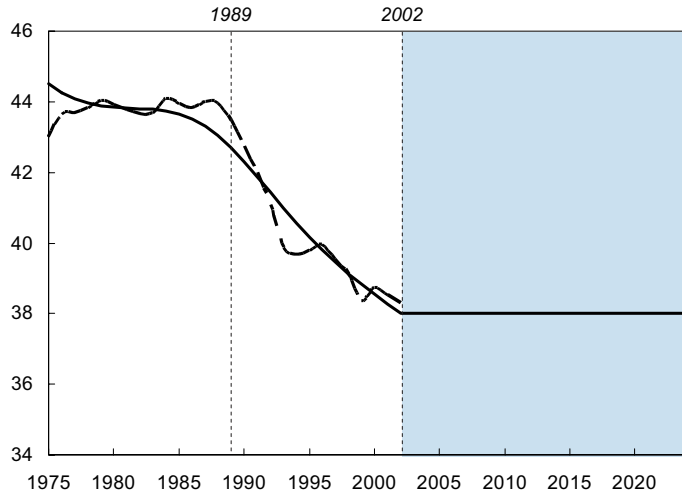
These comparisons provide us with confidence that our projection can serve as a reasonable baseline path for household savings in Japan.

Exhibit 13

JAPAN – TREND WEEKLY HOURS

Ratio

— HP trend weekly hours
- - - Weekly hours



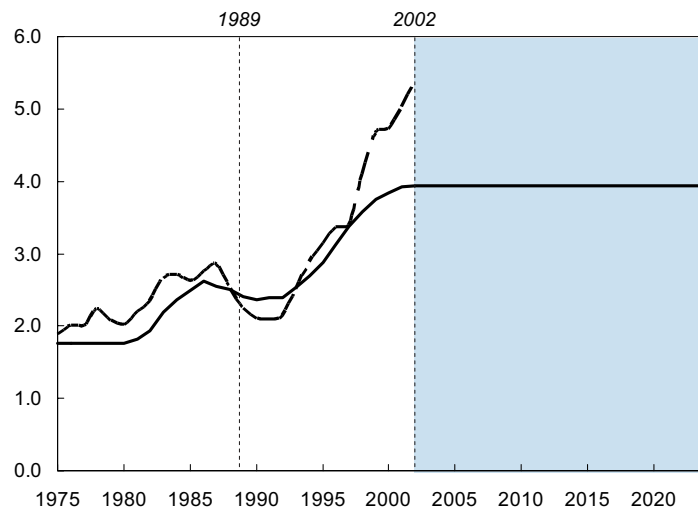
Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 14

JAPAN – NAIRU AND THE UNEMPLOYMENT RATE

Ratio

— NAIRU (OECD)
- - - Unemployment rate

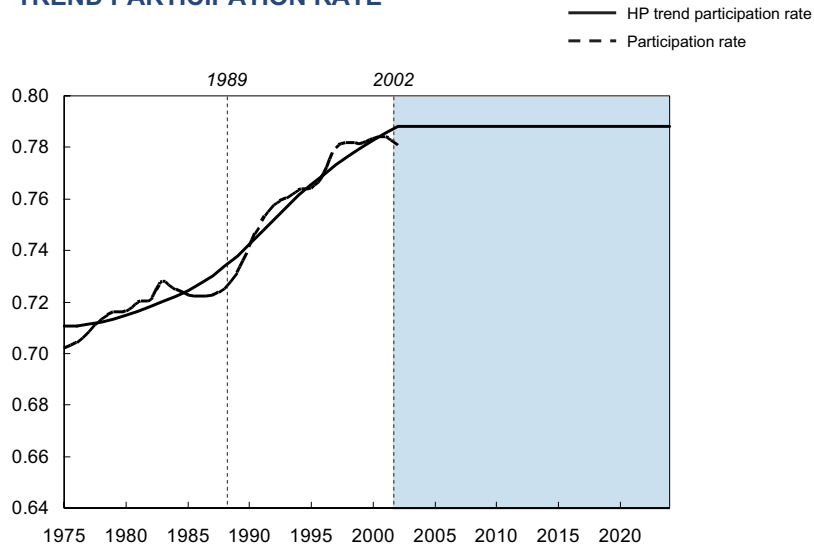


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 15

JAPAN – TREND PARTICIPATION RATE

Ratio

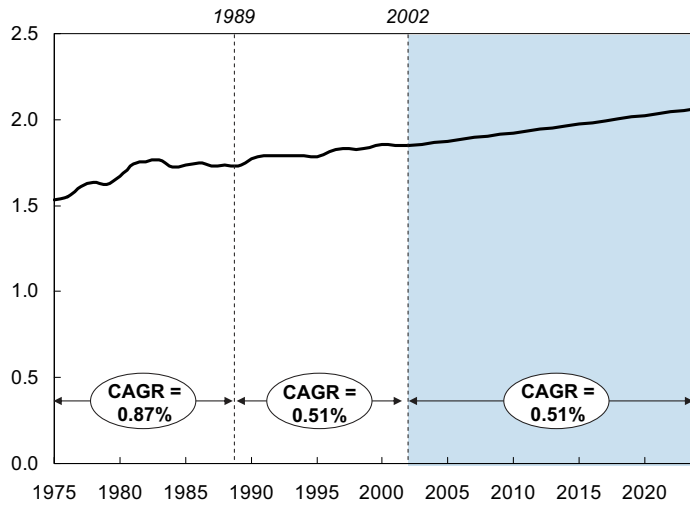


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 16

JAPAN – TREND CAPITAL OUTPUT RATIO

Ratio

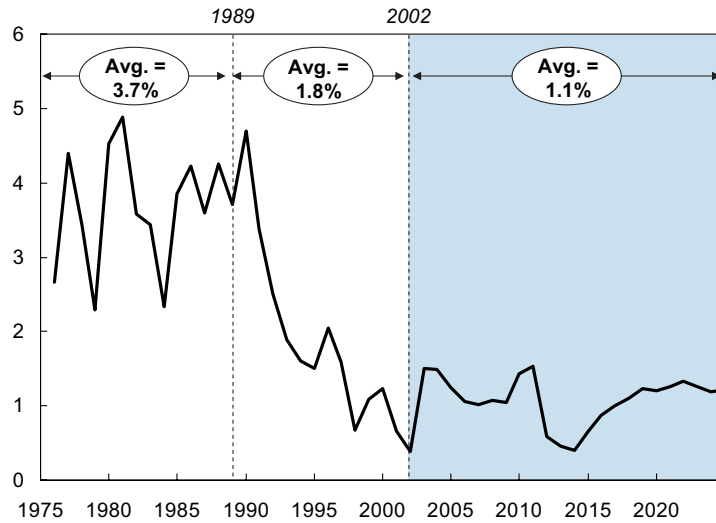


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 17

JAPAN – GROWTH OF POTENTIAL GDP

Percent

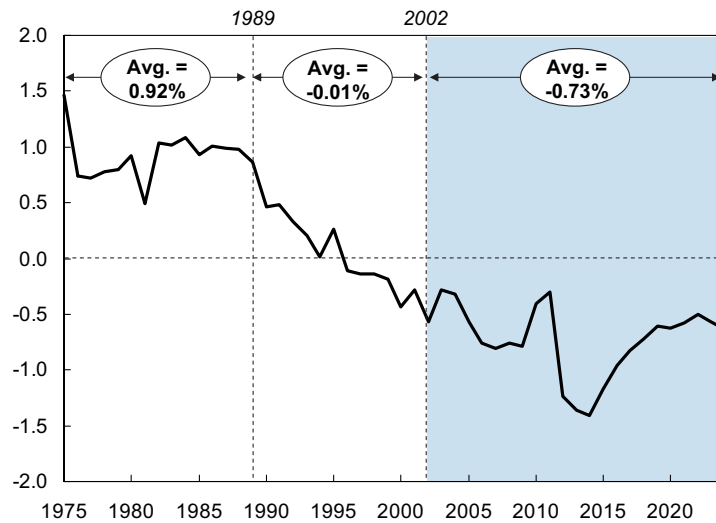


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 18

JAPAN – GROWTH OF WORKING AGE POPULATION AGES 15-64

Percent

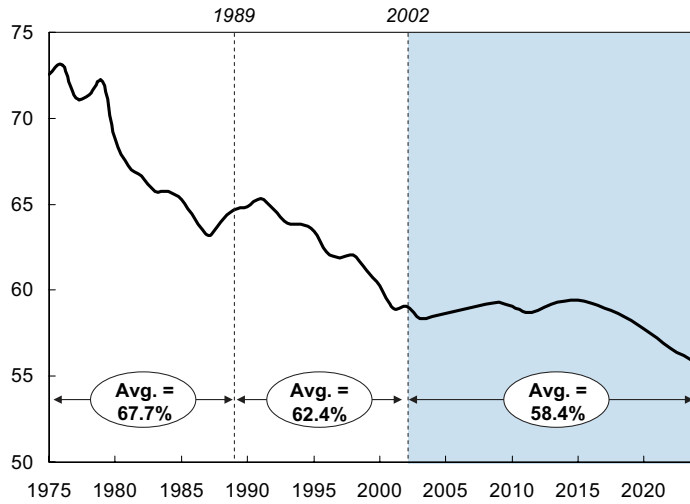


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 19

JAPAN – RATIO OF DISPOSABLE INCOME TO POTENTIAL GDP

Percent

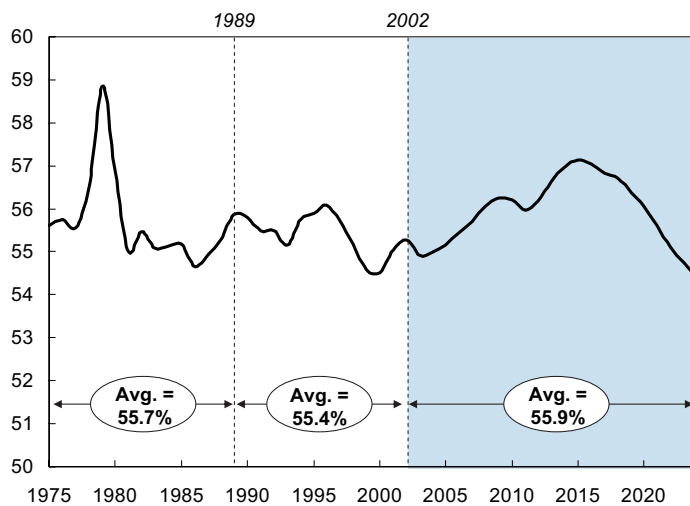


Source: ERSI; OECD Economic Outlook No. 75; Bank of Japan, Family Expenditure Survey, 1975-2000, Japan; National Institute of Population and Social Security Research, Japan; MGI Wealth Accumulation Model

Exhibit 20

JAPAN – RATIO OF CONSUMPTION TO POTENTIAL GDP

Percent

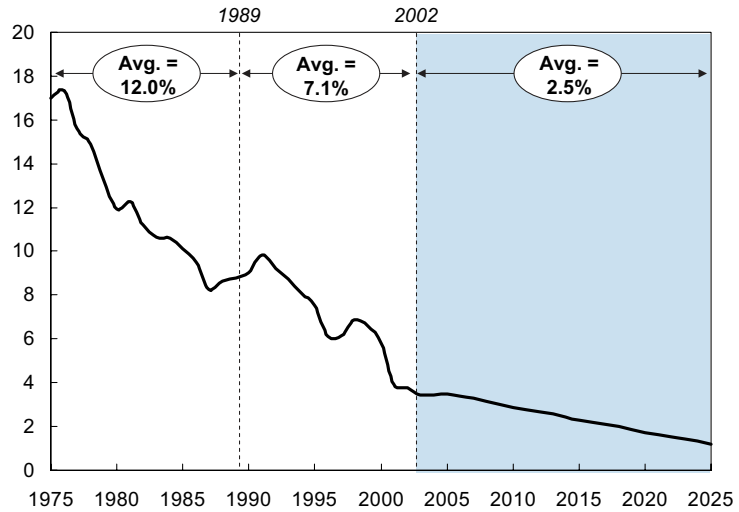


Source: ERSI; OECD Economic Outlook No. 75; Bank of Japan, Family Expenditure Survey, 1975-2000, Japan; National Institute of Population and Social Security Research, Japan; MGI Wealth Accumulation Model

Exhibit 21

JAPAN – RATIO OF SAVINGS TO POTENTIAL GDP

Percent

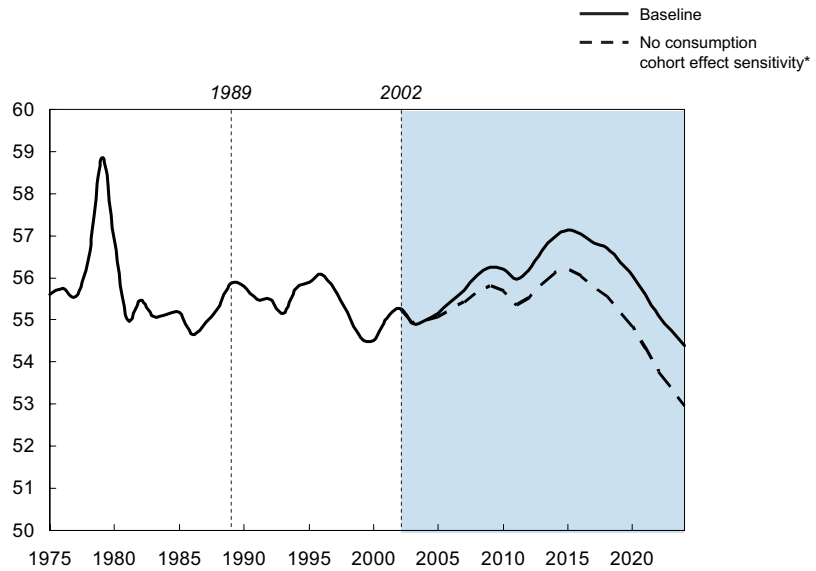


Source: ERSI; OECD Economic Outlook No. 75; Bank of Japan, Family Expenditure Survey, 1975-2000, Japan; National Institute of Population and Social Security Research, Japan; MGI Wealth Accumulation Model

Exhibit 22

JAPAN – RATIO OF CONSUMPTION TO POTENTIAL GDP

Percent

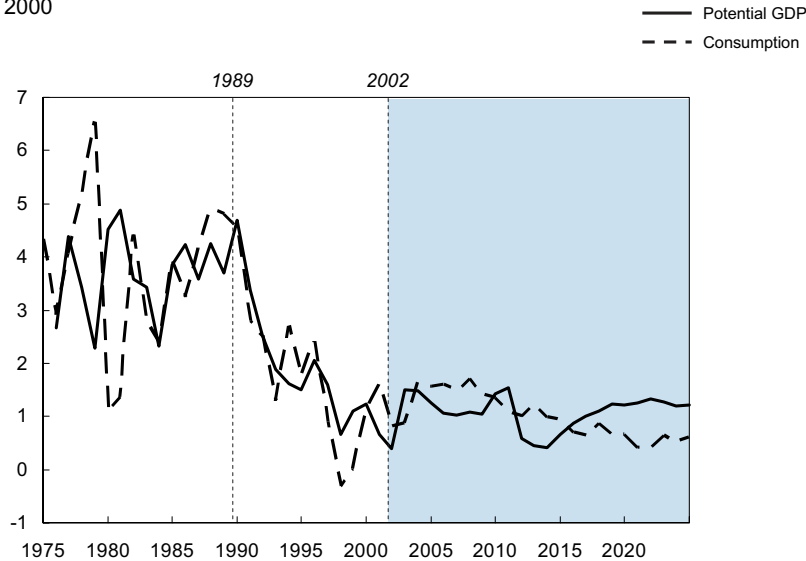


* Assumes that cohorts born after 1960 gradually increase their spending levels so that they are in line with the 1950s cohorts (i.e., eliminates the consumption cohort effect). See Section 5 of the Japan chapter.
 Source: ERSI; OECD Economic Outlook No. 75; Bank of Japan, Family Expenditure Survey, Japan; National Institute of Population and Social Security Research, Japan; MGI Wealth Accumulation Model

Exhibit 23

JAPAN – GROWTH OF POTENTIAL GDP AND CONSUMPTION

Percent, ¥ 2000



Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Benchmarking US projections. As noted above, estimates of US potential GDP are published by the Congressional Budget Office (CBO), and Macroeconomic Advisors (MA) publishes potential GDP growth rates. We constructed a potential GDP series based on the published MA growth rates using the 1990 value of the CBO estimate¹⁵ (Exhibit 24). A forecast of potential GDP was then calculated using MA's long-term projections (Exhibit 25).

The slowdown in projected income and consumption growth in the US is significant when compared to history, and the projected growth of potential GDP. To gauge the impact of this slowdown, we tested a "balanced growth" sensitivity which keeps projected income and spending shares constant relative to potential GDP after 2007. Although higher levels of income and spending growth raises savings and the saving rate, there is only a moderate impact on NFW accumulation. The saving rate levels off at approximately 2.5 percent, and the growth rate of NFW increased from 1.6 percent to 1.9 percent (exhibits 26-28).

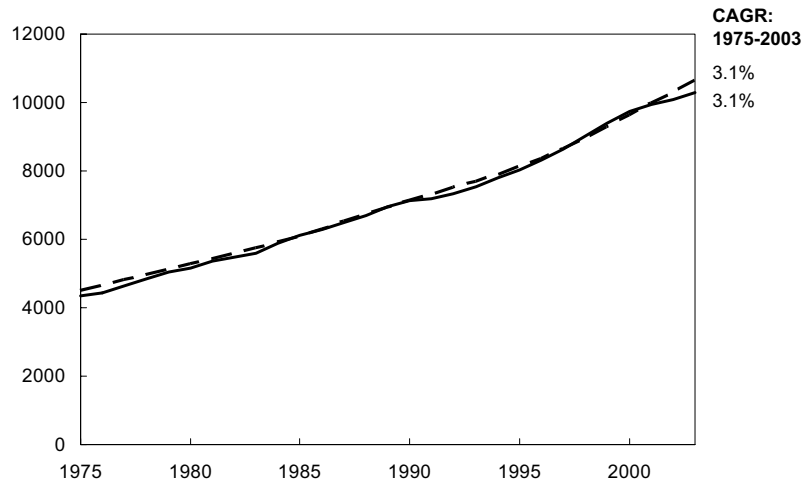
¹⁵ The data for 1990 was chosen since for this year the CBO estimate of potential GDP was within 0.1% of actual GDP.

Exhibit 24

US – POTENTIAL GDP

\$ Billions, 2000

— Macroeconomic Advisors*
 - - - Congressional Budget Office

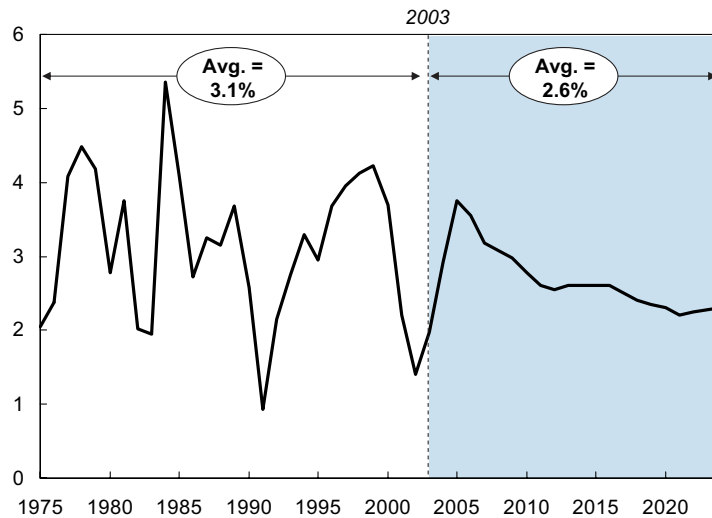


* Potential GDP calculated using growth rate published by Macroeconomic Advisors, and 1990 value of CBO estimate of potential. 1990 used because CBO estimate of potential within 1.0 percent of actual GDP
 Source: Macroeconomic Advisors, Congressional Budget Office; MGI estimates

Exhibit 25

US – GROWTH OF POTENTIAL GDP*

Percent, ¥ 2000



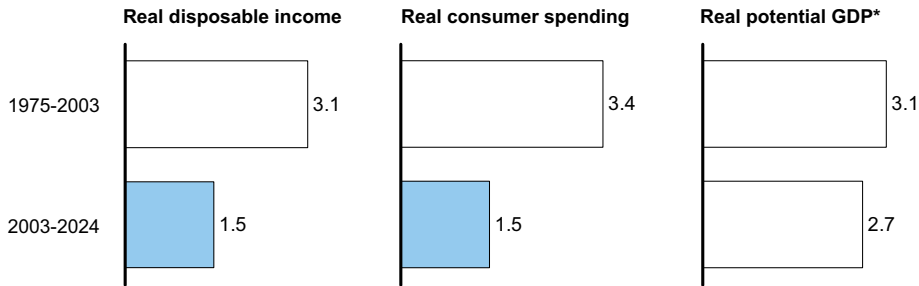
* Potential GDP calculated using growth rate published by Macroeconomic Advisors, and 1990 value of CBO estimate of potential. 1990 used because CBO estimate of potential within 1.0 percent of actual GDP
 Source: Macroeconomic Advisors, Congressional Budget Office; MGI estimates

Exhibit 26

US – INCOME AND SPENDING GROWTH RELATIVE TO POTENTIAL GDP GROWTH

CAGR, percent

■ Baseline projections



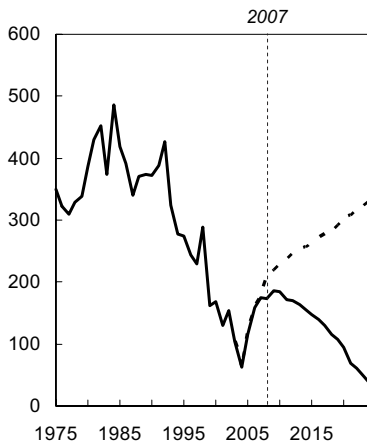
* Potential GDP calculated using growth rate published by Macroeconomic Advisors, and 1990 value of CBO estimate of potential. 1990 used because CBO estimate of potential within 1.0 percent of actual GDP
 Source: Macroeconomic advisors; CBO; McKinsey Global Institute Household Wealth Model, MGI estimates

Exhibit 27

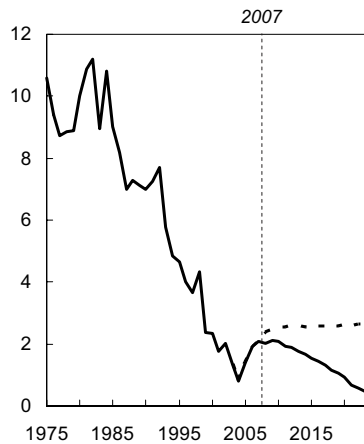
US – HOLDING INCOME AND CONSUMPTION SHARES CONSTANT RELATIVE TO POTENTIAL GDP AFTER 2007

— Base case
 - - - Balanced growth scenario

Household savings
 \$ Billions, 2000



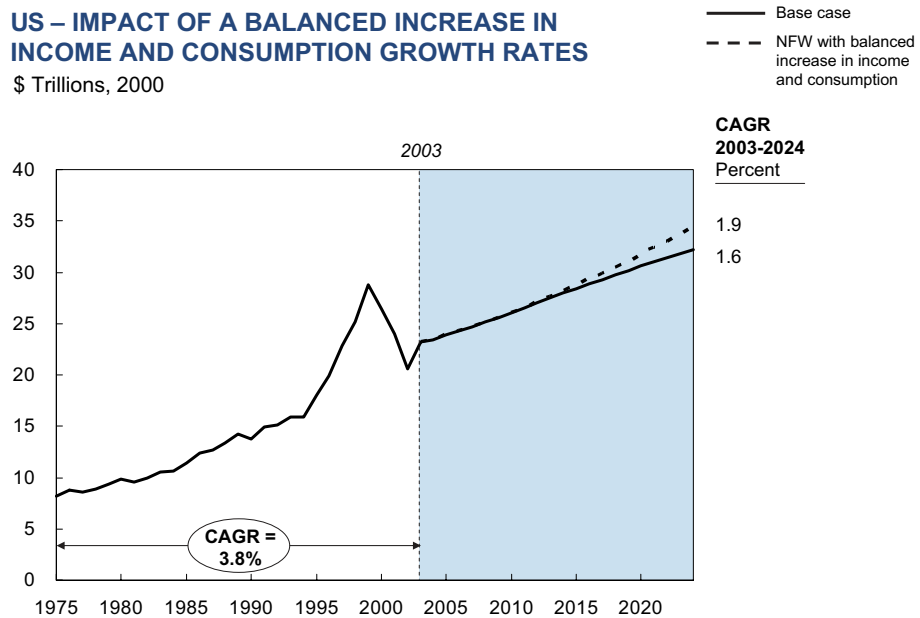
Household savings rate
 Percent of disposable income



Source: Macroeconomic advisors; CBO; McKinsey Global Institute Household Wealth Model

Exhibit 28

US – IMPACT OF A BALANCED INCREASE IN INCOME AND CONSUMPTION GROWTH RATES
\$ Trillions, 2000



Source: BLS Consumer Expenditure Survey, Diary Survey; Federal Reserve Flow of Funds (March 2004); McKinsey Global Institute Household Wealth Model

The reason that a balanced growth alternative has a small impact on wealth accumulation is that income and spending growth both increase and the net impact on savings, the saving rate, and the net acquisition of financial assets is relatively small. Thus, although our model is predicting a growth slowdown, the balanced growth scenario demonstrates that growth near trend would not change the overall story in the US

PROJECTIONS OF THE JAPANESE CURRENT ACCOUNT

With household savings in Japan projected to continue its downward slide, there is a distinct possibility that savings will fall faster than investment, and that Japan will move from its historic position as a net exporter of financial capital to running current account deficits. Recent research that has approached this problem from different directions has come to this conclusion¹⁶ (Exhibit 29).

16 See Dekle (2004), and Haji and Yajima (2004).

Exhibit 29

OPINIONS ON THE FUTURE OF THE JAPANESE CURRENT ACCOUNT

“Most papers, including the simulation model presented in this paper, project declining saving and investment rates, with saving rates declining faster than investments rates, leading to current account deficit and capital inflows”

Robert Dekle, NBER, September 2004

“In the future as the saving rate drops further the current account balance should turn to deficit”

Haji Koichi and Yajima Yasuhide
NLI research, National Institute for Research Advancement,
April 2004

Source: NBER; NIRA

Using our model of potential GDP, and our projections of household savings, we can develop a projection of the Japanese current account balance. Expressing the current account in terms of the savings and investment balance, we can show how our projections can be used to calculate the current account balance (Exhibit 30). Our calculation show that gross savings will grow, albeit at a slower rate than gross investment, resulting in large current account deficits going forward (exhibits 31-33). If Japan wanted to avoid these deficits it would require some combination of government budget surpluses (and lower government investment), higher labor force participation rates and/or lower equilibrium unemployment rates, higher corporate savings, and lower rates of capital accumulation.

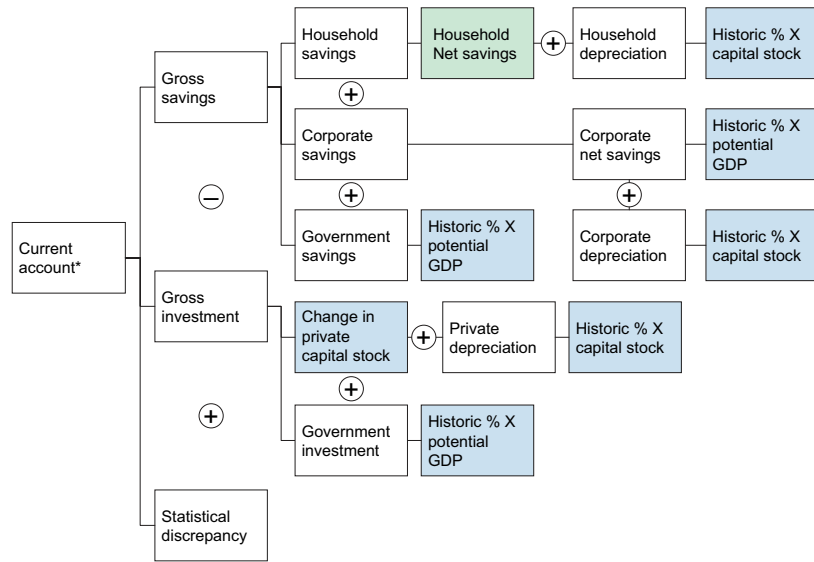
In what follows we briefly review the assumptions underlying our calculation.

Projecting gross investment. We can compute the implied capital stock from our projection of potential GDP and the assumed capital output ratio. Combining the change in the stock and private sector depreciation gives private sector gross investment. Private sector depreciation is projected by assuming that it maintains a constant share of the lagged capital stock. Government investment is assumed to maintain a fixed share of potential GDP (exhibits 34-36).

Exhibit 30

APPROACH TO PROJECTING JAPANESE CURRENT ACCOUNT

■ NFW Model
 ■ Potential GDP model

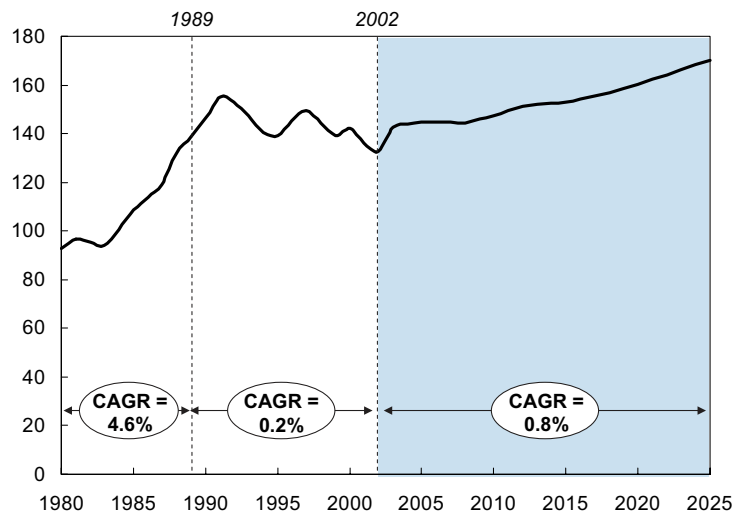


Source: Team analysis

Exhibit 31

JAPAN – GROSS SAVINGS

¥ Trillion, 2000

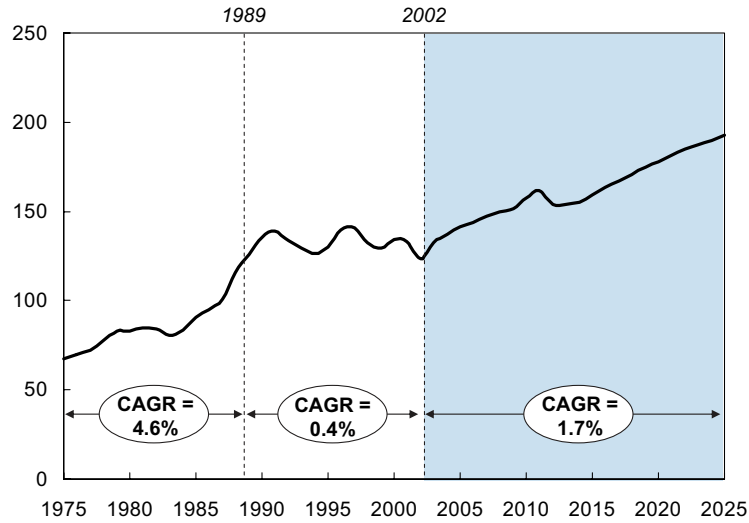


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 32

JAPAN – GROSS INVESTMENT

¥ Trillion, 2000

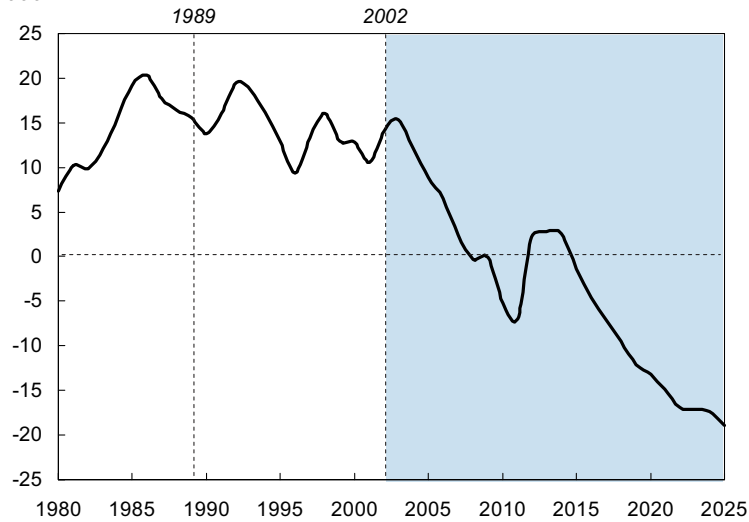


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 33

JAPAN – CURRENT ACCOUNT BALANCE

¥ Trillion, 2000

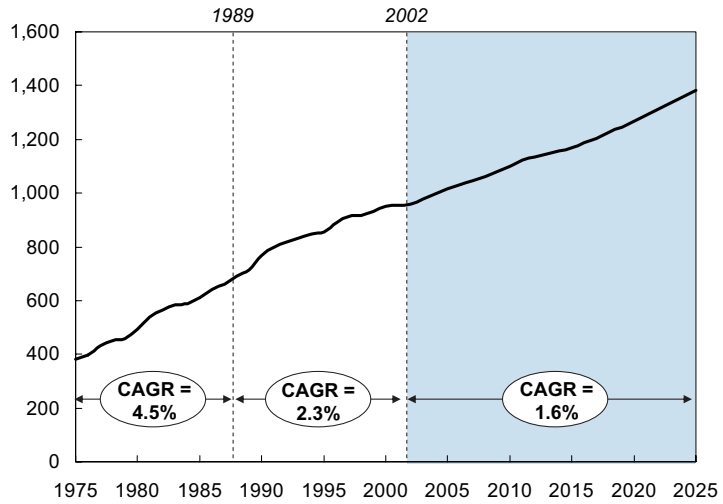


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 34

JAPAN – CAPITAL STOCK

¥ Trillion, 2000

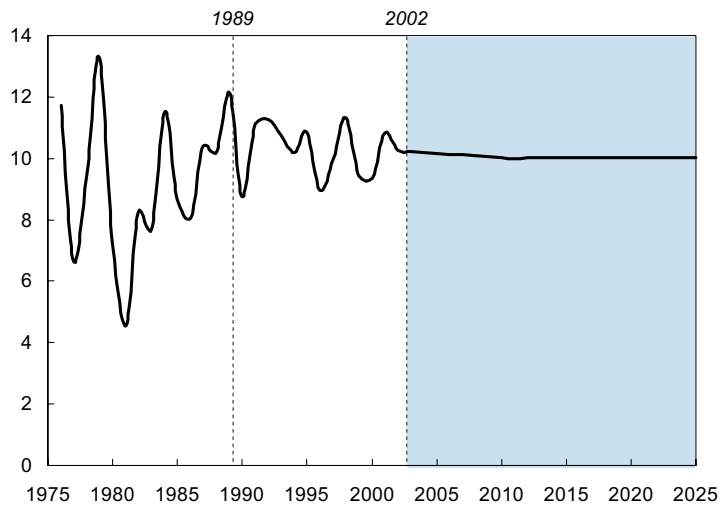


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 35

**JAPAN – PRIVATE SECTOR ECONOMIC DEPRECIATION
RELATIVE TO THE LAGGED CAPITAL STOCK**

Percent

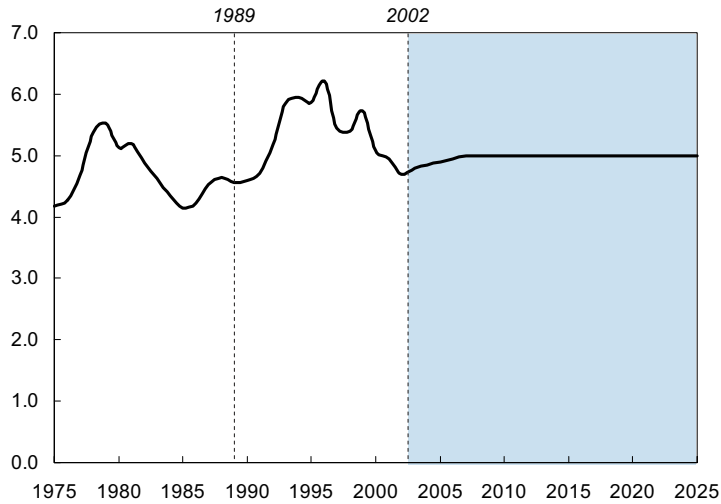


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 36

JAPAN – GOVERNMENT GROSS INVESTMENT RELATIVE TO POTENTIAL GDP

Percent



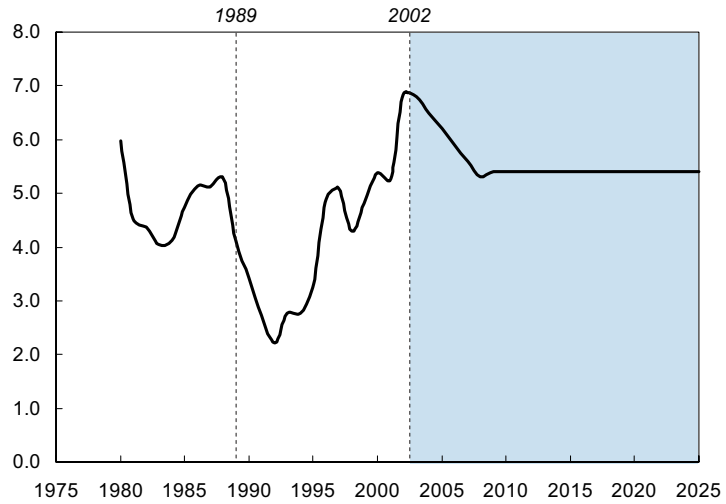
Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Projecting gross savings. We have a projection of net household savings. We assume that net corporate savings maintains its 2002 share of potential GDP, and that net government savings is neutral (i.e., the government budget is balanced).¹⁷ Depreciation for households and corporations is projected by assuming that it maintains a constant share of the lagged capital stock (exhibits 37-40).

¹⁷ This is a very conservative assumption, given the costs of supporting the aging population.

Exhibit 37

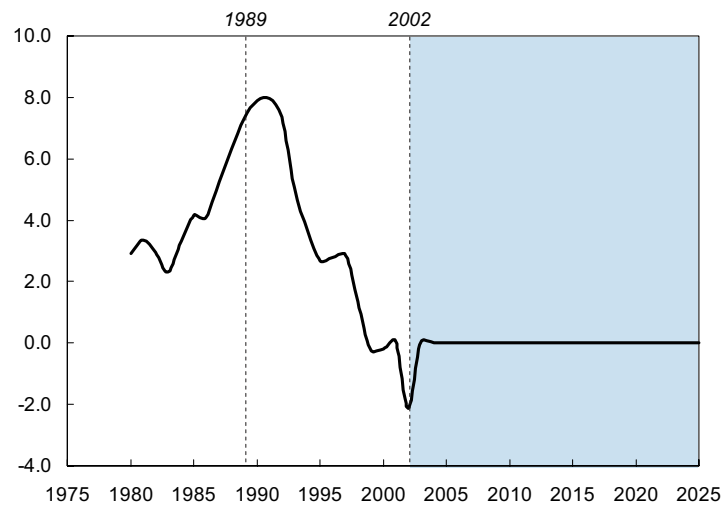
JAPAN – CORPORATE SAVINGS RELATIVE TO POTENTIAL GDP
Percent



Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 38

JAPAN – GOVERNMENT SAVINGS RELATIVE TO POTENTIAL GDP
Percent

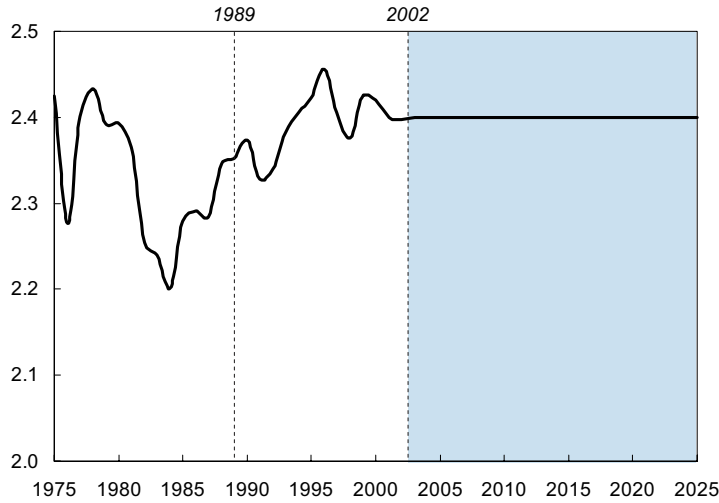


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 39

JAPAN – HOUSEHOLD DEPRECIATION RELATIVE TO LAGGED CAPITAL STOCK

Percent

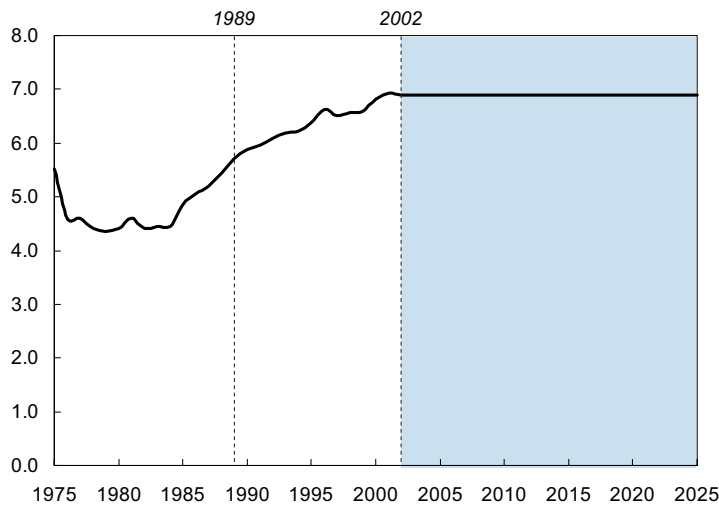


Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Exhibit 40

JAPAN – CORPORATE DEPRECIATION RELATIVE TO LAGGED CAPITAL STOCK

Percent



Source: ERSI; OECD Economic Outlook No. 75; National Institute of Population and Social Security Research, Japan; MGI analysis

Data Appendix

In this appendix, we describe the data sources used in our models. We have not attempted to be exhaustive, but rather to highlight the main data sources and procedures. This appendix has 5 country specific sections organized around five topics:

- **Demographic data:** Discusses the population and household data inputs
- **Micro-data:** Discusses the data used to estimate the life cycle curves
- **National accounts:** Discusses the key aggregated data series of income, consumption and savings
- **Assets and Liabilities:** Discusses the flow of funds data series we have used for assets, liabilities and financial asset appreciation
- **Data deflation and use of exchange rates:** Discusses the deflators used to present data in real terms and the conversion across exchange rates

US

Demographic data

Our population data series obtained from the US Census Bureau (2000 census). Population projections were obtained from Economy.com using U.S. census official projections.¹

¹ Official projections have not all been updated for consistency with the 2000 census. Economy.com performs these calculations.

Household projections by age group were estimated by applying average historical ratios of households to population by age group as published by the census. Projections of total households were obtained from Economy.com, based on U.S. census official projections.

Micro-data

The synthetic panel used to estimate the cohort specific income and spending life cycle curves was obtained from the Bureau of Labor Statistics (BLS) survey of consumer expenditure (CEX) over the years 1980-2000.

Until the 1970s, the CEX was collected every ten years. Since 1980, the CEX is being conducted annually, and is made up of two large and independent surveys, the Diary Survey and the Interview Survey. The former is deemed by the BLS to be better at measuring food and frequently purchased items, while the latter is considered more appropriate for other items. We used the both surveys to construct a more representative synthetic panel.²

We adopt the National Income and Product account (NIPA) definitions of income, consumption and savings when aggregating these items on the survey level. More specifically, income is defined as the after tax household income (disposable income), consumption accounts for total household spending including durables, education and rent, and saving is estimated as income minus consumption. Savings rate is defined as saving as a percent of household income.

The liabilities to income lifecycle curve was estimated based on The Federal Reserve Survey of Consumer Finance (SCF) 1995.

National accounts data

As mentioned in the Technical Note, we calibrate the aggregate levels of income and spending to the NIPA actual values. All the calibration equations in our model that used national accounting data are based on NIPA official publications.

Assets and liabilities aggregated data

Household balance sheet data was obtained from the June 2004 version of the Federal Reserve Flow of Funds Accounts (FFA) More specifically, we obtained the

² Orazio Attanasio (2004) constructed the synthetic panel that combined the diary and the interview surveys.

stock figures of household assets (financial and tangible) and liabilities from the households and non-profit balance sheet table (b100) and the flow figures from the table that deals with the change in net worth of households and non-profit (r100).

The annual Financial Asset Appreciation (FAA) values were calculated by subtracting the annual Net Acquisition of Financial Assets (NAFA) from the total annual change in households' financial assets. Thus, FAA rate is defined as annual FAA divided by the stock of financial assets in the previous year.

The projected series of real estate wealth, used to estimate the real estate wealth effect, was obtained from Economy.com.

Data deflation

All figures are presented in 2000 dollars. We used the Personal Consumption (PC) deflator from NIPA to convert nominal data into 2000 dollars.

JAPAN

Demographic data

Historical information and official projections of population, households and other demographic information were obtained from the National Institute of Population and Social Security Research, Japan.

Micro-data

The synthetic panel data used to estimate the cohort specific income, spending and liabilities lifecycle curves was obtained from the National Survey of Family Income and Expenditure conducted by the Statistics Bureau of Japan for every fifth year between 1974 and 1999. Since we required data for every fifth year between 1975 and 2000, we used the growth of the appropriate aggregate to move the available data forward one year.

We estimate after tax household income, spending, and liabilities for all households from the survey for the years that only published information on "2+" and single households. Implicit tax rates from workers households were used to calculate disposable income for all households. For years in which data

was not broken down for age groups older than 65, the distribution of later surveys as well as the actual distribution of households by age group were used to create estimates. Data for single person households is often not presented in five year age groups. Information from "2+" households as well the actual distribution of households by age group were in some cases used to estimate this finer level of distribution.

National accounts data

All national accounts data was obtained from the Economic and Social Research Institute (ESRI) in the Cabinet Office of the Government of Japan. Data from 1980 to 2003 was available according to the SNA93 standard. Growth rates from the SNA68 standard were used to extend the SNA93 data back to 1975. This national account data was used in all of our calibration equations (see the Technical Note).

Assets and liabilities aggregated data

All aggregate household asset and liability data was obtained from the Bank of Japan, Flow of Funds Accounts. Data from 1997 to 2003 was available according to the SNA93 standard. Growth rates from the SNA68 standard were used to extend the SNA93 data back to 1975.

Annual financial asset appreciation (FAA) is defined as the difference between net acquisition of financial assets and the annual change in the stock of households' financial assets. Thus, the rate of FAA is defined as annual FAA divided by the stock of financial assets in the previous year.

Data deflation

All figures are presented in 2000 Yen. We used the personal consumption deflator to convert nominal data into 2000 Yen. Data from 1980 to 2003 was available according to the SNA93 standard. Growth rates from the SNA68 standard were used to extend the SNA93 data back to 1975.

GERMANY

Demographic data

The population data series, both historical and projections, were obtained from Statistisches Bundesamt Deutschland (German Federal Statistical Office).

Historical household data series were obtained from German Federal Statistical Office and household projections from FERI (Financial and Economic Research International). Household projections by age group were calculated by applying average historical ratios of households to population as published by these two sources.

Micro-data

We obtained saving rate curves from Börsch-Supan (2001) based on Schnabel (1999). The income curve we use comes from Börsch-Supan (2003). The original data was averaged to match 10-year age groups of households. Savings are calculated as a product of income and saving rate at the level of household age group and then aggregated.

National accounts data

As mentioned in the Technical Note, we calibrate the aggregate levels of income and savings to the actual values as published in national accounts. We run a calibration over the 1991-2003 period for data consistency reasons (unified Germany). All the calibration equations in our model use national accounting data that is based on official publications from Deutsche Bundesbank and Statistisches Bundesamt Deutschland. German National Accounts are based on the European System of Accounts 1995 (ESA 95).

Assets and liabilities aggregated data

The reports of Deutsche Bundesbank were used as the prime data source for our historical series of households' balance sheets.

We obtain the annual Financial Asset Appreciation (FAA) rate by applying the same procedure used for the U.S. model

Data deflation

All figures are presented in 2000 euros. Exchange rates were obtained from Eurostat. The German deflator of private consumption for the historical period was acquired from Global Insight.

ITALY

Demographic data

Our population data series, both historical and projections, were obtained from "Istat" – Istituto Nazionale di Statistica (Italian National Institute of Statistics).

Historical and projected household data series were also obtained from Istat. Household projections by age group were calculated by applying average historical ratios of households to population as published by these two sources.

Micro-data

We obtained saving rate curves from private correspondence with Massimo Baldini. He provided us with an updated version of the saving rate curve published in Baldini, Mazzaferro, and Onofri (2002). The original data from Baldini was averaged to match 10-year age groups of households. The income curve we use is based on the Survey of Household Income and Wealth. The original data was averaged to match 10-year age groups of households. Savings are calculated as a product of income and saving rate at the level of household age group and then aggregated.

National accounts data

As mentioned in the Technical Note, we calibrate the aggregate levels of income and savings to the actual values as published in national accounts. We run a calibration over the 1986-2003 period for consistency reasons. All the calibration equations in our model use national accounting data that is based on official publications from OECD, Eurostat, and Istat. Italian National Accounts are based on the European System of Accounts 1995 (ESA 95).

Assets and liabilities aggregated data

The reports of Bank of Italy as well as proprietary data from McKinsey EFIC (European Financial Institutions Centre) were used as the prime data source for our historical series of households' balance sheets. Adjustments to historical data prior to 1995 were made to correct for changing Bank of Italy methodology and obtain comparable long time series.

We obtain the annual Financial Asset Appreciation (FAA) rate by applying the same procedure we used for the U.S. model

Data deflation

All figures are presented in 2000 euros. Exchange rates were obtained from Eurostat. The Italian deflator of private consumption for the historical period was acquired from Global Insight.

UK

Demographic data

Our population data series were obtained from the Office of National Statistics on the basis of the U.K. 2000 census. Population projections were obtained from the UK Government Actuary on the basis of UK census data.

We combined detailed data on population and households from different official sources to construct the historical and projected time series of households' number by 5 year age group. Household numbers were based on regional official data. The Office of the Deputy Prime Minister (OPDM) was the source for England and Wales and the Scottish Executive was the source for Scotland.

Micro-data

We obtained life cycle income, consumption, and saving flows from Banks and Rohwedder (2003). These curves were built on the basis of data collected through the Family Expenditures Survey.

The Family Expenditures Survey (FES) provides detailed information on characteristics, expenditures, and incomes of all members of approximately 7000 participating households. Even though the survey has been done annually

since 1961, Banks and Rohwedder used the 1974-1995 for consistency reasons.

National accounts data

As mentioned in the Technical Note, we calibrate the aggregate levels of income and spending to the national accounts actual values. All the calibration equations in our model that used national accounting data are based on the ONS Blue Book (through the UK StatBase). UK National Accounts are based on the European System of Accounts 1995 (ESA 95).

Assets and liabilities aggregated data

The Blue Book was used as the prime data source for our historical series of households' balance sheets. More specifically, we obtained the stock figures of assets (financial and tangible) and liabilities for the households and non profit institutions serving households. The flow figures were obtained from the UK Financial Accounts.

We obtain the annual Financial Asset Appreciation (FAA) rate by applying the same procedure used for the U.S. model

We obtained the detailed balance sheet items of UK households (i.e. the split of the aggregates) by merging two different – but partially overlapping – time series (from 1982-96 and 1987-current).

Data deflation

All figures are presented in 2000 British Pounds. The U.K. deflator of private consumption for the historical period was acquired from Global Insight.

Glossary

Cohort effects. *Cohort* effects refer to the differences in income levels, savings and borrowing behavior by birth *cohorts*. A *cohort* is a group of individuals born in a specific time frame (e.g., 1955-1960). We estimated *cohort-specific lifecycle* curves using *cohort fixed effects* and a *fifth-order polynomial* in age. As a result, cohort effects are responsible for shifts in the level, but not shape, of the lifecycle savings curve. The explanations for cohort effects are country-specific. For example, in Japan, younger cohorts are observed to save less and borrow more. There are a number of potential explanations for this, including younger generations' reliance on inheritances from older generations, and younger generations not experiencing the hardships (and therefore the propensity to save) as older generations. On the borrowing side, increased availability and social acceptance of consumer credit and mortgages could explain the increased borrowing levels of younger cohorts. Indeed, Japan's rapid development has created distinct "eras," leading to strong cohort effects, which are responsible for a significant portion of the observed decline in NFA for Japan.

Dissaving. Negative saving during the reference period which derives from the running down of assets or the incurrence of a liability in order to finance current consumption, current transfers or direct taxes.

Financial assets. Financial assets are *entities* over which ownership rights are enforced by institutional units, individually or collectively, and from which economic benefits may be derived by the owners by holding them, or using them over a period of time.

Financial asset appreciation (FAA). FAA represents the unrealized appreciation of existing financial assets divided by previous period's stock of financial assets; it captures appreciation for financial assets measured at market value in the flow of funds accounts (see "Technical Notes" for details). It is important to note that the absolute numbers quoted as "financial asset appreciation" are difficult to interpret because they are not equivalent to the real returns on household financial assets. Nevertheless, differences in this rate across countries can be used as a proxy for differences in actual returns.

Liabilities. Stock of household financial obligations including mortgages.

Liabilities-to-income ratio. Ratio of the stock of liabilities to disposable aftertax income.

Lifecycle effects (or "age effects"). Effects of aging on household savings (income and consumption) and liabilities. Two sub-effects drive the aggregated magnitude of the life cycle effects: the degree of population aging and the shape of the lifecycle curves.

Lifecycle savings curves. The "lifecycle hypothesis" indicates that as income changes with age, so too will savings and will follow a classic "hump-shaped" lifecycle curve. For the purposes of a net financial wealth accumulation model, the lifecycle effects are responsible for translating the demographic changes into changes in savings. As such, they play a central role in contributing to the results of the simulation – relatively "steep" curves (curves with a rapid decline in savings in old age) will amplify the age effects on savings, while relatively "flat" curves (curves with a moderate decline in savings in old age) will mute the age effects on savings. Lifecycle effects are driven by changes in income and consumption with age. The nature of these changes is highly country specific and related to local issues such as borrowing constraints, pension systems and cultural attitudes towards savings.

NAIRU. Acronym for "non-accelerating inflation rate of unemployment."

Net acquisition of financial assets. Acquisition (through purchase or transfer) minus disposal (through sale or transfer) of financial assets. Approximately equals savings plus the change in financial liabilities. Includes realized interest, dividends and capital gains that are saved as well as income saved from accumulating new liabilities

Net financial wealth. The value of all financial assets owned by an institutional unit less the value of all its outstanding liabilities.

Prime saver ratio. In terms of aging, the proportion of prime saving households in an economy (defined as the 20 year age-band of households with the maximum amount of flow savings per year in an economy) relative to elderly households (defined as households older than the prime saving households) is an important measure of the demographic impact on savings flows. It expresses the number of prime saving households "supporting" one elderly household.

Savings out of income. Disposable (aftertax) income less final consumption expenditure.

Wealth effect. The effect on household spending arising from a change in household wealth. Wealth effects are usually associated with changes in the value of financial assets (such as equities) and real estate.

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1.21.05
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