Thinking Ahead Institute

Global Pension Assets Study | 2022

The Thinking Ahead Institute

Formed in 2015, the Thinking Ahead Institute (TAI) is a global not-for-profit research and innovation group whose aim is to mobilise capital for a sustainable future. The Institute's members comprise asset owners, investment managers and other groups that are similarly motivated. It is an outgrowth of Willis Towers Watson Investments' Thinking Ahead Group and more research is available on its website.

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Executive summary

Overview and key findings

Overview

P22

The study covers 22 pension markets in the world (P22). They have pension assets of **USD 56,575 bn**

P22 markets

Australia, Brazil, Canada, Chile, China, Finland, France, Germany, Hong Kong, India, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, South Africa, South Korea, Spain, Switzerland, UK, US

P7

A deeper analysis is performed for the P7, with assets of **USD 52,169 bn**

P7 markets

Australia, Canada, Japan, Netherlands, Switzerland, UK, US

92%

of P22 assets are in the seven largest markets

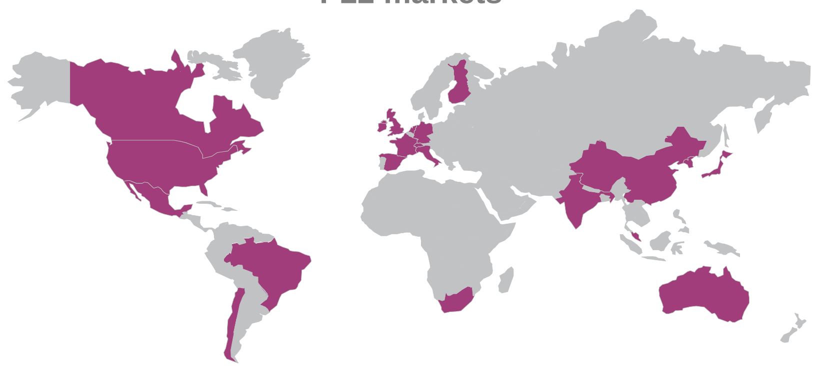
P195

Outside the P22 we estimate there is an additional USD 3-6 tn of pension assets

75%

The Gini coefficient of global pension assets reflecting the concentration in few markets

P22 markets



Overview of P22 markets

USD 56,575 bn Total P22 assets estimated to year-end 2021

P22

62%

The US is the largest pension market, representing 62% of total P22 assets

This is followed by UK (6.8%) and Japan (6.5%)

75%

The US, UK and Japan represent 75% of all pension assets

6.9%

%y/y growth in 2021 P22 assets from USD 52,937 bn the previous year

11.2%

Return for a 60% global equities / 40% global bonds reference portfolio as of December 2021 (in USD)

76% Ratio of pension assets to GDP of P22 markets

The P22 assets growth rate of US, UK and Japan were 10.3%, 11.9% and 11.9% respectively in 2021 (in USD)

It is important to note the impact of currency exchange rates when measuring the growth of pension assets in USD as, in many cases, the results vary significantly with growth rates in local currency terms

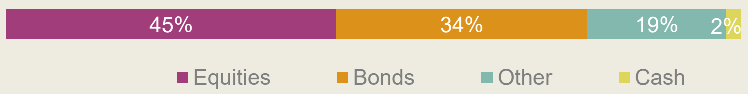
Overview of P7 markets

Asset allocation

US and Australia have higher allocations to equities than the rest of P7 markets

Japan, Netherlands and the UK have higher allocation to bonds

Average global asset allocation of the seven, largest markets at the end of 2021



The asset allocation pattern has changed since 2001. Allocation to equities has decreased while investments in other assets (alternatives, property) grew during the same period

DB/DC split

54%

% of DC assets represented in total P7 pension assets

9.0%

Growth rate of DC assets in the last ten years

4.8%

Growth rate of DB assets in the last ten years

DC is dominant in Australia and the US

Canada, historically only DB, is now showing an increasing allocation towards DC

P7

Five big themes for 2022

Accountability

Growing demands from regulation, stakeholders and society are calling for greater clarity on sustainability-related actions

It is time for the investments industry to translate net-zero announcements into concrete strategies. Greater accountability from asset owners will drive change in the rest of the investment value chain. The rise in benchmarking and standardisation will place a limit on greenwashing and overclaiming. Growing legal and regulatory pressures produce further reinforcement for accountability.

Benchmarks

Surging data and benchmarks support a better understanding of relative positioning and best practice

The market has had decades of developing disciplines in financial reporting; but only one decade of this development in non-financial reporting. There is huge scope for reporting and investing standards to become better disciplined, consistent and valuable but it will take a highly coordinated effort by the large global industry bodies, and stronger disciplines in organisations' reporting and accountability.

Collaboration

Investment organisations move from isolated models to versions that recognize the benefits of collaborations in the value chain

There is a big shift in priorities towards active ownership activities which is enabled with deeper asset owner / asset manager engagement and the rise of sustainability NGOs like PRI. Leadership styles are evolving, with *systems leadership* particularly well-placed to produce change in collective-action settings.

Diversity

Evolving working patterns, technology, workplace design call for a greater focus on diversity, equity and inclusion

The corporate environment is transforming. Financial institutions are taking more humanistic pathways to improve employee experience and provide meaningful work. The right culture enables diversity to thrive. Culture is emerging as a key differentiator between organisations with links to success in sustainability and broader resilience. Increasing attention is being given to *teamwork* as a value creation opportunity, by mobilising cognitive diversity, inclusion and trust.

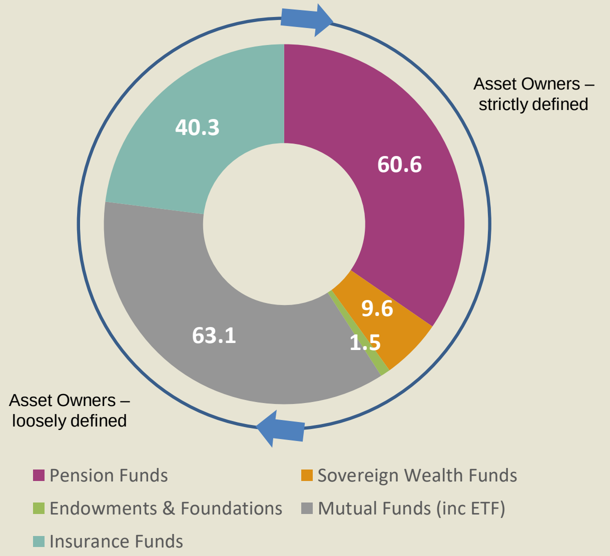
Evolving conventions

Investing is in transition from the narrower alpha and beta version to a sustainable value creation paradigm

The investment paradigm shift is most evident in *3D investing* in which goals go beyond risk and return to real-world impact. The revisions to risk frameworks are particularly significant with climate risk, net zero and systemic risk being centre-pieces. In addition, there is a new emphasis on building better beta, in which *universal-ownership theory* is a factor as well as *total portfolio thinking* and practice.

Global asset owner landscape

Asset owners globally control USD 175 trillion



Pension funds, sovereign wealth funds and endowments and foundations clearly qualify as asset owners, while mutual funds and insurance funds partly qualify

What is an asset owner?

An asset owner has four qualifying characteristics:

- Works directly for a defined group of beneficiaries/savers/investors as the manager of their assets in a fiduciary capacity under delegated responsibility
- Works with a sponsoring entity (government, government affiliate, company or not-for-profit)
- Works within explicit law and possesses an implicit societal license to operate because of its societal trust and legitimacy
- Delivers mission-specific outcomes to beneficiaries and stakeholders in the form of various payments or benefits into the future

Read more about asset owners

The Asset Owner of Tomorrow

Provides insight into the complexity of being an asset owner today.

The AO 100 study

The study provides an analysis of the 100 largest asset owners in the market - the most influential capital on the planet

Key findings: Last 20 years of global pension assets

#1 Market
Australia

The most successful pensions market can be found in Australia, featuring 20-year pension asset growth of 11.3% per annum, in USD terms. The critical features in this success have been government-mandated pension contributions, a competitive institutional model and the dominance of DC

#1 Pension design
Defined contribution

The 20-year growth of DC in the P7 has been 7.8% per annum relative to 4.1% per annum for DB, in USD terms. DC has worked better for employers who have had declining appetite for taking pension risk during this 20-year period

#1 Asset class
Private assets

The asset allocation to real estate, private equity and infrastructure in the 20-year period has moved from about 7% to above 26%. Alternatives have been attractive for return reasons, offsetting their governance difficulties

#1 Meme
Governance

The governance of pension funds has been a growing source of attention fanned by successive industry reviews – ERISA in the US; Myners in the UK; Royal Commission and Productivity Commission in Australia. Pension governance is a lot stronger than 20 years ago

#1 Missed opportunity
Stewardship

The 20-year story is one of missing the opportunity to influence and mitigate corporate misalignments – like executive pay, and other poor leadership and boardroom practices

#1 No show
Technology

The technology impacts on pension funds have been surprisingly light as evidenced by legacy systems that rely heavily on spreadsheets. The prioritisation of technological innovation hasn't changed much over the last 20 years

10 key sustainability issues for the next 10 years

1. Halving of emissions by 2030	The 2030 target demands a rapid transformation of the investments landscape – at a scale which the industry has rarely experienced before. This transition will be challenging and resource intensive. Organisations are trying to transform their business, investment and people models to transition to a low-carbon economy. Those organisations which adopt a systems-leadership mindset, champion culture and technology, and emphasise collaboration stand a chance at success. But quite a large number of organisations will not be able to achieve the required change.
2. Rise in S of ESG	Organisations recognise that the transition to a sustainable future is more than just achieving net-zero targets, it is about having a positive impact on the society in which they operate. In order to guarantee this social licence to operate, organisations are increasingly advocating for labour and human rights; ensuring minimum wages in their supply chain; improving human capital; and promoting diversity and inclusion.
3. Bigger impact from evolved regulation and inevitable policy response	The regulatory burden is expected to get heavier, particularly around climate-related disclosures and increased scrutiny on financial institutions' climate actions. The inevitable policy response refers to the tightening grip of public policy because carbon emissions are potentially not being contained in a timely manner. Organisations should build monetary means, people resources and expertise to successfully manage these risks.
4. Fiduciary duty evolves	The historic interpretation of fiduciary duty (FD) was all about the financial materiality and largely precluded non-financial considerations. The race to net zero is stretching the window of interpretation. With beneficiaries demanding decent investment returns and a more sustainable future, the investment industry currently finds itself in a difficult space, caught between the progressive views of society (its customers) and the lagging interpretations of FD. We expect the interpretation and implementation of FD to undergo increased scrutiny in this decade.
5. Biodiversity loss becomes important	Conserving land and sea ecosystems improves the capacity to mitigate and adapt to climate change. It also helps manage the social impacts from the transition – supporting the most vulnerable sections of society. We expect biodiversity considerations to move up the list of priorities for governments, civil society and the financial industry. Capital providers can play an important role in driving greener, more sustainable solutions.

Executive summary

10 key sustainability issues for the next 10 years

6. Stewardship and engagement	Engagement activities enable organisations to have a real world impact as they decarbonise their portfolios or businesses, but they can be resource-heavy endeavours. Outsourcing is a viable option for budget constrained organisations. We expect third-party provider strategies to come under growing scrutiny. Emerging standards and better data have led to better reporting on engagement activities and have increased accountability in the industry.
7. Culture and diversity make a difference	Net-zero and multi-stakeholder principles are supporting stronger values and more principled organisations that have a bigger purpose. Investment organisations increasingly differentiate themselves by referencing their values and culture. New measurement, models and methods continue to emerge and move the needle on culture. Diversity, equity and inclusion plays a key part in the drive for more emotional intelligence in organisations' workforces and in investment portfolios.
8. The rise of universal ownership	Pension funds boards are seeking to redefine their investment models aligned with systems thinking, by adopting the concepts of Total Portfolio Approach, 3D investing and Universal Ownership (UO). Building a hyper-integrated mindset will help them safeguard the climate system, protect the financial system, support the goals of sustainable growth, and produce better outcomes for the global economy. UO doesn't apply to only large asset owners with long-term goals. Asset owners of any size can choose to adopt certain UO principles into their strategies.
9. Technology will be an important lever	Technology will challenge existing business models and people models, requiring considerable and accelerating adaptation. The people-plus-technology model should ultimately emerge as dominant. Technology enhanced engagement can play an important role in a DC-dominant world. Technology will also play an increasing part in portfolio construction. And blockchain technology and decentralized finance will be extremely significant in reducing frictions in the system.
10. Net-zero transition is multifaceted	The journey to net zero should be a just transition, where the most vulnerable sections of global society should not bear a higher cost of this transition. Emerging markets will struggle to achieve a net-zero future without assistance from their developed country counterparts. There is no net-zero without emerging markets. The conservation of biodiversity also plays an important role in reaching a low-carbon world. And anti-microbial resistance will be a growing issue.

The investment macro: Our top five issues

Alternatives

Asset owners are expected to face lower-for-longer interest rates and returns over the medium-term, which have raised solvency concerns and prompted funds to increase allocations to alternative assets.

As funds attempt to define and access the asset classes of tomorrow[1], alternatives will play an important role in future portfolios.

Emerging markets

The financial industry is developing instruments and strategies to help capital providers better access growing opportunities in emerging markets.

Asset owners who adopt Total Portfolio Approach will open avenues to access emerging market assets more efficiently and provide capital to the much needed energy transition in these economies.

Liability-driven investing

Liability-driven investing (LDI) has come a long way since its days of exclusively finding bonds and swaps to exactly match future liabilities.

With rising market liquidity, sophisticated analytics and lower barrier to entry, schemes are employing more holistic strategies to match future liabilities. Funds are incorporating a wider range of assets to better manage risk-return profiles.

Inflation

Inflation rose to its highest level in three decades following extraordinary stimulus measures in response to the pandemic, especially in developed markets.

Inflation risks are expected to be tilted towards inflation above central bank targets over the next two years, but are expected to subside after.

Stimulus is expected to gradually unwind from 2022 onwards.

Lifecycle assets for DC

DC schemes continue to focus on designing better lifecycle strategies.

The ideal lifecycle portfolio is one where the asset composition shifts to best suit an individual's changing risk tolerance and time horizon i.e. higher exposure to growth assets for younger members with progressive switches into secure income assets.

[1] Asset classes of tomorrow

Section 1 | Asset size

P22

Asset sizes

Market	Total Estimated Assets 2021 (USD billion)	Assets/GDP ratio (%)[7]
Netherlands	2,149	213.3%
Australia	2,777	172.4%
Canada	3,420	169.6%
Switzerland[1]	1,271	156.7%
US[2]	35,011	152.6%
UK	3,858	124.1%
Finland	293	99.1%
Malaysia	278	74.8%
Japan[3]	3,683	72.2%
Chile	207	62.6%
Hong Kong	221	59.8%
South Korea	1,004	55.1%
South Africa	223	53.8%
Ireland	195	37.7%
Mexico	266	20.7%
Germany[4]	542	12.8%
Brazil[5]	200	12.1%
Italy	242	11.4%
India	171	5.8%
France	154	5.2%
Spain	44	3.1%
China[6]	365	2.2%
Total	56,575	76.3%

Source: Thinking Ahead Institute and secondary sources

[1] Only includes autonomous pension funds. Does not consider insurance companies assets.
[2] Includes IRAs.
[3] Does not include the unfunded benefit obligation of corporate pension plans (account receivables).
[4] Only includes pension assets for company pension schemes.
[5] Only includes pension assets from closed entities.
[6] Only includes Enterprise Annuity assets.
[7] The Assets/GDP ratio for individual markets are calculated in local currency terms, and the total Assets/GDP ratio is calculated in USD.

Pension asset growth versus market returns

Period to end December 2021	Total assets growth in USD – All countries Annualised	Total assets growth in USD – P7 countries Annualised	Reference portfolio return 60% Global Equity / 40% Global Debt annualised
1-year	6.9%	7.6%	11.2%
5-year	8.6%	8.7%	10.5%
10-year	6.8%	6.8%	8.5%
20-year	6.8%	6.5%	7.1%

Total pension asset growth has been quite closely matched to global public market equity and bond returns over the last 20 years.

The reference portfolio returns are a simple proxy for market returns used by some funds – in practice funds seek to outperform this return by adopting different mixes of asset to the 60/40 split in the reference portfolio. In particular, funds have large alternative assets exposures.

Pension asset growth includes net cash flows – contributions in and benefits out. Most calculations suggest that this amount has been quite small relative to the size of assets and market growth.

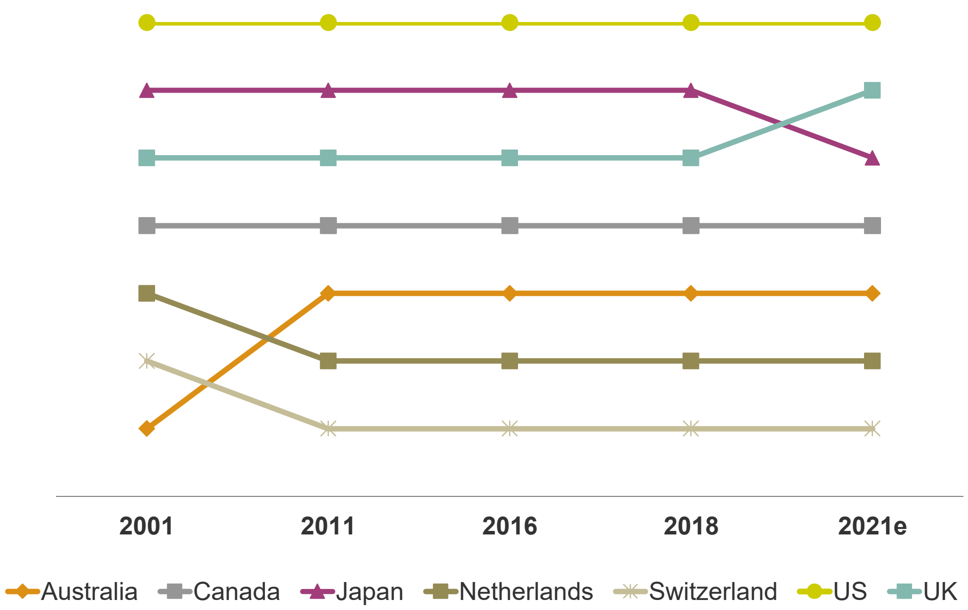
Source: Thinking Ahead Institute and secondary sources
Growth in all countries not adjusted for the change from using P11 to P22 over the period
Figures for P7 are like-for-like in the 7 countries selected

Reference Portfolio used by some pension funds as performance comparator for an averagely sized risk appetite
The Reference Portfolio is rebalanced annually
Source: MSCI ACWI Index ; Bloomberg Barclays Global Aggregate Bond Index
All calculations in US dollars

Evolution of P7 ranking: USD bn assets

P7

UK Market reaches #2 by overtaking Japan in 2021



Evolution of assets under management (USD bn) over the past two decades

2001	
US	9,723
Japan	2,116
UK	1,054
Canada	809
Netherlands	433
Switzerland	276
Australia	270

2011	
US	15,312
Japan	3,709
UK	2,489
Canada	2,270
Australia	1,414
Netherlands	1,076
Switzerland	666

2021e	
US	35,011
UK	3,858
Japan	3,683
Canada	3,420
Australia	2,777
Netherlands	2,149
Switzerland	1,271

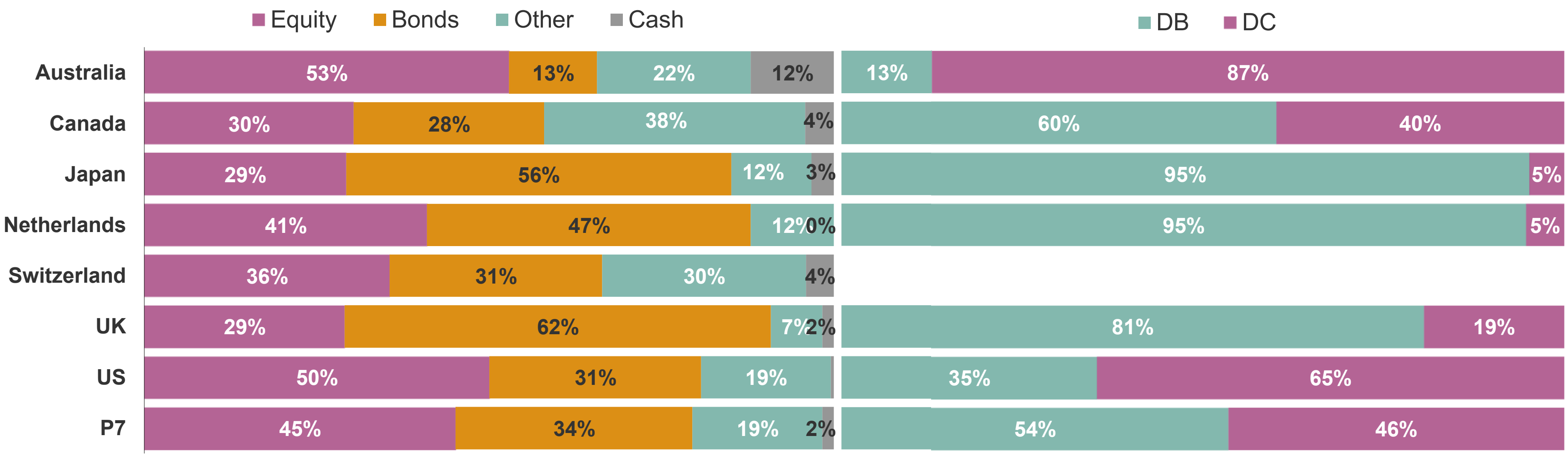
Source: Thinking Ahead Institute and secondary sources

Asset allocation and DB/DC split

P7

Asset allocation 2021

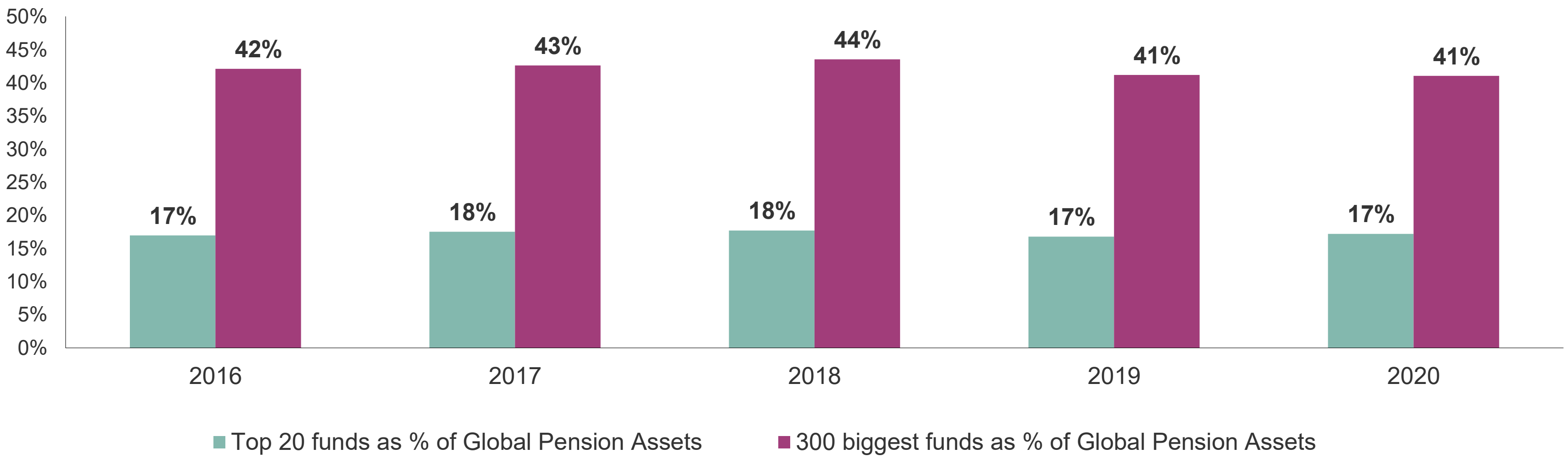
DB/DC split 2021*



Source: Thinking Ahead Institute and secondary sources

Numbers may not add up 100% due to rounding
*The majority of pension fund assets in Switzerland are DC and take the form of cash balance plans, whereby the plan sponsor shares the investment risk and the assets are pooled. Pure DC assets have only recently been introduced in Switzerland and, although they have seen strong growth, they are not yet large enough to justify inclusion in this analysis.
˙In January 2017, the UK's Office for National Statistics stated that the figures previously disclosed for DC entitlements were significantly overestimated. As a result there is a significant decrease in UK DC pension assets when compared to the previous editions of this study. This change has a very limited impact on the P7 DC assets; in the order of a one percent reduction.
˙Canadian DC assets now include individual accounts. Historical figures have been restated.

Concentration of assets in top 300 pension funds

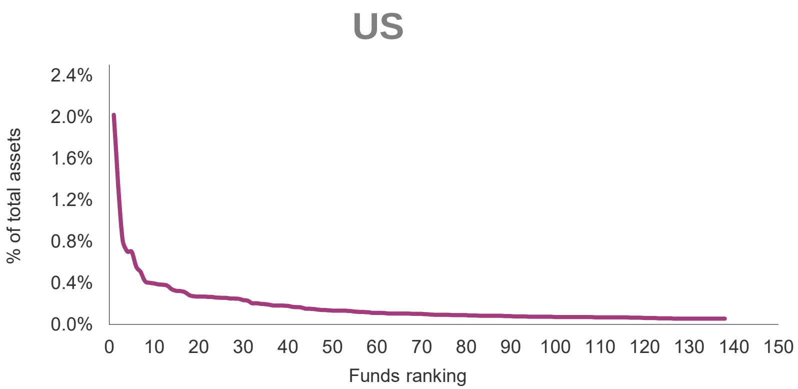


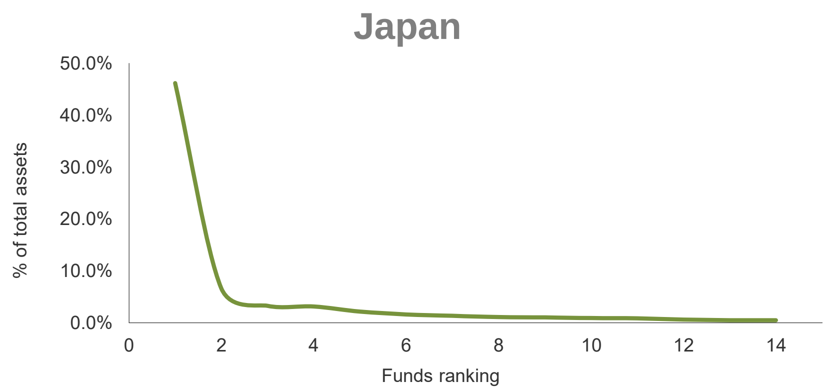
Source: Thinking Ahead Institute and secondary sources

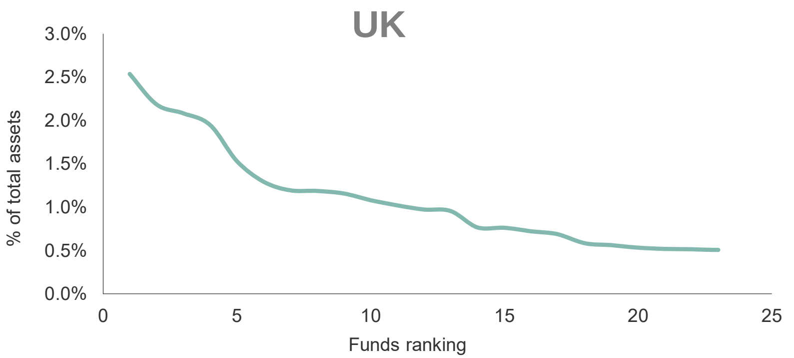
The annual Pension & Investments / Thinking Ahead Institute world 300 Analysis ranks the world's largest 300 pension funds by assets.

The assets of the top 300 pension funds represent 41% of the total global pension assets and the top 20 pension funds account for 17% of total global pension assets.

Relative size of top pension funds by market







The top ten US pension funds represent 7.8% of total US assets.

The top ten Japanese pension funds account for 67.4% of total Japanese assets. This is because the Government Pension Investment Fund represents 46.2% of Japan's pension assets.

In the UK, the top ten pension funds represent 16.2% of the total UK pension assets. Among them, 12.5% are private pension funds and the 3.7% are state-sponsored pension funds.

Source: Thinking Ahead Institute and secondary sources

P22

A decade of growth

In 2021 global pension assets are estimated to have reached USD 56,575 billion, an increase of slightly under 7% in a year.

The US is the largest pension market followed, at significant distance, by the UK and Japan. Together, these three markets account for over 75% of all pension assets.

Market	Total assets 2011 (USD billion)	Total assets 2021e (USD billion)	10-year CAGR (USD) [1]
Australia	1,414	2,777	7.0%
Brazil	323	200	-4.7%
Canada	2,270	3,420	4.2%
Chile	136	207	4.3%
China	56	365	20.6%
Finland	175	293	5.3%
France	140	154	0.9%
Germany	447	542	1.9%
Hong Kong	90	221	9.4%
India	78	171	8.2%
Ireland	94	195	7.6%
Italy	117	242	7.5%
Japan	3,709	3,683	-0.1%
Malaysia	-	278	-
Mexico	142	266	6.5%
Netherlands	1,076	2,149	7.2%
South Africa	220	223	0.2%
South Korea	318	1,004	12.2%
Spain	40	44	0.9%
Switzerland	666	1,271	6.7%
UK	2,489	3,858	4.5%
US	15,312	35,011	8.6%
Total	29,312	56,575	6.7%[1]

Source: Thinking Ahead Institute and secondary source.

[1] 10 year growth rates are not available for Malaysia
Total assets are in USD billion
CAGR is is USD.

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Relative weights of markets

In the past decade, the weights of Australia, China, Hong Kong, Netherlands, South Korea and US have increased relative to other markets in the study.

While the weighting of India, Ireland, Italy, Mexico and Spain has remained unchanged.

Relative weights of each market

Market	2010	2021e
Australia	4.8%	4.9%
Brazil	1.1%	0.4%
Canada[1]	7.7%	6.0%
Chile	0.5%	0.4%
China	0.2%	0.6%
Finland	0.6%	0.5%
France[1]	0.5%	0.3%
Germany	1.5%	1.0%
Hong Kong	0.3%	0.4%
India	0.3%	0.3%
Ireland	0.3%	0.3%
Italy	0.4%	0.4%
Japan	12.7%	6.5%
Malaysia[2]	-	0.5%
Mexico	0.5%	0.5%
Netherlands	3.7%	3.8%
South Africa	0.7%	0.4%
South Korea	1.1%	1.8%
Spain	0.1%	0.1%
Switzerland	2.3%	2.2%
UK[1]	8.5%	6.8%
US	52.2%	61.9%
Total	100.0%	100.0%

[1] There was a methodology change for France and Canada in 2008/2009 and a methodology change for UK in 2012 and 2016.

[2] 2010 figures for Malaysia are not available.

Source: Thinking Ahead Institute and secondary sources

P22

Growth rates in USD

During the last ten years, the fastest growing pension markets have been China (20.6%), South Korea (12.2%) and Hong Kong (9.4%), in USD terms.

Brazil, Japan and South Africa have had the slowest rates of growth in USD terms since 2011 (-4.7%, -0.1% and 0.2% respectively).

Growth rates to 2021e (USD)

Market	1-year CAGR[2]	5 -year CAGR	10-year CAGR
Australia[3]	11.6%	9.3%	7.0%
Brazil	-14.2%	-4.1%	-4.7%
Canada[1]	8.8%	7.5%	4.2%
Chile	-2.8%	3.6%	4.3%
China	5.9%	18.0%	20.6%
Finland	6.3%	7.9%	5.3%
France[1]	-0.3%	1.7%	0.9%
Germany	-2.7%	5.9%	1.9%
Hong Kong	5.7%	10.2%	9.4%
India	1.3%	8.9%	8.2%
Ireland	-1.5%	8.1%	7.6%
Italy	-0.6%	8.7%	7.5%
Japan	-1.1%	5.8%	-0.1%
Malaysia[4]	-1.7%	7.6%	-
Mexico	0.3%	11.1%	6.5%
Netherlands	2.3%	9.6%	7.2%
South Africa	3.1%	1.8%	0.2%
South Korea	-2.6%	10.3%	12.2%
Spain	0.4%	3.3%	0.9%
Switzerland	5.5%	9.5%	6.7%
UK[1]	7.7%	7.7%	4.5%
US	8.5%	9.2%	8.6%
Average	1.8%	7.3%	5.7%

Source: Thinking Ahead Institute and secondary sources

[1] There was a methodology change for France and Canada in 2008/2009 and a methodology change for UK in 2012 and 2016.
[2] 1-year growth rate does not capture net contributions in markets
[3] Existing contribution rates as well as the fact that retirees can cash in all their benefits (i.e. no compulsion to lock in or annuities), can have a significant impact on expected asset growth in Australia.
[4] 10-year growth rates are not available for Malaysia.

Growth rates in local currency

P22

Estimated five-year growth rates range from -0.3% pa in France to 16.0% pa in China.

During the past ten years China's pension assets have grown the fastest, followed by those of South Korea and India, when calculated in local currency.

Growth rates to 2021e (LC)

Market	1-year CAGR[2]	5 -year CAGR	10-year CAGR
Australia	17.9%	10.5%	10.7%
Brazil	-6.9%	6.8%	6.5%
Canada[1]	8.8%	6.4%	6.6%
Chile	15.8%	8.7%	9.6%
China	3.4%	16.0%	20.6%
Finland	15.3%	6.4%	6.7%
France[1]	8.1%	0.3%	2.3%
Germany	5.5%	4.4%	3.3%
Hong Kong	6.3%	10.3%	9.4%
India	2.9%	11.0%	11.7%
Ireland	6.8%	6.5%	9.1%
Italy	7.8%	7.1%	9.0%
Japan	10.3%	5.5%	4.0%
Malaysia[3]	1.7%	6.0%	-
Mexico	3.6%	11.0%	10.7%
Netherlands	10.9%	8.0%	8.6%
South Africa	12.2%	5.1%	7.2%
South Korea	6.4%	10.0%	12.5%
Spain	8.9%	1.9%	2.3%
Switzerland	9.3%	7.2%	6.4%
UK[1]	8.4%	5.7%	5.9%
US	8.5%	9.2%	8.6%
Average	7.8%	7.4%	8.2%

Source: Thinking Ahead Institute and secondary sources

[1] There was a methodology change for France and Canada in 2008/2009 and a methodology change for UK in 2012 and 2016.
[2] 1-year growth rate does not capture net contributions in markets
[3] 10 year growth rates are not available Malaysia.

P22

Currency impact

In 2021, currencies that depreciated the most against the USD were the Chilean Peso (-16.0%), the Japanese Yen (-10.3%), the South Korean Won (-8.5%) and the South African Rand (-8.1%).

On the other hand, only currency that rose against the USD was the Chinese Yuan (2.4%).

Over longer periods, there has been a trend of strengthening USD relative to other major currencies. During the last 10 years, the only currency that has appreciated against the USD was the Swiss Franc (0.3% pa).

Variation in FX rates against USD)

Market	1-year	5-year CAGR	10-year CAGR
Australia	-5.3%	-1.1%	-3.3%
Brazil	-7.9%	-10.2%	-10.5%
Canada	0.0%	1.1%	-2.2%
Chile	-16.0%	-4.8%	-4.8%
China	2.4%	1.7%	0.0%
Finland	-7.8%	1.5%	-1.3%
France	-7.8%	1.5%	-1.3%
Germany	-7.8%	1.5%	-1.3%
Hong Kong	-0.6%	-0.1%	0.0%
India	-1.6%	-1.8%	-3.1%
Ireland	-7.8%	1.5%	-1.3%
Italy	-7.8%	1.5%	-1.3%
Japan	-10.3%	0.3%	-3.9%
Malaysia[1]	-3.3%	1.4%	-
Mexico	-3.2%	0.1%	-3.8%
Netherlands	-7.8%	1.5%	-1.3%
South Africa	-8.1%	-3.1%	-6.5%
South Korea	-8.5%	0.3%	-0.3%
Spain	-7.8%	1.5%	-1.3%
Switzerland	-3.5%	2.2%	0.3%
UK	-0.6%	1.9%	-1.4%

[1] 10-year growth rates are not available Malaysia.

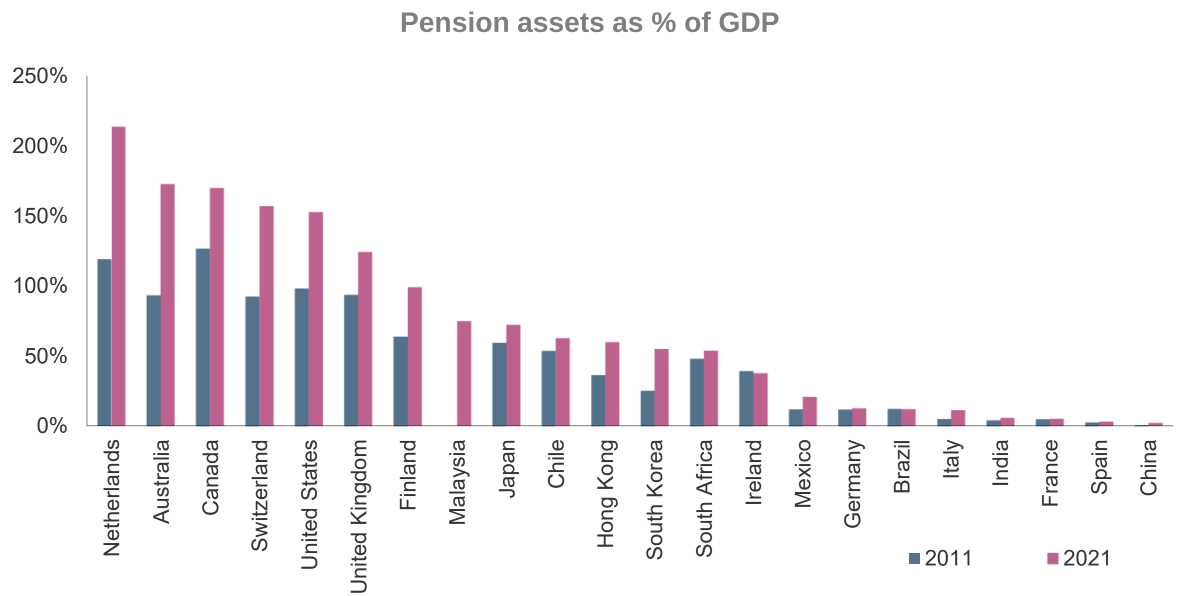
Source: Thinking Ahead Institute and secondary sources

Pension assets vs GDP in local currency

P22

Pension assets as % of GDP

Market	2011	2021e	Change[1]
Australia	93%	172%	79%
Brazil	12%	12%	0%
Canada	127%	170%	43%
Chile	54%	63%	9%
China	1%	2%	1%
Finland	64%	99%	35%
France	5%	5%	0%
Germany	12%	13%	1%
Hong Kong	36%	60%	23%
India	4%	6%	2%
Ireland	39%	38%	-1%
Italy	5%	11%	6%
Japan	60%	72%	13%
Malaysia[2]	0%	75%	-
Mexico	12%	21%	9%
Netherlands	119%	213%	94%
South Africa	48%	54%	6%
South Korea	25%	55%	30%
Spain	3%	3%	0%
Switzerland	92%	157%	64%
UK	94%	124%	31%
US	98%	153%	54%



[1] In percentage points, figures are rounded.
[2] 2011 figures are not available for Malaysia

Source: Thinking Ahead Institute and secondary sources

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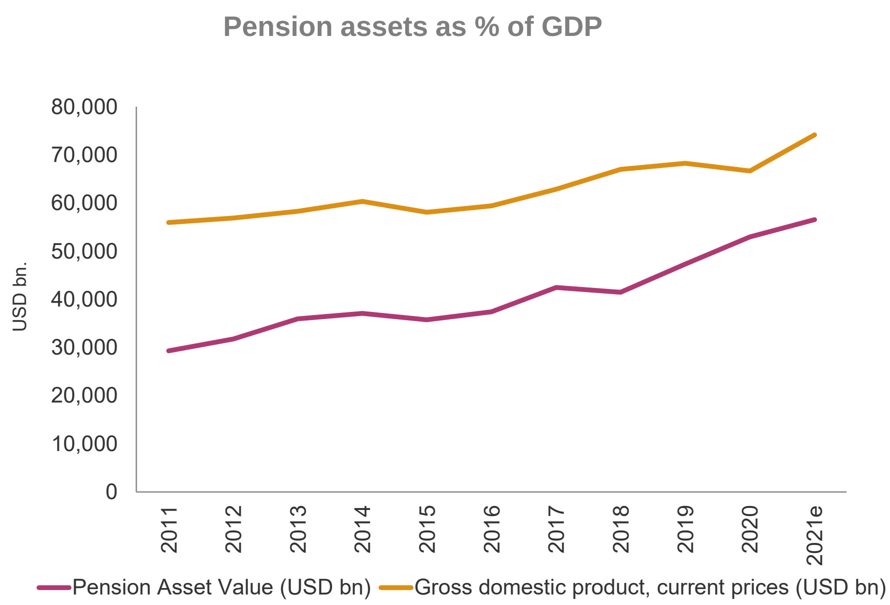
Pension assets vs GDP in USD

P22

The total pension assets to GDP ratio reached 76.3% at the end of 2021.

The Netherlands has the highest ratio of pension assets to GDP (213%) followed by Australia (172%), Canada (170%), Switzerland (157%), the US (153%) and the UK (124%).

During the last ten years[1], the pension assets to GDP ratio increased the most in Netherlands, Australia, Switzerland and the US (94, 79, 64 and 54 percentage points respectively). It declined only in Ireland (1 percentage point).



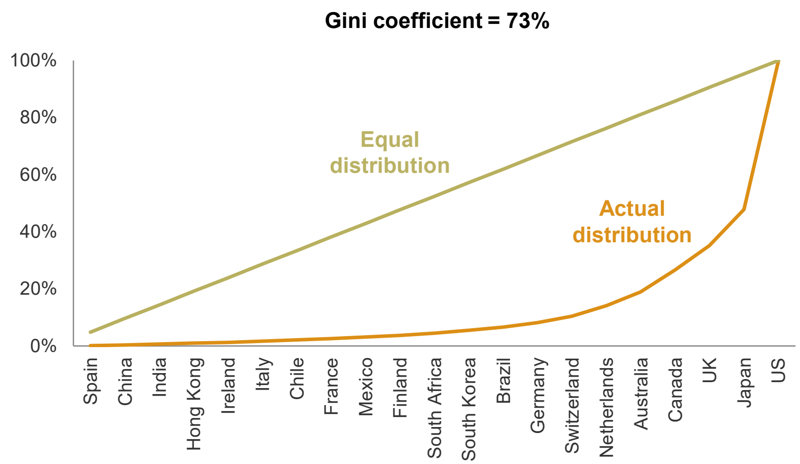
Source: Thinking Ahead Institute and secondary sources

[1] 2011 figures are not available for Malaysia

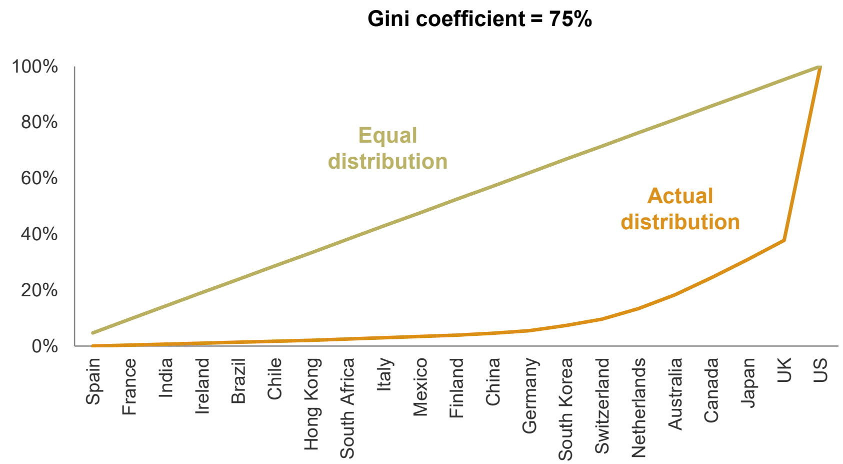
P22

Pension market concentration

Lorenz curve for pension assets in 2011



Lorenz curve for pension assets in 2021



The Gini coefficient of global pension assets in 2021 was 75.3%. Pension assets are still concentrated in relatively few markets.

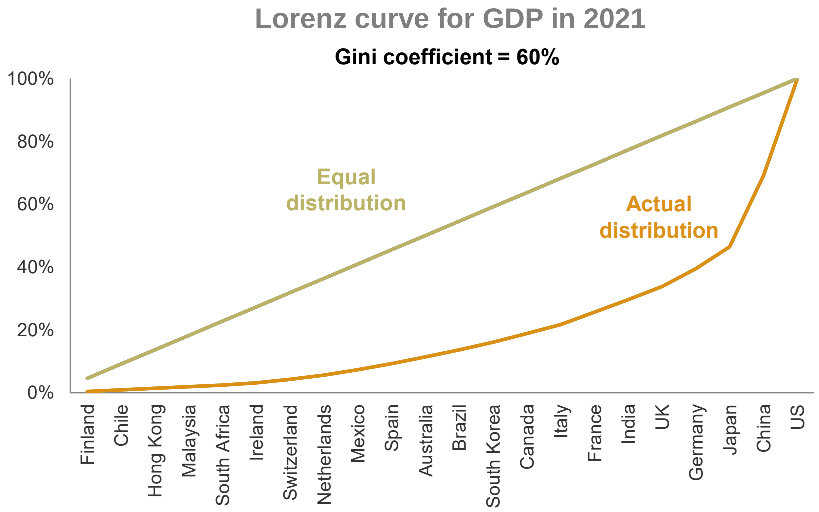
The global pension market has remained largely unchanged over the last 10 years. The Gini coefficient was 73.3% in 2011.

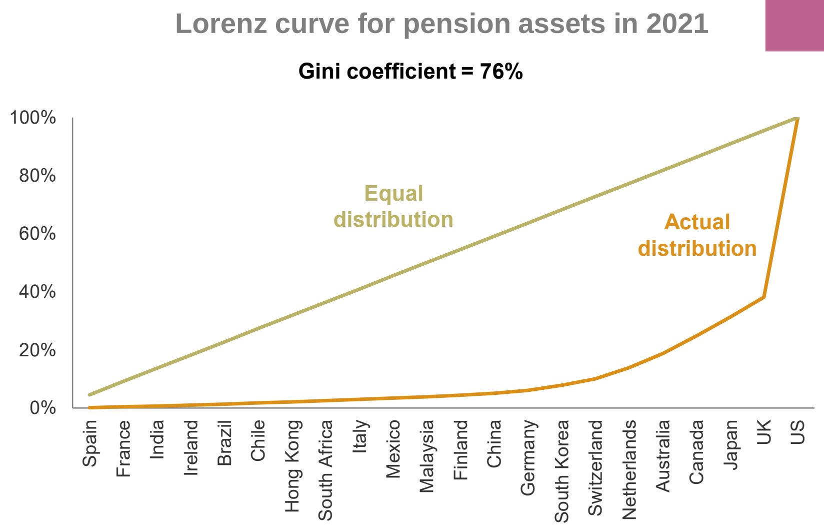
Source: Thinking Ahead Institute and secondary sources

Note: Malaysia are not included in the analysis.

P22

Compared with GDP





The lower Gini coefficient for GDP (59.9%) relative to pension market size (75.7%) suggests that the global pension asset pool is more concentrated than what would be suggested by their GDP levels. This could be explained by a number of factors including but not limited to a more developed capital market and a more mature pension system within the larger markets.

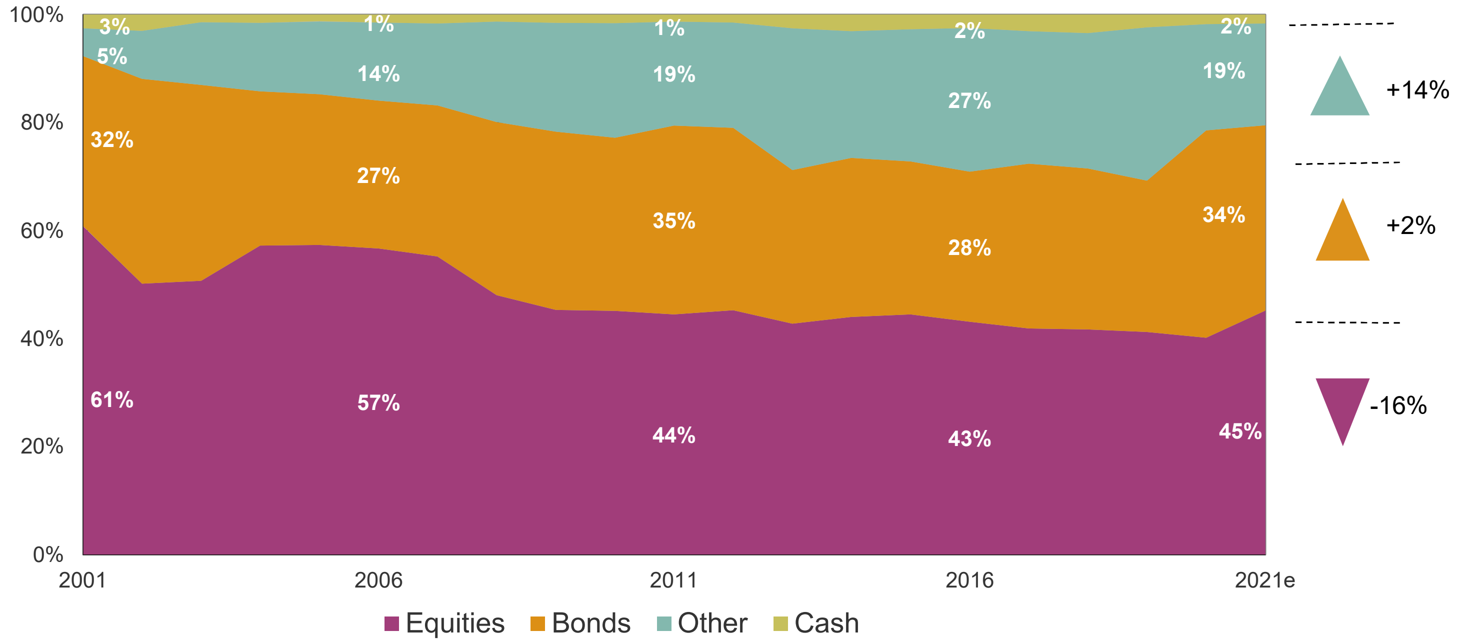
As a comparison, the Gini coefficient for GDP has increased over the last 10 years, from 54.6% in 2011 to 59.9% in 2021.

Source: Thinking Ahead Institute and secondary sources

Section 2 | Asset Allocation

Aggregate P7 asset allocation from 2001 to 2021

P7

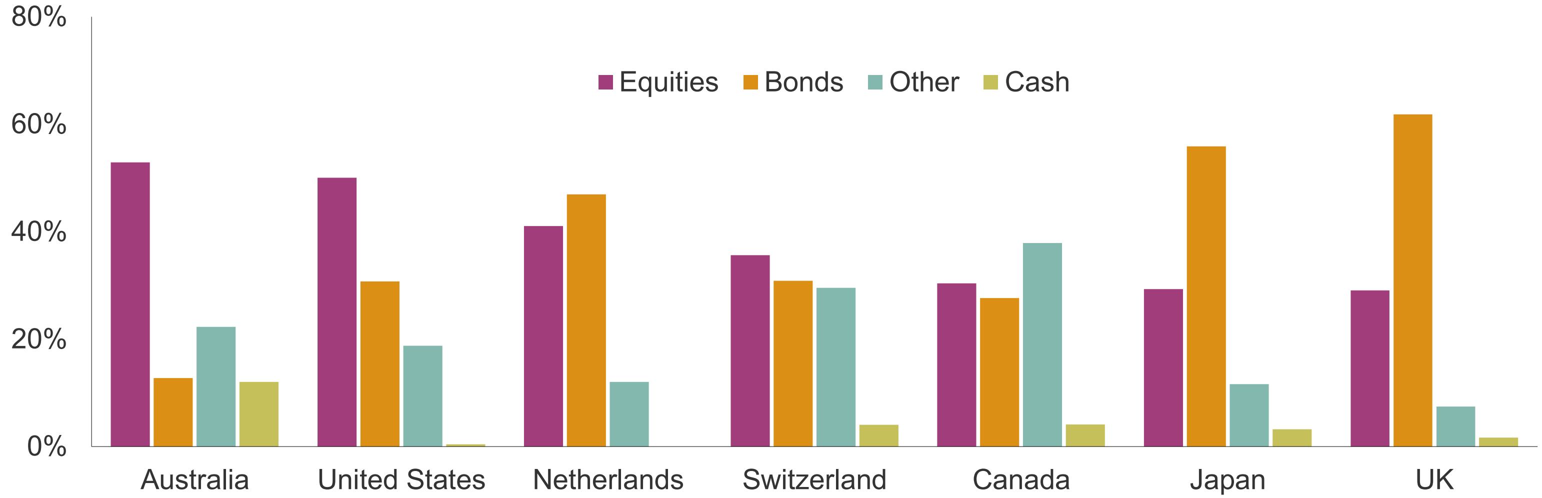


Since 2001 equity allocations have shrunk from 61% to 45% while the allocation to bonds slightly increased from 32% to 34%. Allocation to other assets (real estate and other alternatives) has increased from 5% in 2001 to an estimated 19% at the end of 2021. Allocation to cash instruments declined slightly from 3% to 2%.

Note: Numbers may not add up 100% due to rounding
Source: Thinking Ahead Institute and secondary sources

P7

P7 asset allocation in 2021



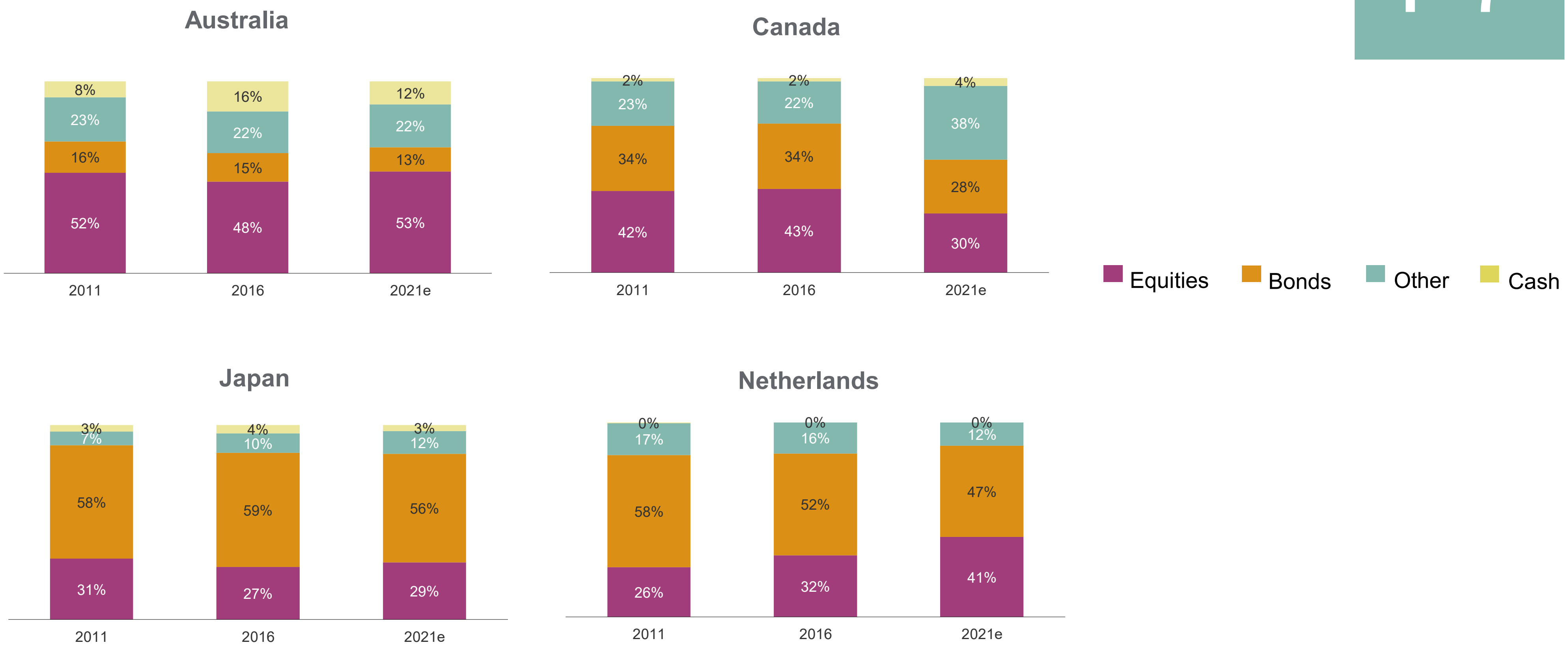
In 2021, Australia and the US continued to have above average equity allocations.

The Netherlands, UK and Japan have above average exposure to bonds, while Switzerland has the most even allocations across equities, bonds and other assets.

Note: Numbers may not add up 100% due to rounding
Source: Thinking Ahead Institute and secondary sources

P7 asset allocation over the last ten years (1)

P7



Note: Numbers may not add up 100% due to rounding
Source: Thinking Ahead Institute and secondary sources

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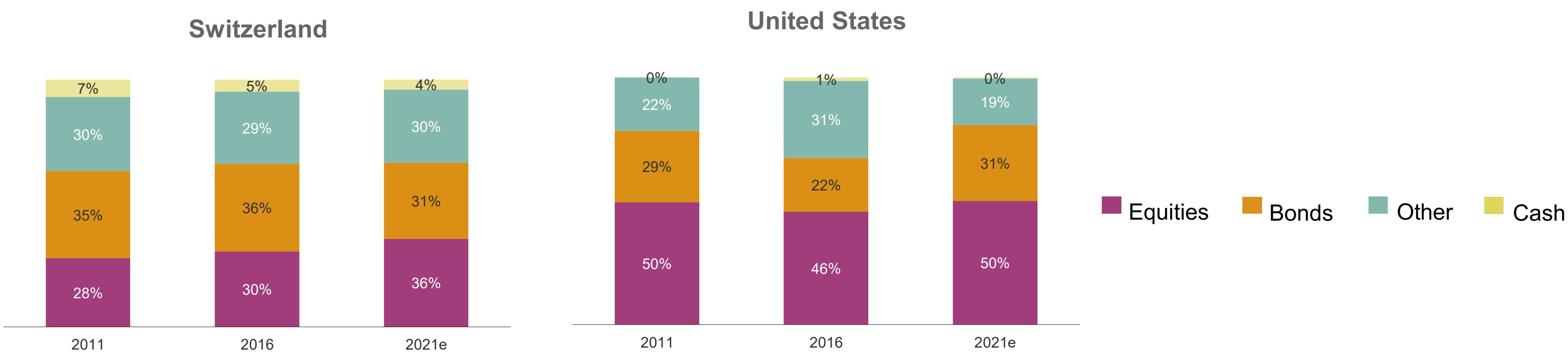
P7 asset allocation over the last ten years (2)

P7

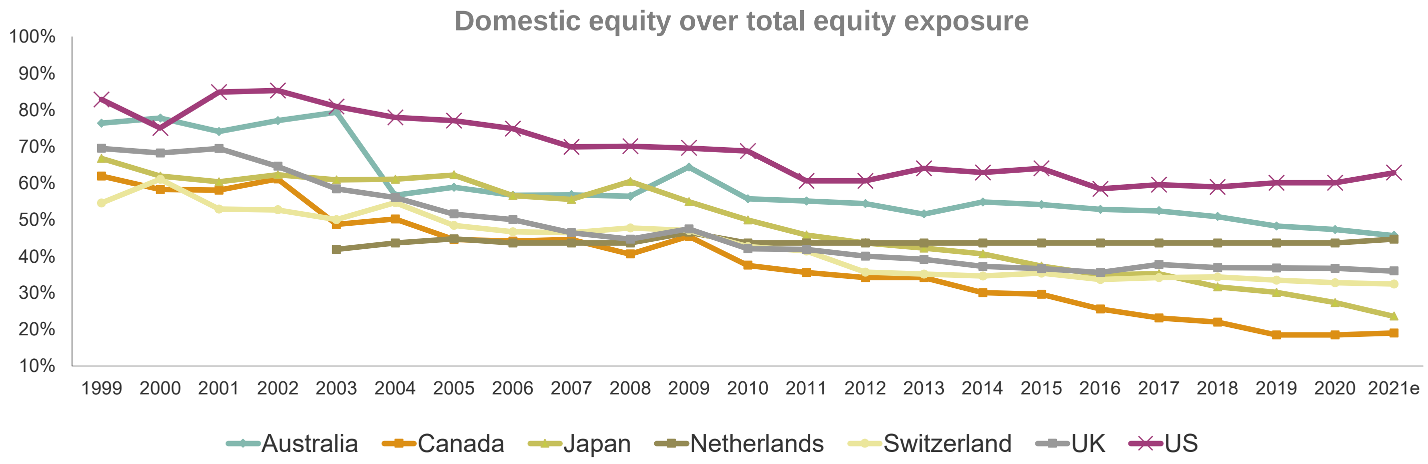


Source: Thinking Ahead Institute and secondary sources

Note: Numbers may not add up 100% due to rounding
Due to methodological changes announced by the Official National Statistics (ONS), the source for UK pension data was changed in the 2017 edition of the study, from the ONS to a variety of publicly available sources. As such we are unable to provide comparable historic asset allocation data for the UK.

Domestic equity exposure

P7



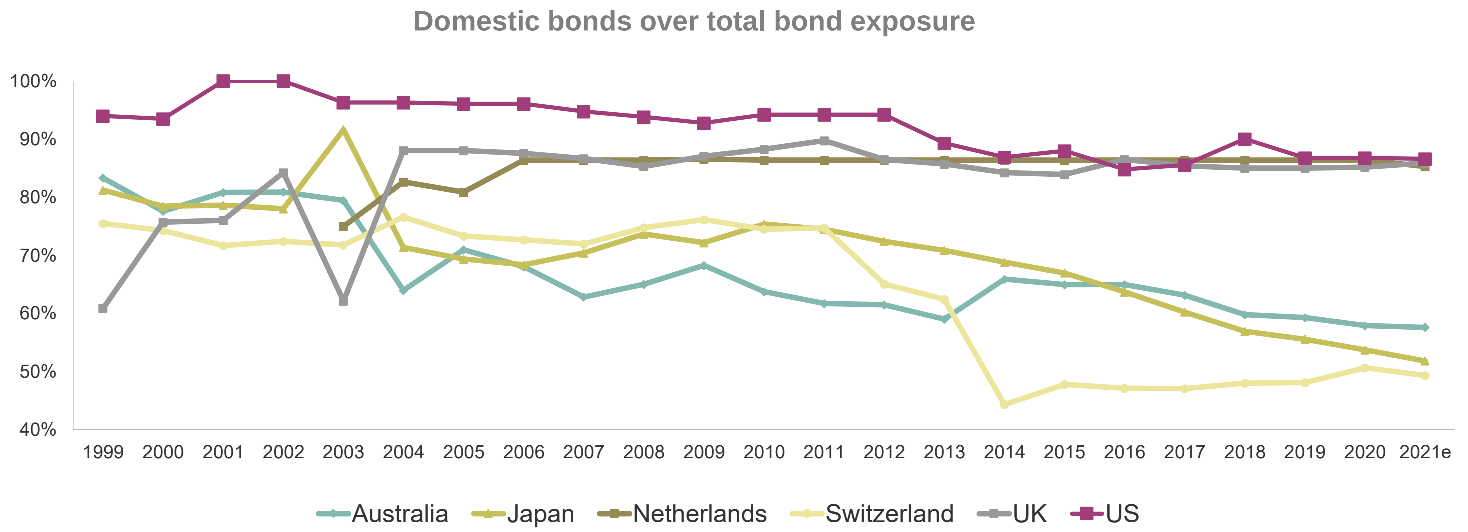
There is a clear sign of a reduced home bias in equities, as the weight of domestic equities has fallen, on average, from 66.6% in 2001 to 37.7% in 2021.

During the past 10 years, the US has had the highest allocation to domestic equities, while Canada, Japan and Switzerland have had the lowest allocation.

Source: Thinking Ahead Institute and secondary sources

Domestic bonds exposure

P7



The allocation to domestic bonds has remained high, even though it has decreased in the last 20 years. On average, the allocation to domestic bonds as a percentage of total bonds was 81.4% in 2001 and 69.4% in 2021.

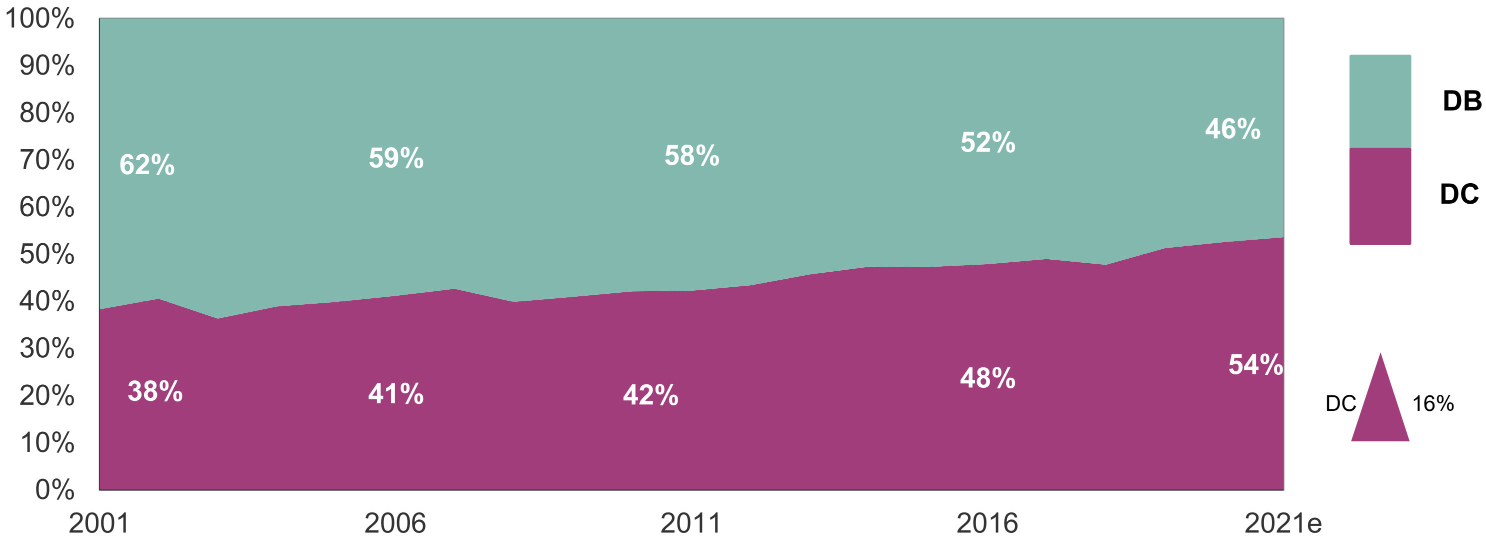
Netherlands, the UK and the US have the highest allocation to domestic bonds, while Switzerland has the highest foreign bond exposure.

Source: Thinking Ahead Institute and secondary sources

Section 3 | DB/DC Split

DC on the rise

P7



During the last ten years, DC assets have grown by 9.0% pa while DB assets have grown at a slower pace by 4.8 % pa.

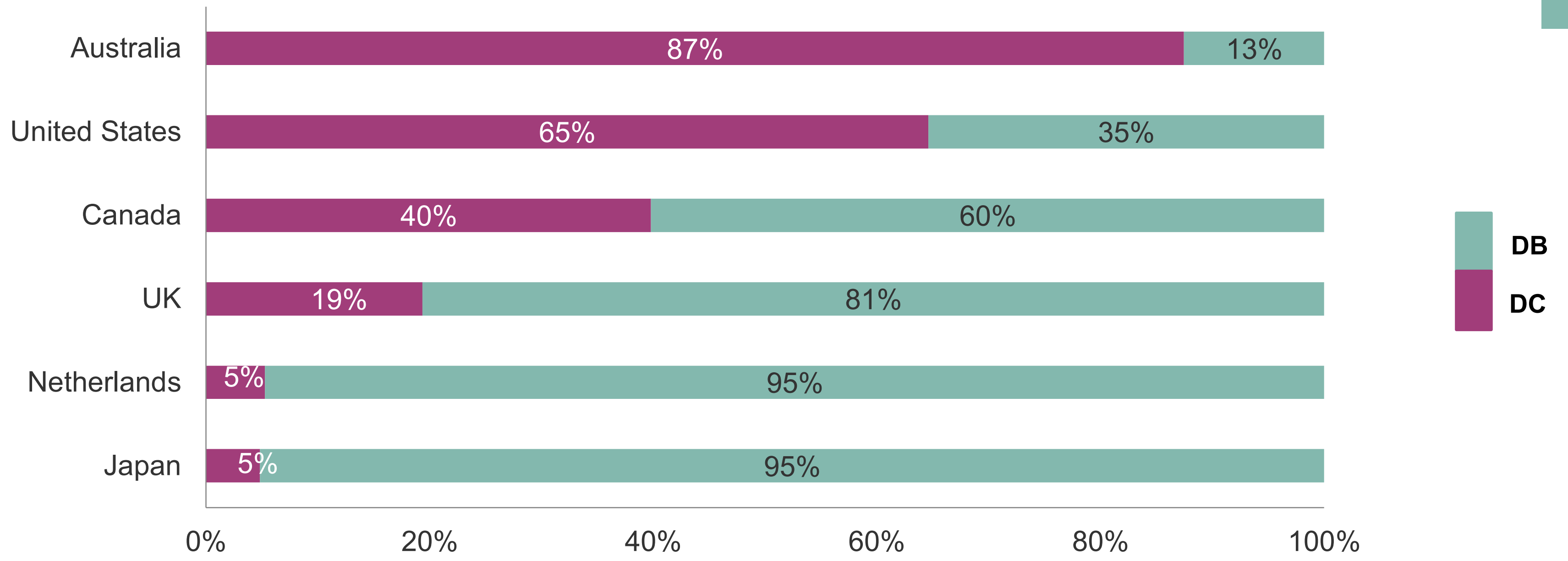
The growth rate of DC assets for the last 20 years is 8.2% pa and 5.1% pa for DB assets.

Note:Numbers may not add up 100% due to rounding
The majority of pension fund assets in Switzerland are DC and take the form of cash balance plans, whereby the plan sponsor shares the investment risk and the assets are pooled. Pure DC assets have only recently been introduced in Switzerland and, although they have seen strong growth, they are not yet large enough to justify inclusion in this analysis. Canadian DC assets now include individual accounts. Historical figures have been restated.

Source: Thinking Ahead Institute and secondary sources

P7

DB/DC split in 2020



Note Numbers may not add up 100% due to rounding:
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Source: Thinking Ahead Institute and secondary sources

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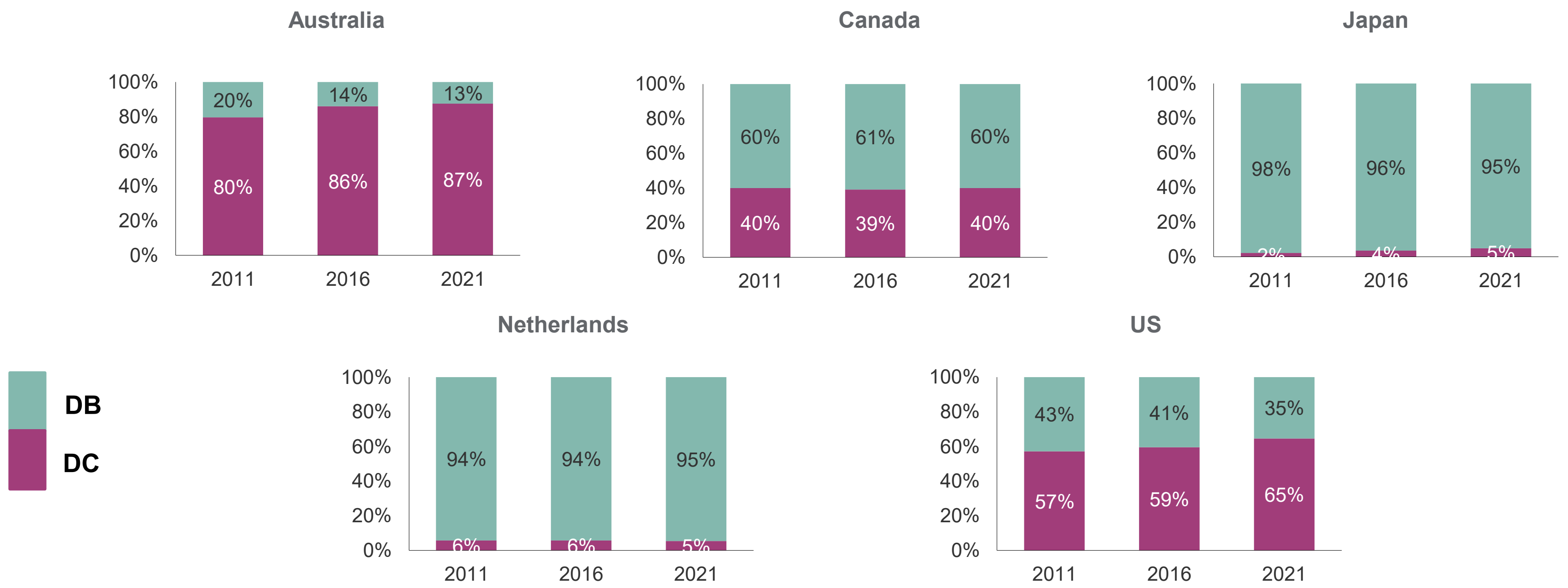
DB/DC split over the last ten years

P7



Source: Thinking Ahead Institute and secondary sources

Notes:Numbers may not add up 100% due to rounding
The majority of pension fund assets in Switzerland are DC and take the form of cash balance plans, whereby the plan sponsor shares the investment risk and the assets are pooled. Pure DC assets have only recently been introduced in Switzerland and, although they have seen strong growth, they are not yet large enough to justify inclusion in this analysis. Canadian DC assets now include individual accounts. Historical figures have been restated.

In January 2017, the UK's Office for National Statistics stated that the figures previously disclosed for DC entitlements were significantly overestimated. As a result, we do not have confidence in making comparisons with prior years and so have omitted this chart.

Section 4 | Methodology

Methodology

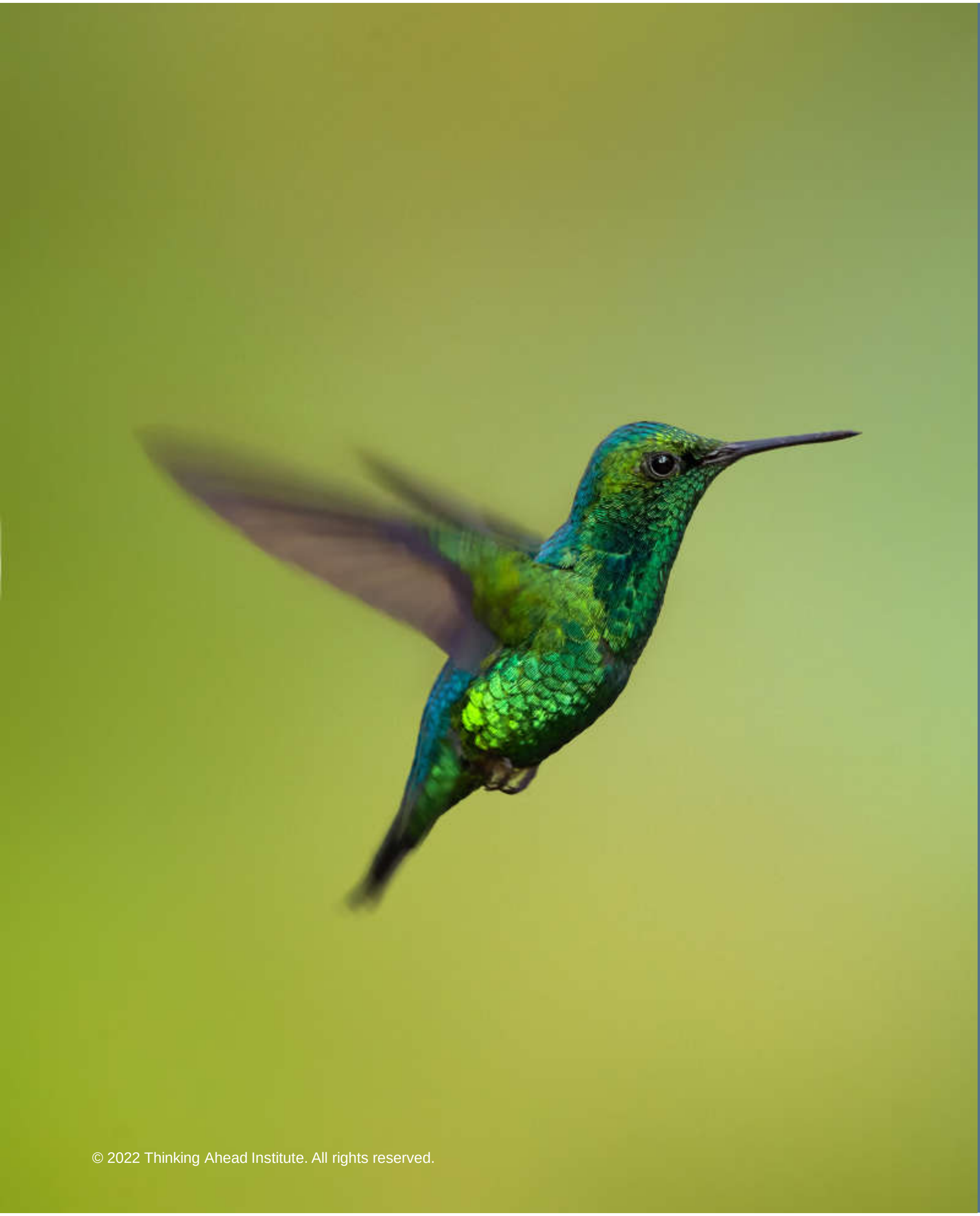
Asset estimation

- In this analysis we seek to provide estimates of pension fund assets (i.e. assets whose official primary purpose is to provide pension income). This data comprises:
  - Hard data typically as of year-end 2020 (except for Australia and Brazil which is from June 2021) collected by Willis Towers Watson and from various secondary sources
  - Estimates as at year-end 2021 based on index movements
- Before 2006, we focused only on ‘institutional pension fund assets’, primarily 2nd pillar assets (occupational pensions). Since 2006, the analysis has been slightly widened, incorporating DC assets (IRAs) within US’s total pension assets. The objective was to better capture retirement assets around the globe and expand the analysis into the 3rd pillar (individual savings) universe, which is primarily being used for pensions purposes in many markets. Furthermore, this innovation enables us to estimate the global split between DB and DC assets.
- In the 2016 edition of the GPAS Australian assets started to include Self-Managed Super Fund (SMSF) assets. SMSF represent almost a third of Australia’s pension assets.
- The source for UK pension data was changed in the 2017 edition of the study, from the Official National Statistics (ONS) to a variety of publicly available sources. This change was prompted by methodological changes announced by the ONS in January 2017.
- Due to unavailability of pensions data in China, the study collects information on Enterprise Annuity (Pillar II) assets only. Data relating to Pillar I assets - social pooling (DB) and individual accounts (DC) - is very limited and therefore not included. The National Social Security Fund pension assets are also not included as it is considered as a reserve fund and separate from the pension system.
- In the 2021 edition of the GPAS Canadian assets started to include individual accounts, historical figures have been restated.

Comparison with GDP

- This section compares total pension fund assets within each market to GDP sourced from the IMF.

Limitations of reliance



Limitations of reliance

Limitations of reliance – Thinking Ahead Group 2.0

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