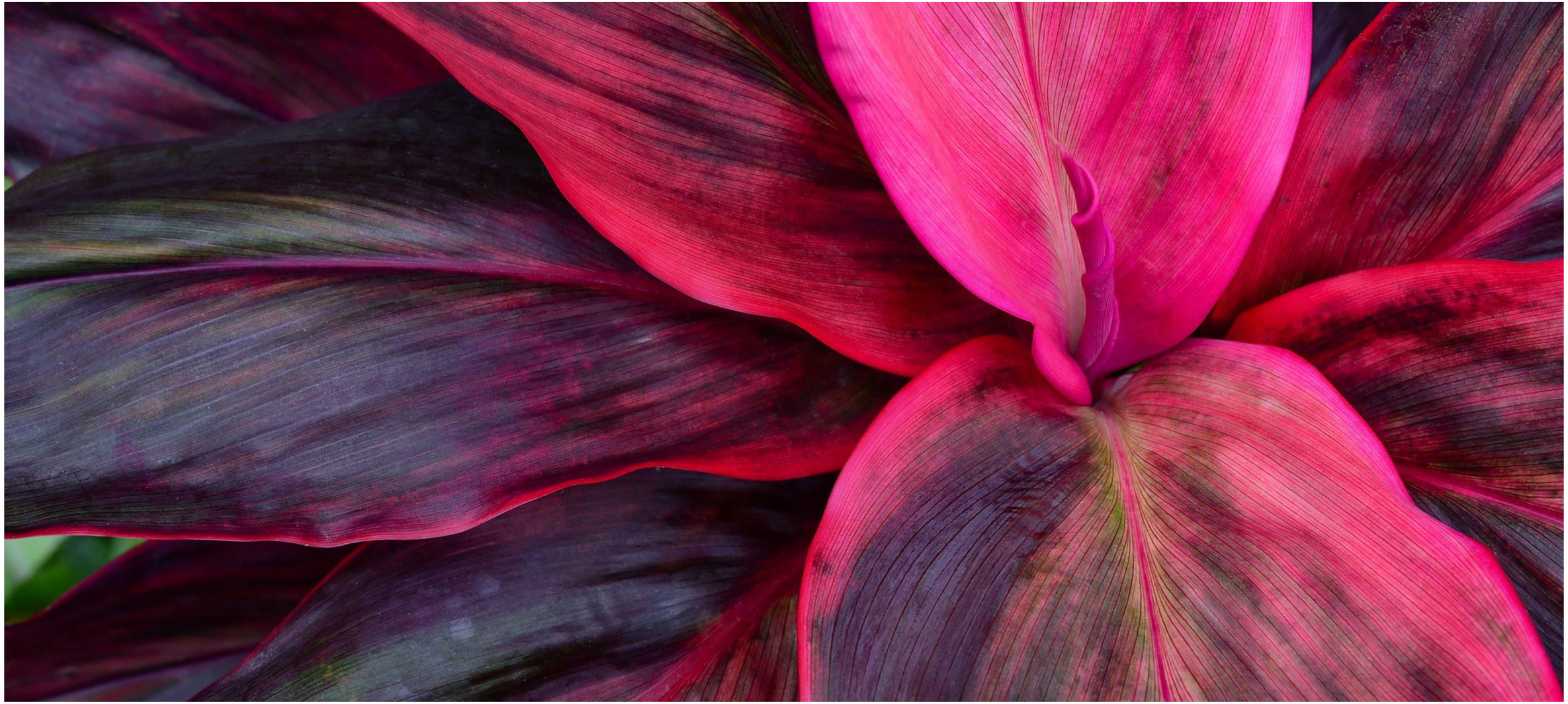
Thinking Ahead Institute

Global Pension Assets Study | 2021



The Thinking Ahead Institute

Formed in 2015, the Thinking Ahead Institute 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.

The Thinking Ahead Group research team

Tim Hodgson

Liang Yin

Marisa Hall

Roger Urwin

Executive summary

Overview and key findings

Overview

3

Main sections:
- Asset size, including growth statistics and comparison of asset size with GDP **(P22)**
- Asset allocation **(P7)**
- DB and DC share of pension assets **(P7)**

P22

The study covers 22 pension markets in the world (P22). They have pension assets of **USD 52,522 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 48,221 bn**

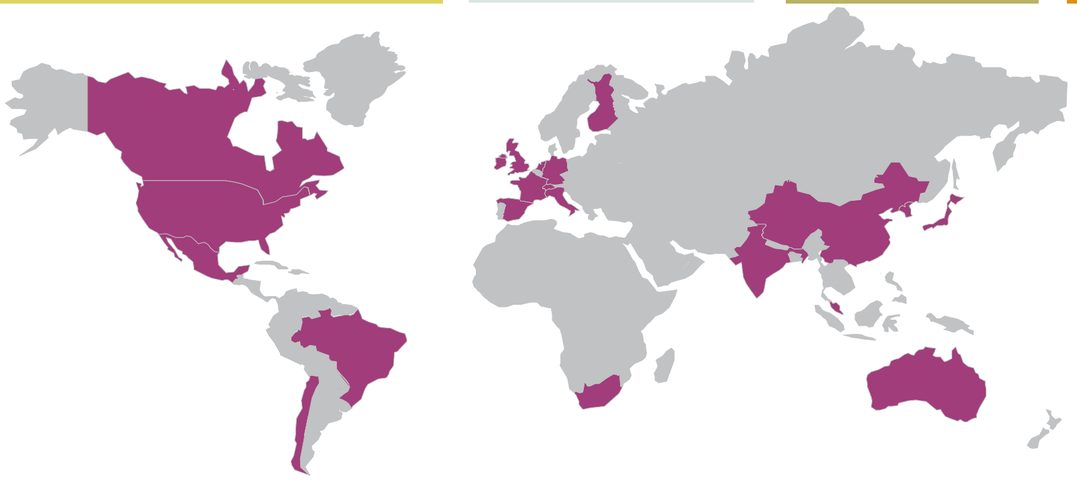
P7 markets
Australia
Canada
Japan
Netherlands
Switzerland
UK
US

P195

Outside the P22 we estimate there is an additional USD 3-5 trn of pension assets

92%

of P22 assets are in the seven largest markets



75%

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

Key 2020 findings – P22 markets

P22

USD 52,522 bn Total P22 assets estimated to year end 2020

62%

The US is the largest market, with a share of 62.0% of P22 assets, followed by Japan and UK with 6.9% and 6.8% respectively

92%

of P22 assets are in seven largest markets

P22 assets increased

11.1% in 2020

from USD 47,289 bn the previous year

13.2%

Return for a 60% global equities / 40% global bonds reference portfolio as of December 2020 (in USD)

80% Ratio of pension assets to GDP of these economies

The P22 assets growth rate of US, UK and Japan were 18.0%, 6.6% and 7.9% respectively in 2020 (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

Key 2020 findings – P7 markets

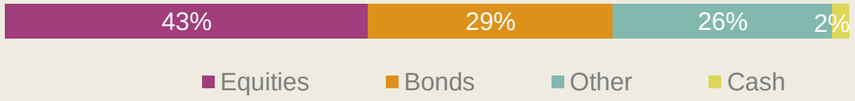
P7

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 2020



The asset allocation pattern has changed since 2000. Allocation to equities has decreased while investments in other assets grew during the same period.

DB/DC split

53%

DC assets are estimated to represent almost 53% of total P7 pension assets

8.2%

Growth rate of DC assets in the last ten years

4.3%

Growth rate of DB assets in the last ten years

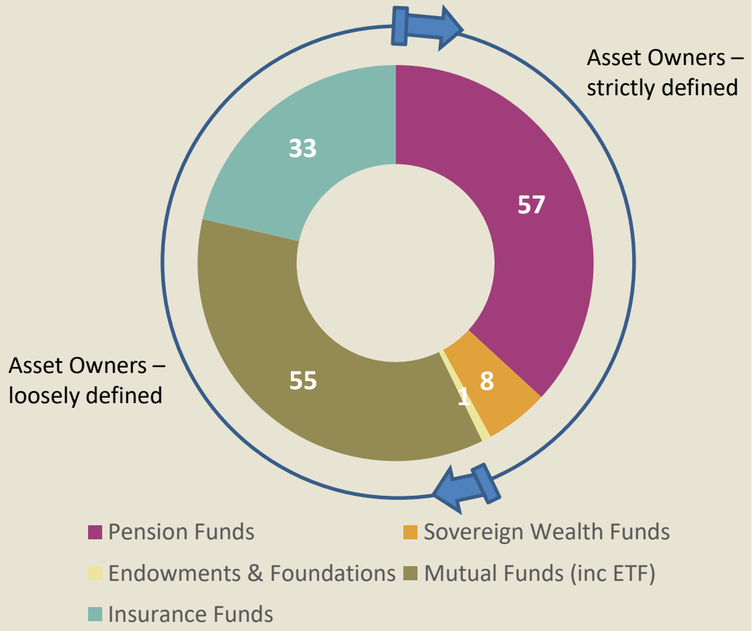
DC is dominant in Australia and the US. Japan and Canada, historically only DB, are now showing an increasing allocation towards DC

Five big themes for 2021

Five themes for 2021			Adjacent issues
Alternatives 	Alternative assets fill a fixed-income shaped hole in the asset mix via a shift that holistically pivots the total portfolio strategy.	The investment macro is being twisted and, tortured by the impacts of extraordinary monetary policies with investment markets positioned as a transmission channel for, and an after-effect of, monetary policy. The implications of this for the industry are multiple – for investment strategy, the sustainability of long-term investment institutions and the wider societal implications of the role of investing and investment professionals.	Total portfolio approaches and risk budgeting are ideal thought partners in supporting these shifts. Replacement of the 60/40 model is critically needed, for the industry's sustainability.
Benchmarks 	Benchmarks and data surge in a world of few absolutes. This supports 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.	Benchmarking is a growth area to improve accountability. Data is used in clunky ways and needs stronger strategy, governance and science to deliver to its full potential.
Collaboration 	Collaboration develops and adds to creativity and innovation, the industry's lifeblood and moats, helped by the co-opetition model.	Our industry has many organisational players. For the industry to progress successfully there needs to be increased collaboration via internal teams, strategic partnerships in the value chain and through the stronger global industry bodies that act as convenors and facilitate collaboration. The opportunities are biggest in active ownership and private market strategies where returns to scale are most significant.	The big industry convenors come to the fore – CFA Institute, PRI, IFRS, Investor Agenda, Net-Zero Asset Owner Alliance. Collaboration on various levels is a big multiplier.
Diversitv 	The DEI dynamic plus the WFA model co-star in a nexus of soft considerations that are steadily transforming the corporate environment.	The world of work is changing and its evolving state will change in its context - technology, flexible work (WFA – working from anywhere) , workplace design, employee wellness, diversity, equity & inclusion (DEI); and in its content – the specialised versus the routine; the team context versus individual; the trust-constrained situations versus trust-optimised; agile process versus rote process; empowered roles versus hierarchical.	The scrutiny on industry people and teams and culture gets intense as new norms are applied to organisations. The soft strands start to be seen as the key strand.
ESG 	The 'ESG unstoppable train' is picking up pace and in some case is being turbo-charged by climate change and accelerating to net zero.	The investment world is undergoing a paradigm shift in extending from the two-dimensional model (risk and return) to a three-dimensional one (risk, return and impact); from a risk return optimisation paradigm to the dual organising principles around return optimising and sustainability alignment; from the narrow precepts of MPT and market fundamentalism to systems-theory, multi-stakeholders and a society context.	There is a triage in organisations in terms of their commitment to ESG – free riders, core players and leaders. The leaders emerge as 'truly sustainable organisations'.

Global asset owner landscape

Asset owners globally control USD 154 trillion



What is an asset owner?

An asset owner has five qualifying characteristics:

1. Works directly for a defined group of beneficiaries/savers/investors as the manager of their assets in a fiduciary capacity (upholding loyalty and prudence) under delegated responsibility
2. Works with a sponsoring entity, usually a government, part of government, a company or a not-for-profit
3. Works within explicit law and possesses an implicit societal license to operate because of its societal trust and legitimacy
4. Delivers mission-specific outcomes to beneficiaries and stakeholders in the form of various payments or benefits into the future
5. Employs a business model that combines a governance budget (essentially resources and processes) and a risk budget (reflecting the mix of financial assets that delivers on the mission).

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

Read more about asset owners:

The Asset Owner of Tomorrow
Provides insight into the complexity of being an asset owner today.

The AO 100 survey published by the Thinking Ahead Institute provides analysis of the 100 largest asset owners in the market - the most influential capital on the planet

Key findings from the last 20 years of global pension assets growth

#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 20 years

Key issues for pension funds to consider in the next 5-10 years

Pension design continuing towards a DC model	DC becomes the dominant global model. DC models are in a state of flux: platforms continue to emerge; scale matters; providing lifetime income replaces asset accumulation as the core focus
Bigger impact from evolved regulations	Pension funds will be subject to heavier saver / investor protection regulations. What they invest in will also be over-regulated
Governance issues are challenging	There is a big governance challenge to build the resources and support effective collective decision-making required to manage a complex organization, with multiple stakeholders, and varied views on what constitutes progress and success
Culture makes a difference	Investment organisations increasingly differentiate themselves by referencing their values and culture. New measurement models and methods continue to emerge to move the needle on culture. Diversity, equity and inclusion (DEI) plays a key part in the drive for more emotional intelligence in organisations' workforces and in investment portfolios.
Sustainability and long-horizon investing	Opportunities are being missed in the overlapping areas of sustainability, ESG, stewardship and long-horizon investing. Investors need to combine both investment beliefs and wider sustainability motives in their strategy. Investors must also integrate SDGs and impact positions alongside strategies to deal with climate change
Technology rising	Technology will challenge business models and human capital, requiring adaptation. The people plus technology model should ultimately emerge as dominant. Technology enhanced engagement can play an important role in a DC-dominant world

Expected shifts by pension funds in the next 5-10 years

Shift	Shift from	Shift to
Business model Institutionalising professionalism	▪ License to operate is more of a legal construct ▪ Focused over short- and long-term but problems with control	▪ License to operate is both legal and a social construct reflecting wider stakeholders ▪ Focused over long- and short-term; with better control
People model Leveraging culture and diversity more Streamlining decisions	▪ Male, ethno-centric, economics educated with limited culture ▪ IT infrastructure weak ▪ Decision biases significant ▪ Collective intelligence weakly harnessed	▪ Multi-disciplinary, diverse spectrum of backgrounds with stronger culture ▪ IT infrastructure stronger ▪ Decision biases reduced ▪ Collective intelligence strongly harnessed
Investment model Repositioning to more systematic and sustainable	▪ Alternatives moderately sized but infrastructure finance small ▪ Alpha broad, factors small ▪ Small-scale responsible investing model ▪ Silent and disengaged owners	▪ Alternatives large-sized with infrastructure finance larger ▪ Alpha selective, factors larger ▪ Mainstreamed sustainability model ▪ Engaged owners with some activism

Source: The asset owner of tomorrow, Thinking Ahead Institute, 2017

Section 1 | Asset size

P7

Asset sizes

Market	Total Estimated Assets 2020 (USD billion)	Assets/GDP ratio (%)[7]
Australia	2,333	174.8%
Brazil[1]	195	14.3%
Canada	3,080	192.5%
Chile	243	99.2%
China[2]	285	1.9%
Finland	279	104.3%
France	166	6.5%
Germany[3]	548	14.5%
Hong Kong	199	58.3%
India	184	7.1%
Ireland	197	49.4%
Italy	231	12.5%
Japan[4]	3,613	73.6%
Malaysia	279	83.0%
Mexico	259	24.9%
Netherlands	1,900	214.4%
South Africa	223	78.8%
South Korea	968	61.0%
Spain	44	3.6%
Switzerland[5]	1,163	164.3%
UK	3,564	135.1%
US[6]	32,567	156.5%
Total	**52,522**	**80.0%**

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

Source: Thinking Ahead Institute and secondary sources

Pension asset growth versus market returns

Period to end December 2020	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	11.1%	11.1%	13.2%
5-year	8.0%	8.0%	9.3%
10-year	6.2%	6.2%	7.2%
20-year	6.1%	5.8%	6.0%

- 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 – assets in billions of USD

P7

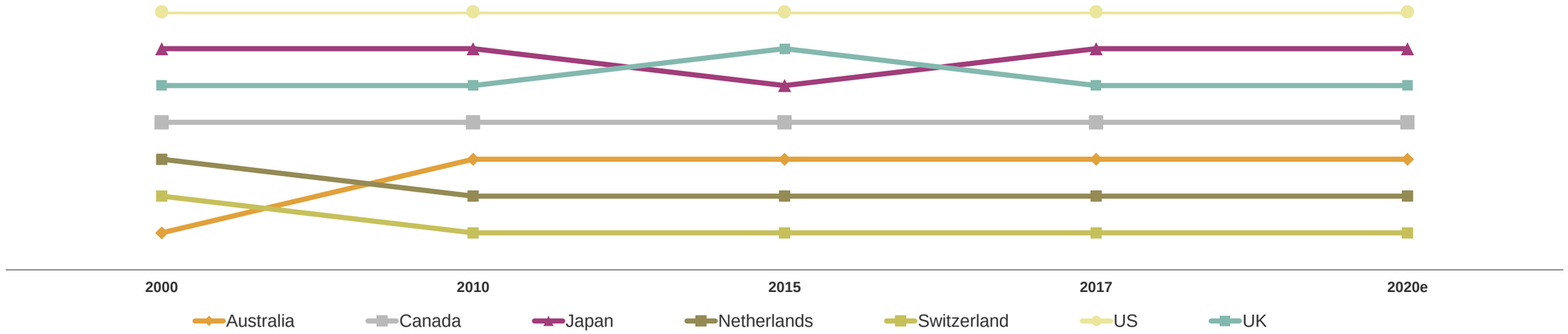
2000	
US	10,141
Japan	2,418
UK	1,256
Canada	870
Netherlands	441
Switzerland	310
Australia	275

2010	
US	15,179
Japan	3,710
UK	2,279
Canada	2,221
Australia	1,406
Netherlands	1,026
Switzerland	662

2015	
US	21,395
UK	2,831
Japan	2,672
Canada	2,243
Australia	1,565
Netherlands	1,285
Switzerland	794

2017	
US	25,368
Japan	3,097
UK	3,047
Canada	2,717
Australia	2,001
Netherlands	1,629
Switzerland	915

2020e	
US	32,567
Japan	3,613
UK	3,564
Canada	3,080
Australia	2,333
Netherlands	1,900
Switzerland	1,163

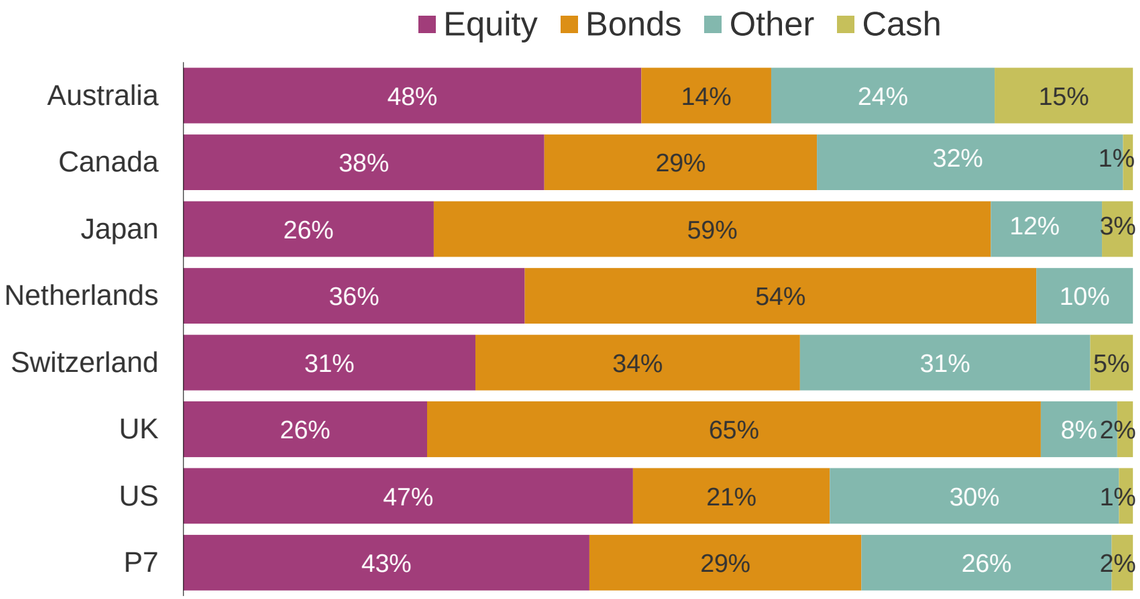


Source: Thinking Ahead Institute and secondary sources

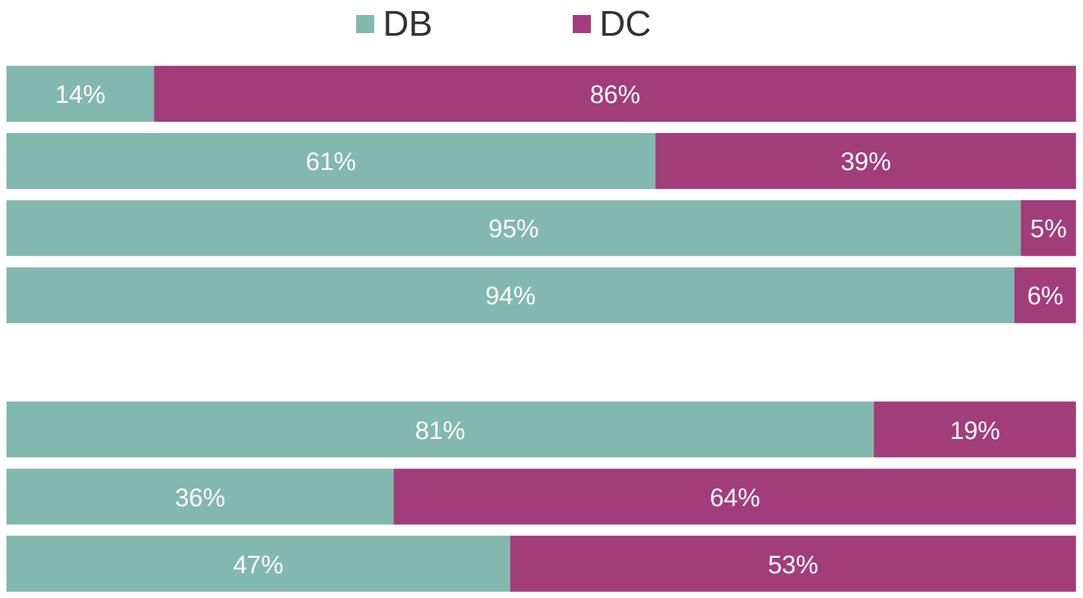
Asset allocation and DB/DC split

P7

Asset allocation 2020



DB/DC split 2020[1,2,3]



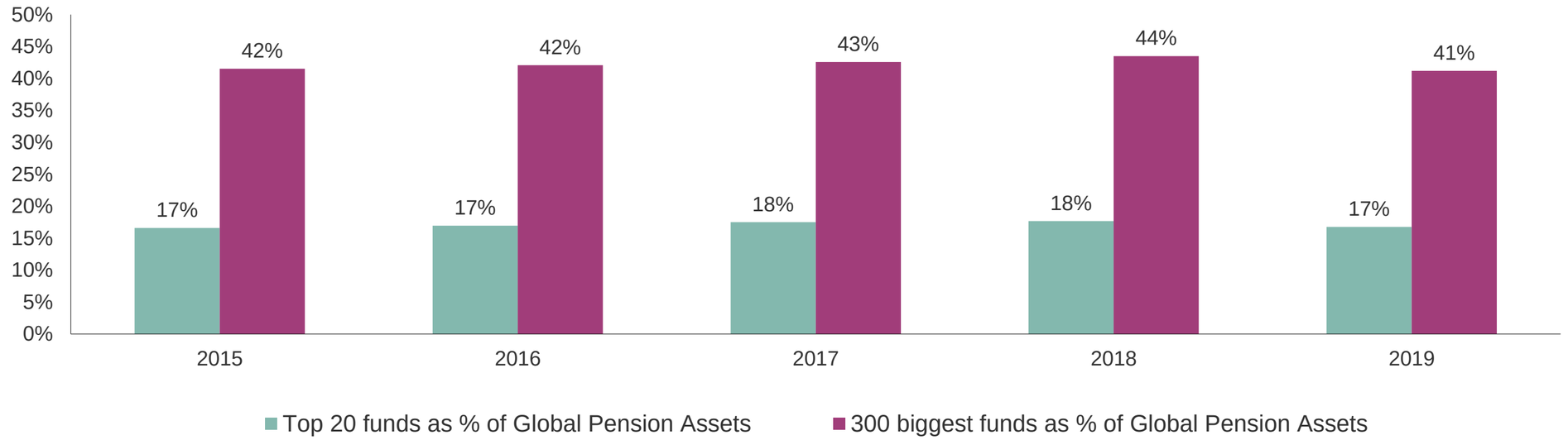
Source: Thinking Ahead Institute and secondary sources

[1] 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.

[2] 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.

[3] Canadian DC assets now include individual accounts. Historical figures have been restated.

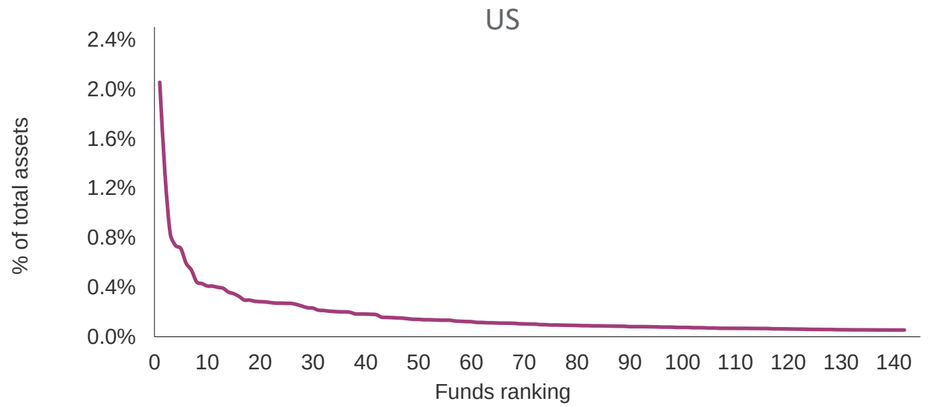
Concentration of assets in top 300 pension funds

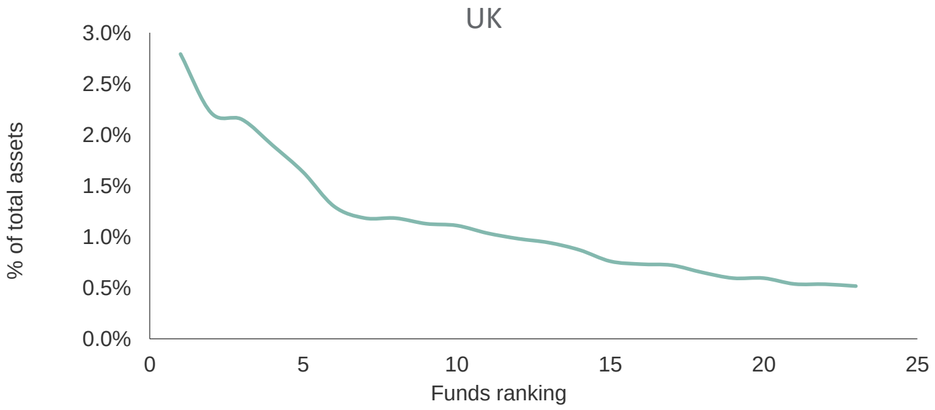


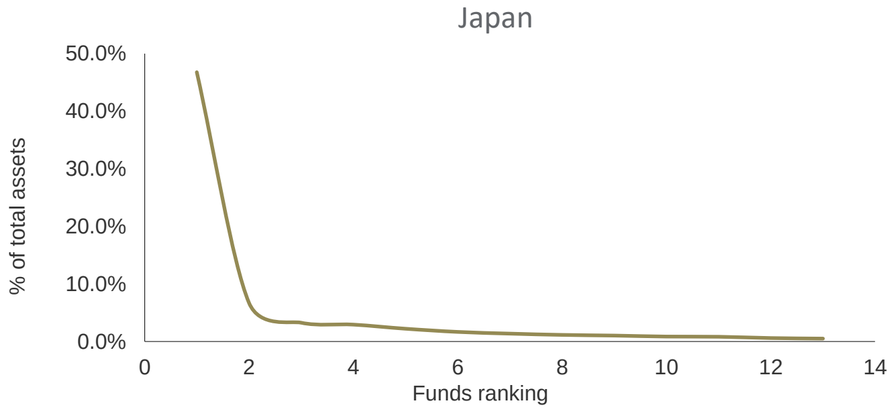
Source: Thinking Ahead Institute and secondary sources

- 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







Source: Thinking Ahead Institute and secondary sources

- While the top ten US pension funds represent 8.1% of total US assets, the top ten Japanese pension funds account for 68.1% of total Japanese assets. This is largely explained by the Government Pension Investment Fund that represents 46.8% of Japan's pension assets.
- In the UK, the top ten pension funds represent 16.6% of the total UK pension assets. Among them, 12.6% are private pension funds and the 4% are state-sponsored pension funds.

P22

A decade of growth

- In 2020 global pension assets are estimated to have reached USD 52,522 billion, an increase of slightly over 11% 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 76% of all pensions assets.

Market	Total assets 2010 (USD billion)	Total assets 2020e (USD billion)	10-year CAGR (USD) [1]
Australia	1,406	2,333	5.2%
Brazil	339	195	-5.3%
Canada	2221	3,080	3.3%
Chile	148	243	5.1%
China	42	285	21.0%
Finland	183	279	4.3%
France	133	166	2.3%
Germany	440	548	2.2%
Hong Kong	89	199	8.4%
India	67	184	10.7%
Ireland	100	197	7.0%
Italy	109	231	7.8%
Japan	3710	3,613	-0.3%
Malaysia	-	279	-
Mexico	145	259	6.0%
Netherlands	1026	1,900	6.4%
South Africa	256	223	-1.4%
South Korea	303	968	12.3%
Spain	41	44	0.8%
Switzerland	662	1,163	5.8%
UK	2279	3,564	4.6%
US	15179	32,567	7.9%
Total	**28,878**	**52,522**	**6.1%[1]**

Source: Thinking Ahead Institute and secondary sources

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

P22

Relative weights of each market

- In the past decade, the weights of China, Finland, Hong Kong, India, South Korea and US have increased relative to other markets in the study while the weight of Chile, Italy, Mexico, Netherlands and Spain remained unchanged.

Relative weights of each market

Market	2010	2020e	
Australia	4.9%	4.4%	▼
Brazil	1.2%	0.4%	▼
Canada[1]	7.7%	5.9%	▼
Chile	0.5%	0.5%	
China	0.1%	0.5%	▲
Finland	0.6%	0.5%	▼
France[1]	0.5%	0.3%	▼
Germany	1.5%	1.0%	▼
Hong Kong	0.3%	0.4%	▲
India	0.2%	0.4%	▲
Ireland	0.3%	0.4%	▼
Italy	0.4%	0.4%	
Japan	12.8%	6.9%	▼
Malaysia[2]	-	0.5%	
Mexico	0.5%	0.5%	
Netherlands	3.6%	3.6%	
South Africa	0.9%	0.4%	▼
South Korea	1.0%	1.8%	▲
Spain	0.1%	0.1%	
Switzerland	2.3%	2.2%	▼
UK[1]	7.9%	6.8%	▼
US	52.6%	62.0%	▲
Total	**100.0%**	**100.0%**	

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] 2010 figures for Malaysia are not available.

P22

Growth rates in USD

- During the last ten years, the fastest growing pension markets have been China (21.0%), South Korea (12.3%) and India (10.7%), in USD terms.
- Brazil, South Africa and Japan have had the slowest rates of growth in USD terms since 2010 (-5.3%, -1.4% and -0.3% respectively).

[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 to 2020e (USD)			
Market	**1-year CAGR[2]**	**5 -year CAGR**	**10-year CAGR**
Australia[3]	18.6%	8.3%	5.2%
Brazil	10.3%	-3.5%	-5.3%
Canada[1]	7.4%	6.5%	3.3%
Chile	13.1%	9.5%	5.1%
China	10.6%	14.2%	21.0%
Finland	14.4%	7.2%	4.3%
France[1]	10.5%	2.9%	2.3%
Germany	12.7%	6.1%	2.2%
Hong Kong	8.3%	9.2%	8.4%
India	6.9%	12.8%	10.7%
Ireland	14.3%	9.3%	7.0%
Italy	11.4%	8.6%	7.8%
Japan	8.6%	6.2%	-0.3%
Malaysia[4]	6.7%	8.1%	-
Mexico	7.7%	8.2%	6.0%
Netherlands	7.5%	8.1%	6.4%
South Africa	1.8%	5.2%	-1.4%
South Korea	13.9%	11.2%	12.3%
Spain	10.8%	2.7%	0.8%
Switzerland	12.5%	7.9%	5.8%
UK[1]	11.4%	4.7%	4.6%
US	11.3%	8.8%	7.9%
Average	**10.5%**	**7.4%**	**5.4%**

Source: Thinking Ahead Institute and secondary sources

P22

Growth rates in local currency

- Estimated five-year growth rates range from -0.3% pa in Spain to 15% pa in India.
- During the past ten years China's pension assets have grown the fastest, followed by those of India and South Korea, when calculated in local currency.

	Growth rates to 2020e (LC)		
Market	**1-year CAGR[2]**	**5 -year CAGR**	**10-year CAGR**
Australia	8.8%	7.6%	8.7%
Brazil	49.1%	5.7%	6.0%
Canada[1]	5.1%	4.8%	5.9%
Chile	8.2%	9.6%	9.7%
China	3.3%	14.3%	20.8%
Finland	4.3%	4.7%	5.1%
France[1]	0.7%	0.5%	3.1%
Germany	2.8%	3.6%	3.0%
Hong Kong	7.8%	9.2%	8.4%
India	9.7%	15.0%	16.1%
Ireland	4.2%	6.7%	7.8%
Italy	1.6%	6.1%	8.5%
Japan	2.8%	3.0%	2.1%
Malaysia[3]	4.9%	6.8%	-
Mexico	13.5%	11.2%	11.1%
Netherlands	-2.0%	5.6%	7.2%
South Africa	6.1%	4.2%	6.7%
South Korea	7.0%	9.5%	11.9%
Spain	1.0%	0.3%	1.5%
Switzerland	2.3%	5.5%	5.1%
UK[1]	7.6%	6.6%	5.9%
US	11.3%	8.8%	7.9%
Average	**7.3%**	**6.8%**	**7.7%**

[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.

Source: Thinking Ahead Institute and secondary sources

Currency impact

- In 2020, currencies that depreciated the most against the USD were the Brazilian Real (-26.0%), the Mexican Peso (-5.2%), the South African Rand (-4.0%) and the Indian Rupee (-2.6%).
- On the other hand, currencies that rose the most against the USD were the Swiss Franc (10.0%), the Euro (9.7%) and the Canadian Dollar (9.0%).
- Over longer periods, there has been a trend of strengthening USD relative to other major currencies. During the last ten years, the only currencies that have appreciated against the USD were the Swiss Franc (0.6% pa) and the South Korean Won (0.4%).

Variation in FX rates against USD

Market	1-year	5-year CAGR	10-year CAGR
Australia	9.0%	0.7%	-3.2%
Brazil	-26.0%	-8.8%	-10.7%
Canada	2.2%	1.6%	-2.4%
Chile	4.5%	-0.1%	-4.2%
China	7.1%	-0.1%	0.1%
Finland	9.7%	2.4%	-0.8%
France	9.7%	2.4%	-0.8%
Germany	9.7%	2.4%	-0.8%
Hong Kong	0.4%	0.0%	0.0%
India	-2.6%	-2.0%	-4.7%
Ireland	9.7%	2.4%	-0.8%
Italy	9.7%	2.4%	-0.7%
Japan	5.6%	3.1%	-2.3%
Malaysia[1]	1.8%	1.2%	-
Mexico	-5.2%	-2.8%	-4.6%
Netherlands	9.7%	2.4%	-0.8%
South Africa	-4.0%	1.0%	-7.6%
South Korea	6.4%	1.5%	0.4%
Spain	9.7%	2.4%	-0.8%
Switzerland	10.0%	2.3%	0.6%
UK	3.5%	-1.7%	-1.3%

Source: Thinking Ahead Institute and secondary sources

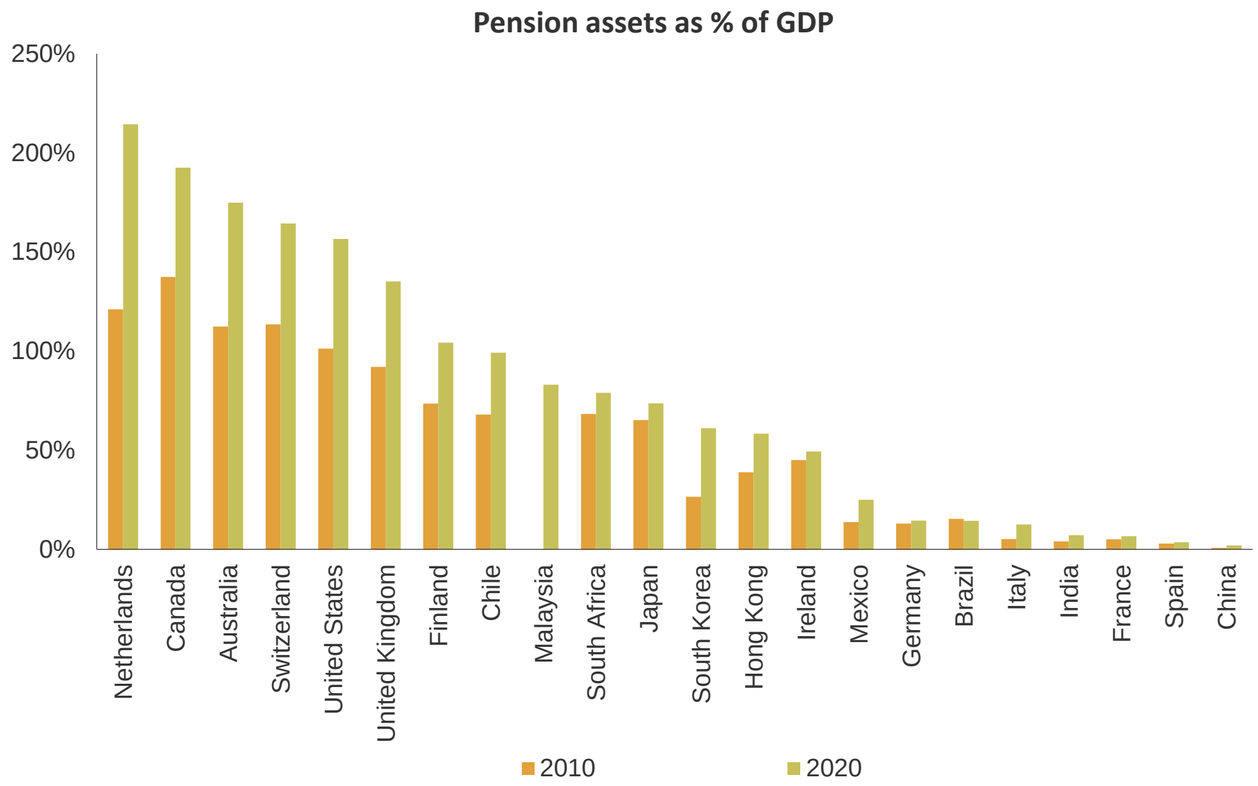
[1] 10 year growth rates are not available Malaysia.

P22

Pension assets vs GDP in local currency

Pension assets as a % of GDP			
Market	**2010**	**2020e**	***Change*[1]**
Australia	112%	175%	62%
Brazil	15%	14%	-1%
Canada	137%	192%	55%
Chile	68%	99%	31%
China[2]	1%	2%	1%
Finland	73%	104%	31%
France	5%	7%	1%
Germany	13%	14%	2%
Hong Kong	39%	58%	19%
India[2]	4%	7%	3%
Ireland	45%	49%	4%
Italy[2]	5%	12%	7%
Japan	65%	74%	8%
Malaysia[2]	—	83%	—
Mexico	14%	25%	11%
Netherlands	121%	214%	93%
South Africa	68%	79%	11%
South Korea	26%	61%	35%
Spain	3%	4%	1%
Switzerland	113%	164%	51%
UK	92%	135%	43%
US	101%	157%	55%

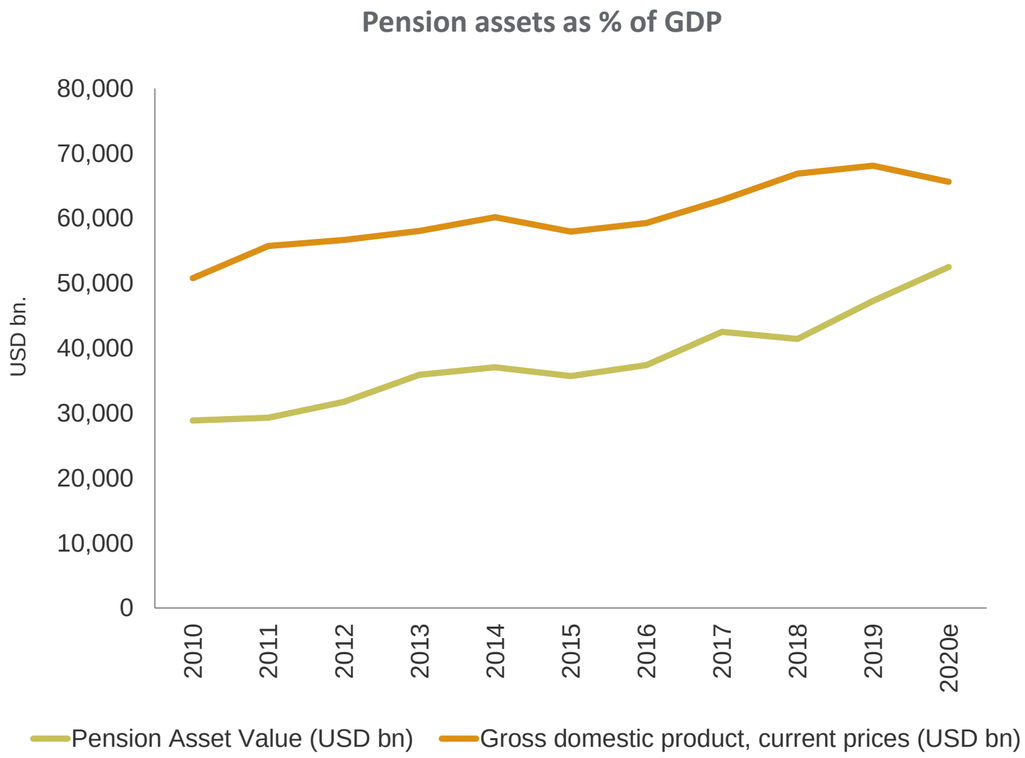
Source: Thinking Ahead Institute and secondary sources



[1] In percentage points, figures are rounded.
[2] 2010 figures are not available for Malaysia

Pension assets vs GDP in USD

- The total pension assets to GDP ratio reached 80.0% at the end of 2020.
- The Netherlands has the highest ratio of pension assets to GDP (214%) followed by Canada (192%), Australia (175%), Switzerland (164%), the US (157%) and the UK (135%).
- During the last ten years, the pension assets to GDP ratio increased the most in Netherlands, Australia, the US and Canada (93, 62, 55 and 55 percentage points respectively). It declined only in Brazil (-1.0%).



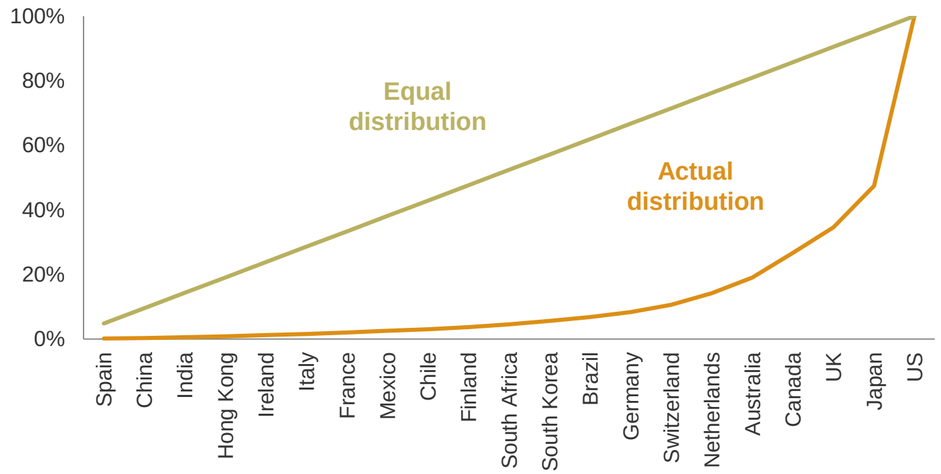
Source: Thinking Ahead Institute and secondary sources

Pension market concentration

P22

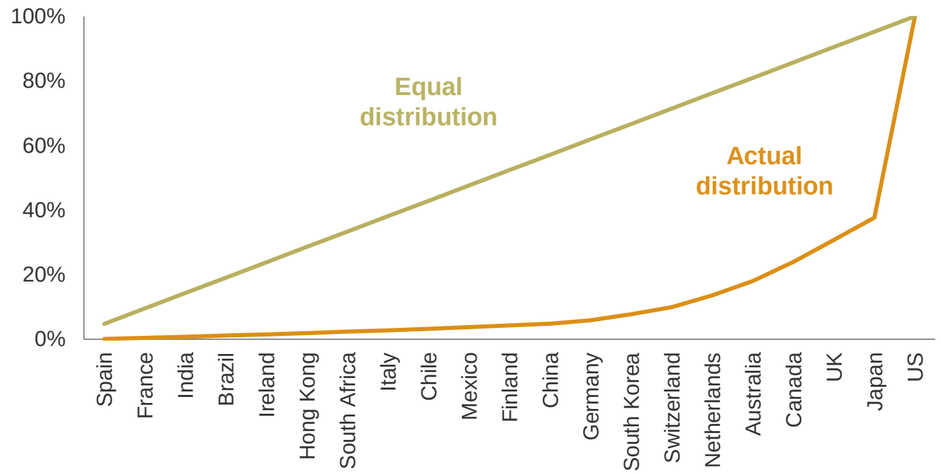
Lorenz curve for pension assets in 2010

Gini coefficient = 73%



Lorenz curve for pension assets in 2020

Gini coefficient = 75%

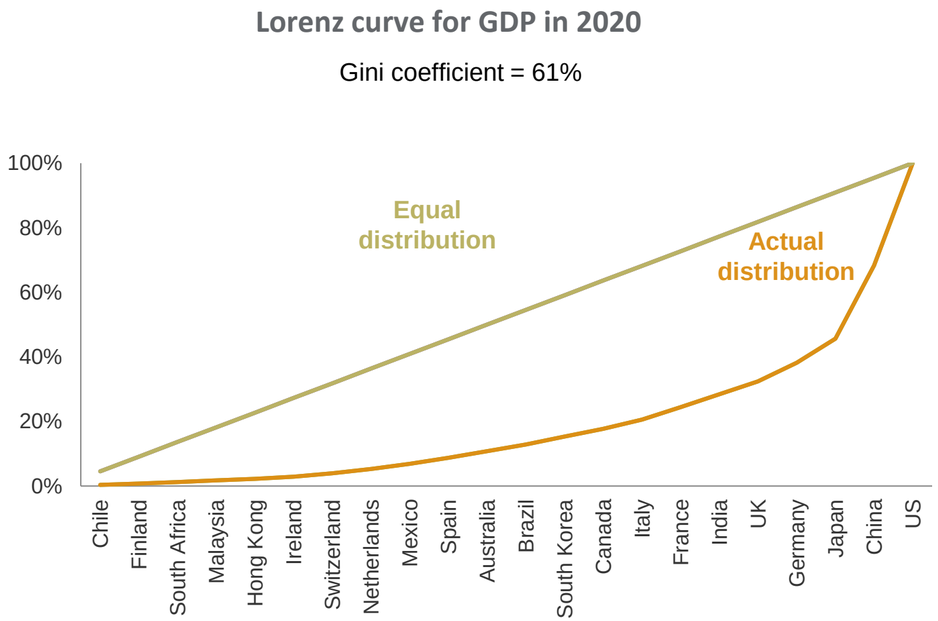


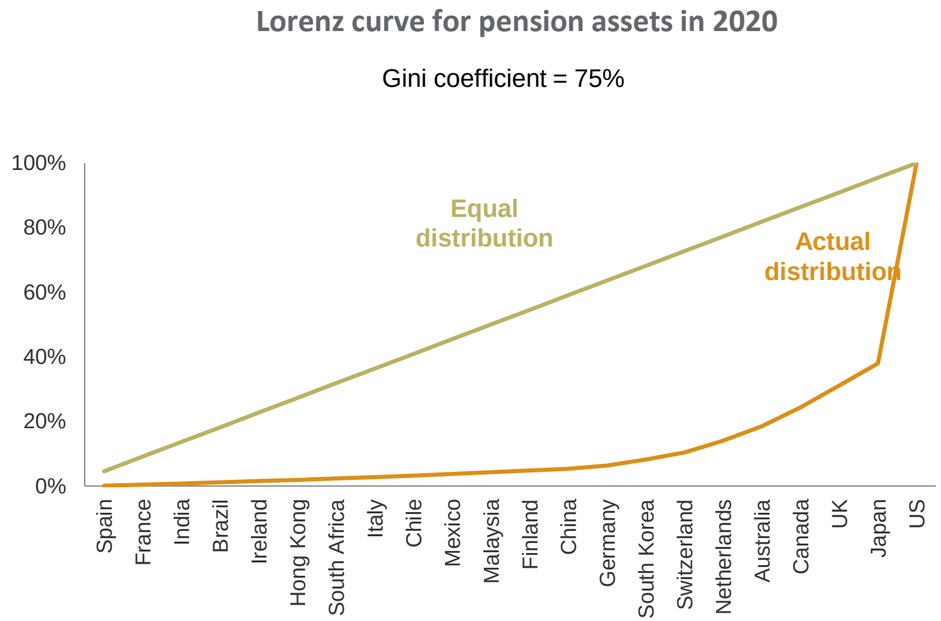
Source: Thinking Ahead Institute and secondary sources

- The Gini coefficient of global pension assets in 2020 was 75.1% which indicates that 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 2010.

Note: Malaysia are not included in the analysis.

Compared with GDP





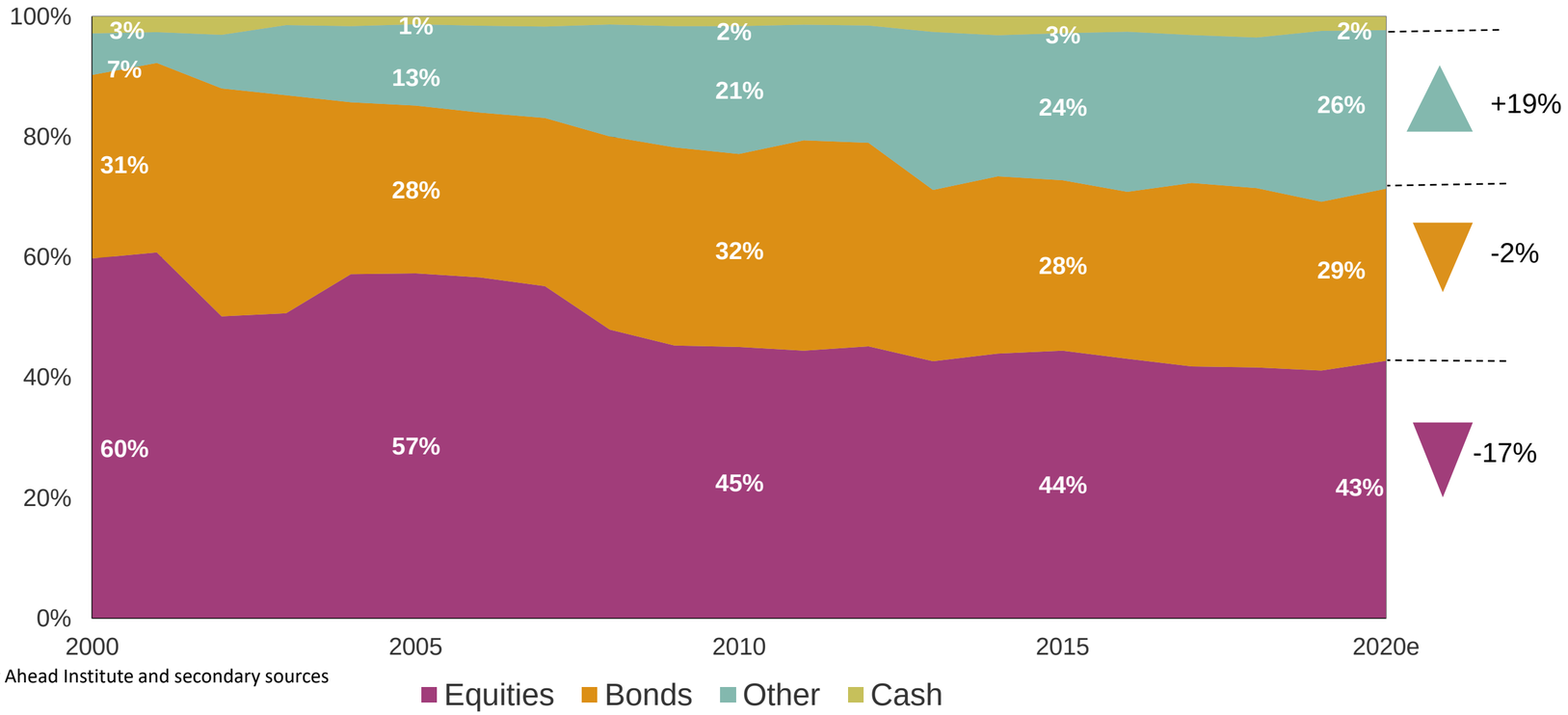
Source: Thinking Ahead Institute and secondary sources

- The lower Gini coefficient for GDP (61%) relative to pension market size (75.4%) 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 55.1% in 2010 to 61% in 2020.

Section 2 | Asset Allocation

Aggregate P7 asset allocation from 2000 to 2020

P7

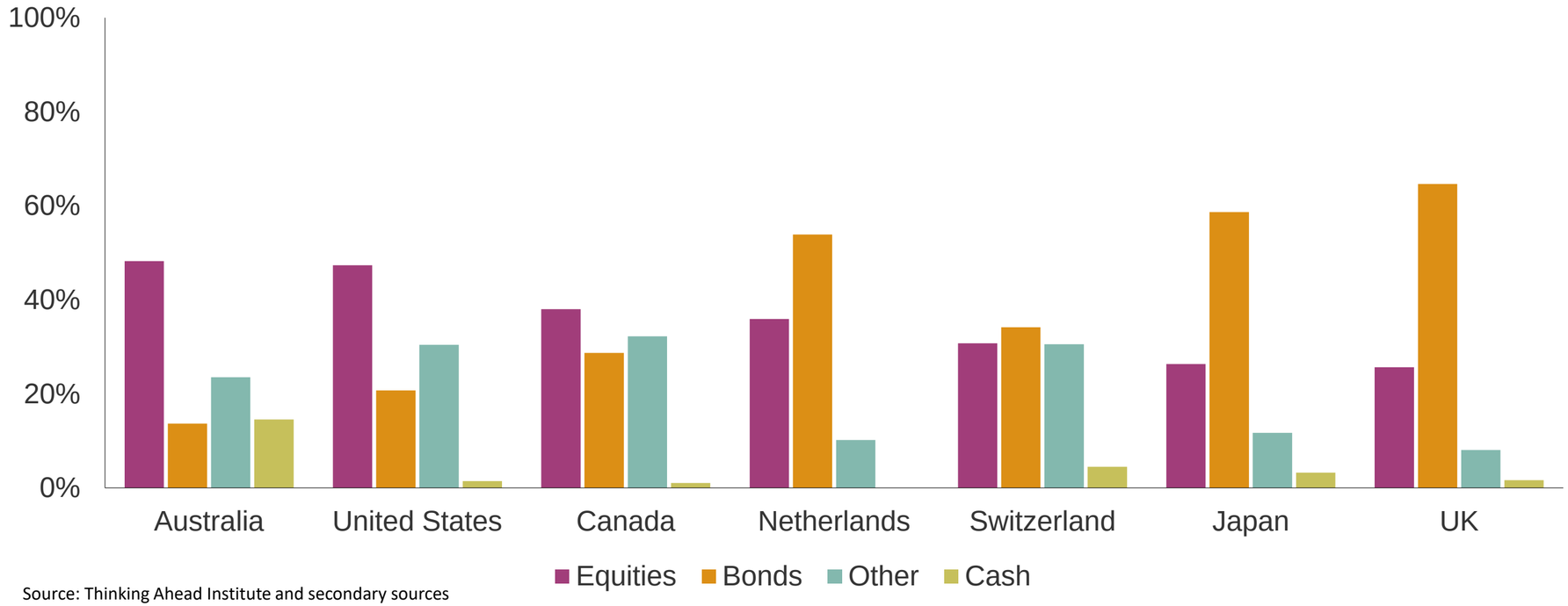


Source: Thinking Ahead Institute and secondary sources

- Since 2000 equity allocations have shrunk from 60% to 43% while the allocation to bonds slightly reduced from 31% to 29%. Allocation to other assets (real estate and other alternatives) has increased from 7% in 2000 to an estimated 26% at the end of 2020. Allocation to cash instruments declined slightly from 3% to 2%.

P7

P7 asset allocation in 2020

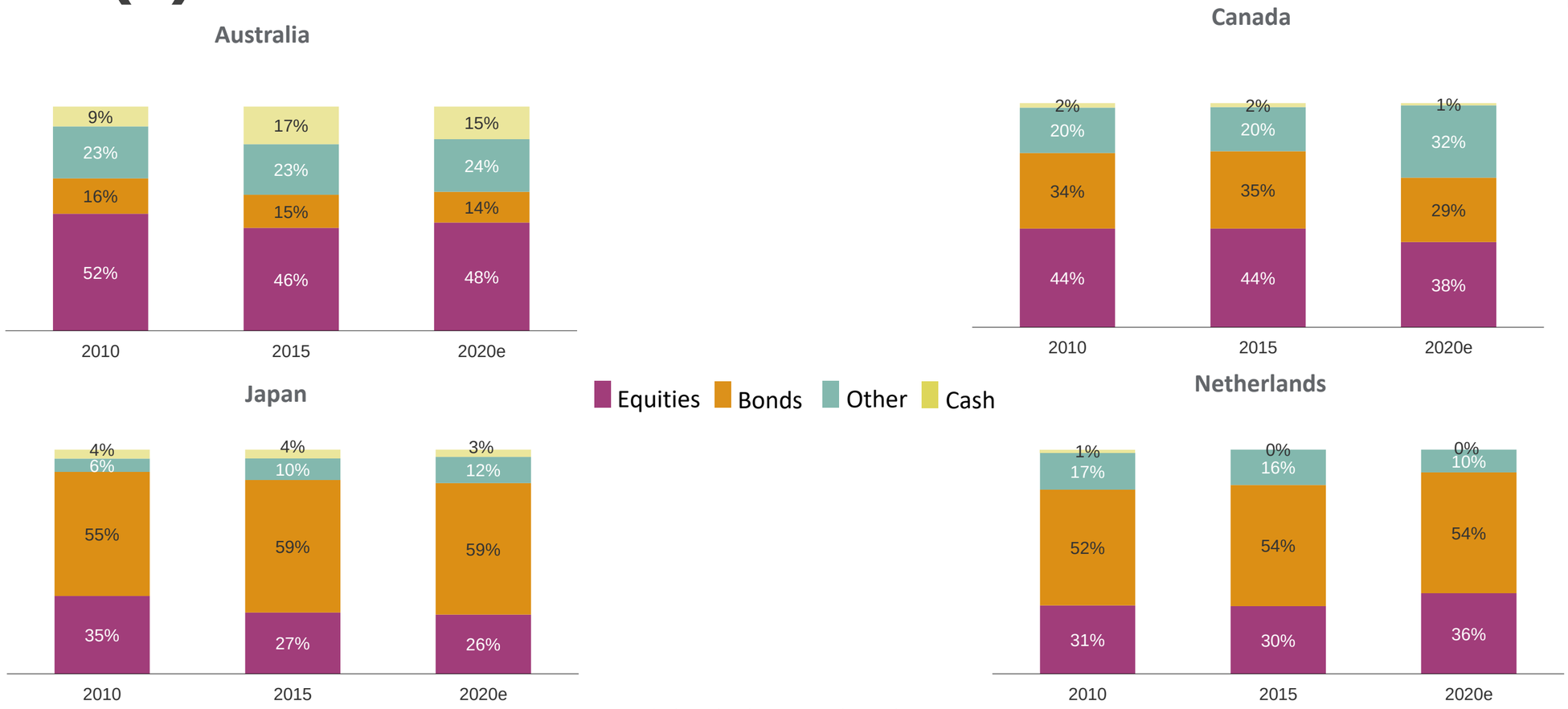


Source: Thinking Ahead Institute and secondary sources

- In 2020, 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.

P7 asset allocation over the last ten years (1)

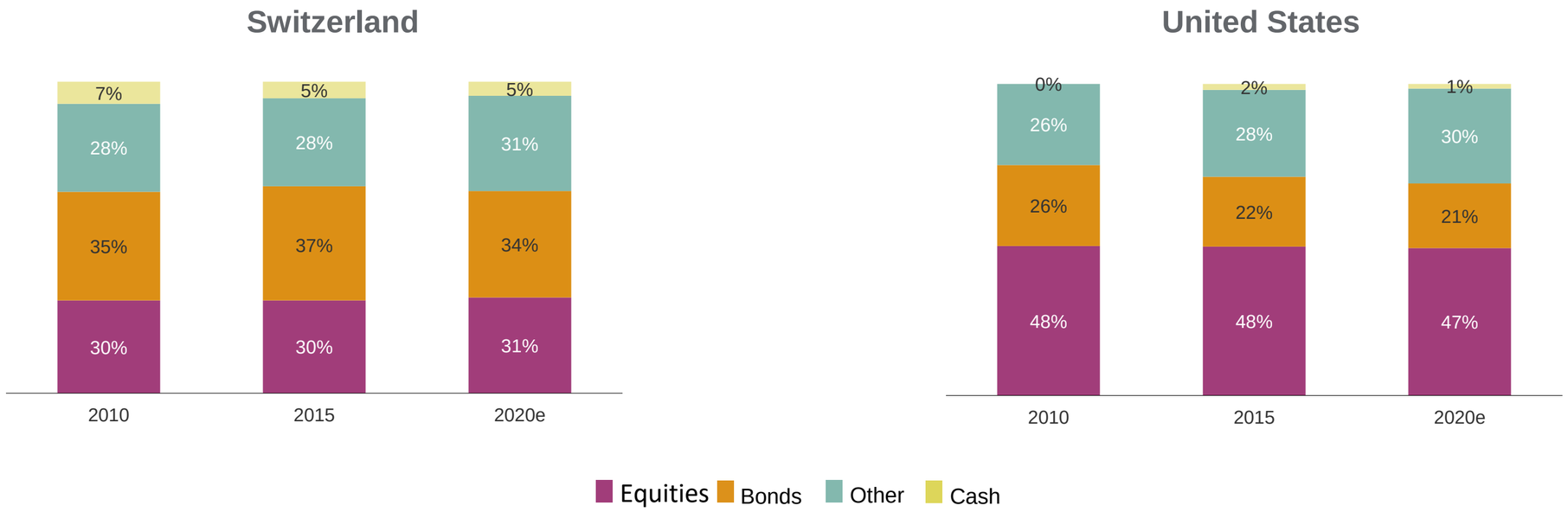
P7



Source: Thinking Ahead Institute and secondary sources

P7 asset allocation over the last ten years (2)

P7

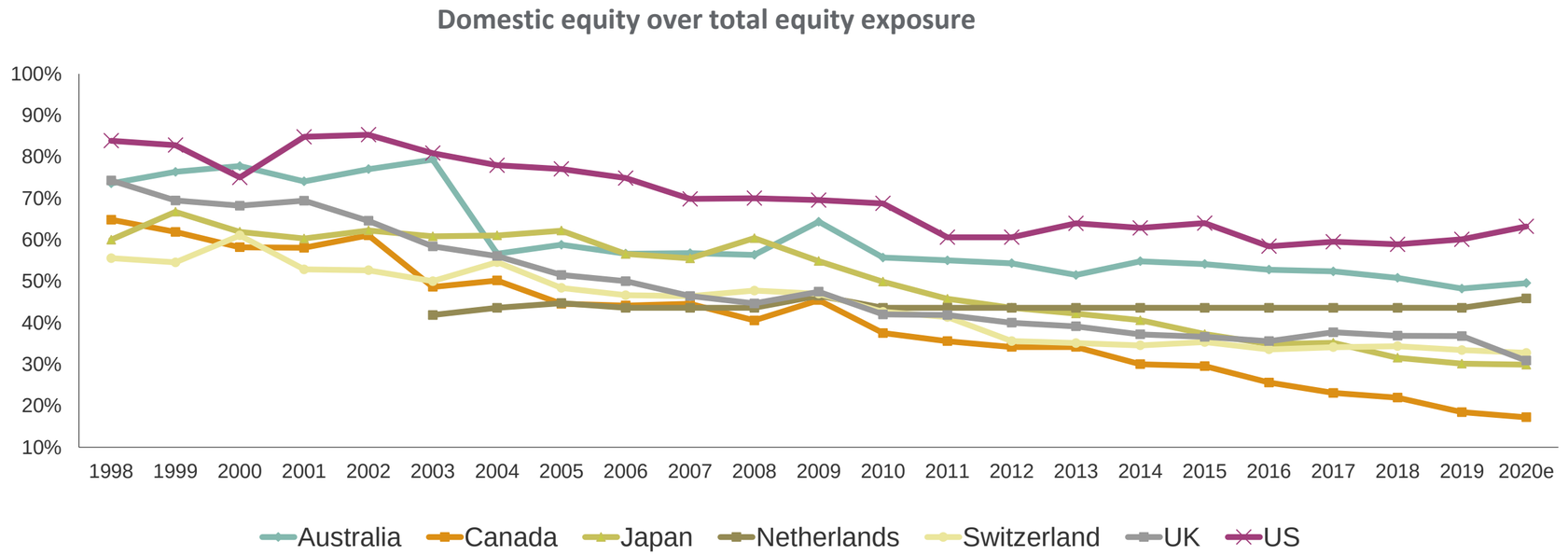


Source: Thinking Ahead Institute and secondary sources

Note: 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

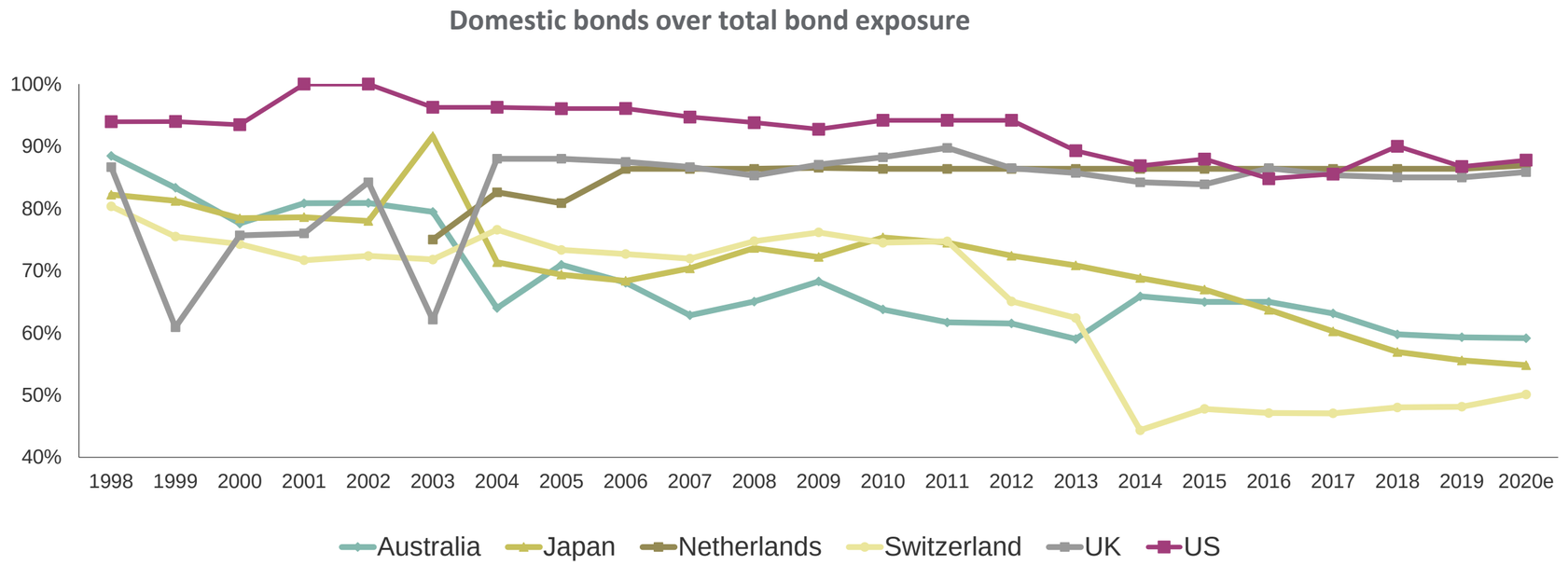


Source: Thinking Ahead Institute and secondary sources

- There is a clear sign of a reduced home bias in equities, as the weight of domestic equities has fallen, on average, from 67.0% in 2000 to 38.5% in 2020.
- During the past ten years, the US has had the highest allocation to domestic equities, while Canada, Japan and the UK have had the lowest allocation.

Domestic bonds exposure

P7



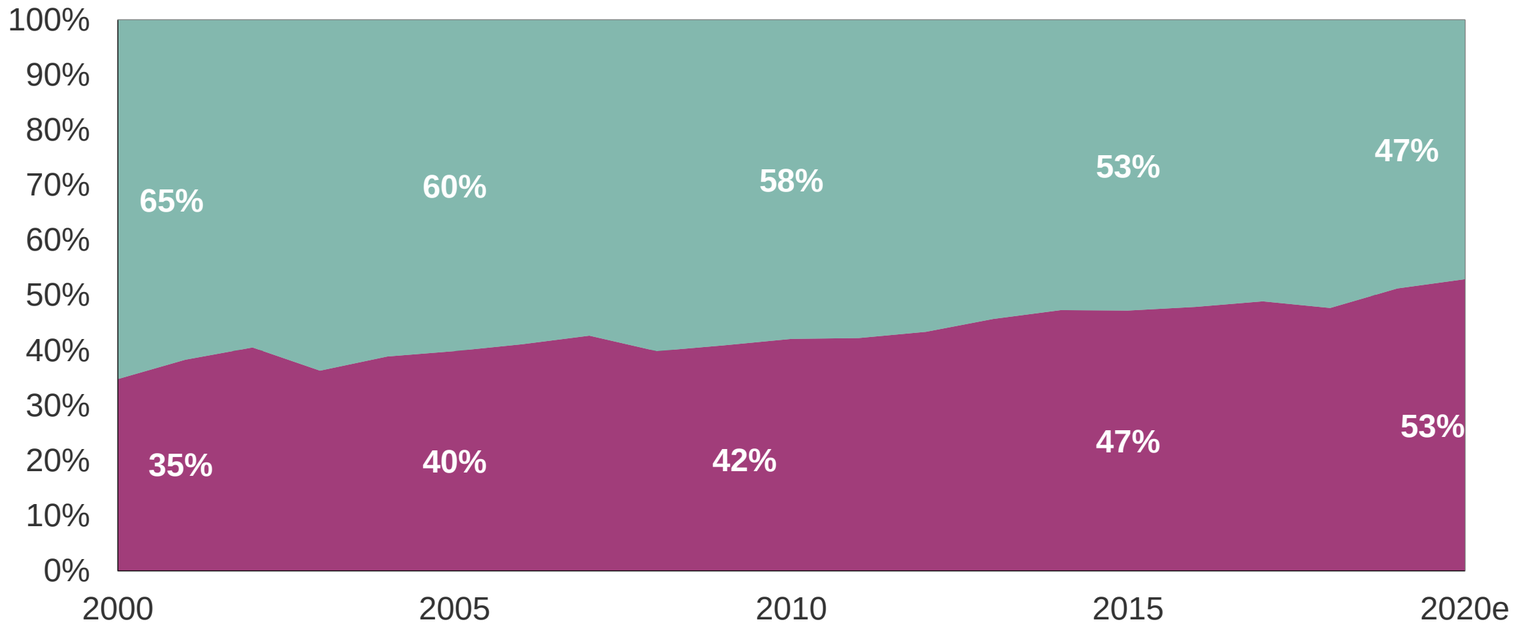
Source: Thinking Ahead Institute and secondary sources

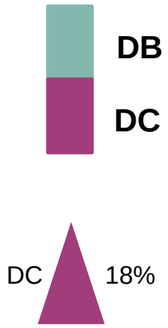
- The allocation to domestic bonds has remained high, even though it has decreased in the last 20 years. On average, the allocation to domestic bonds as a percentage of total bonds was 79.9% in 2000 and 70.8% in 2020.
- Netherlands, the UK and the US have the highest allocation to domestic bonds, while Switzerland has the highest foreign bond exposure.

Section 3 | DB/DC Split

P7

DC on the rise





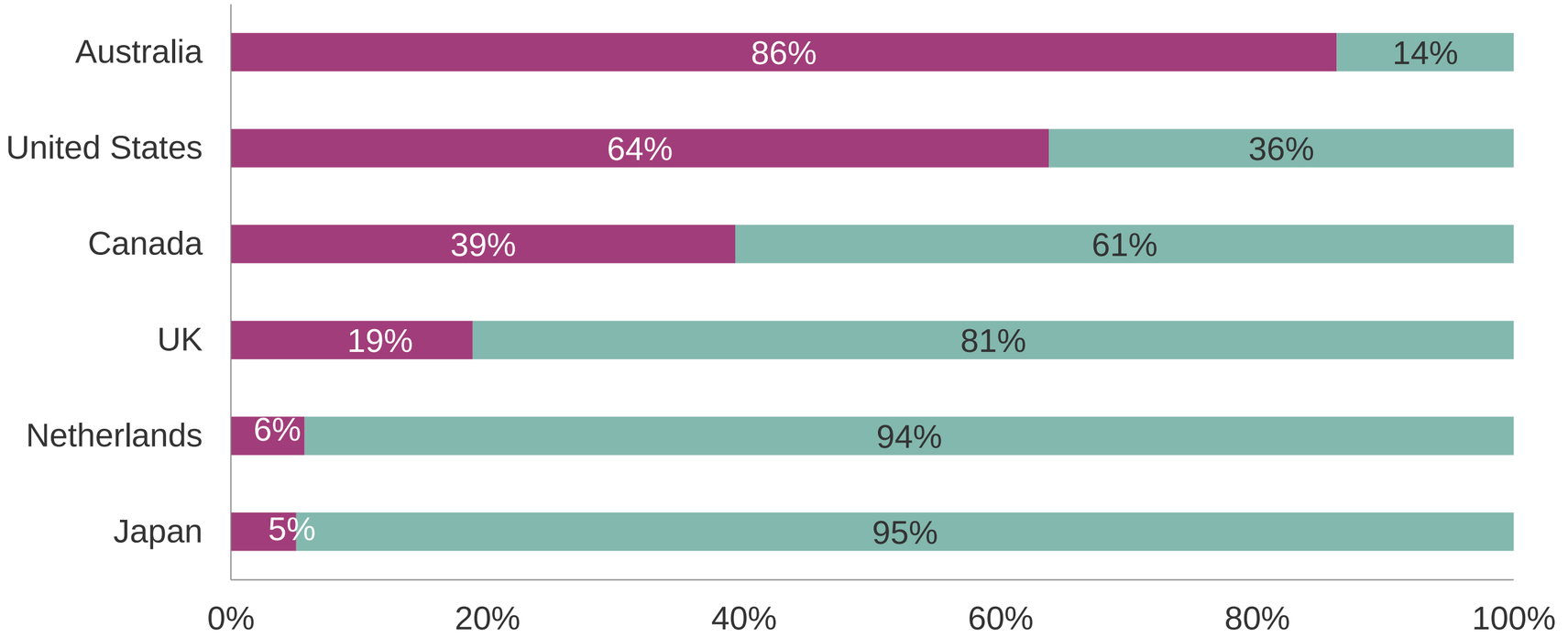
Source: Thinking Ahead Institute and secondary sources

Note: 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.

- During the last ten years, DC assets have grown by 8.2% pa while DB assets have grown at a slower pace by 4.3 % pa.
- The growth rate of DC assets for the last 20 years is 7.8% pa and 4.1% pa for DB assets.

DB/DC split in 2020

P7



Source: Thinking Ahead Institute and secondary sources

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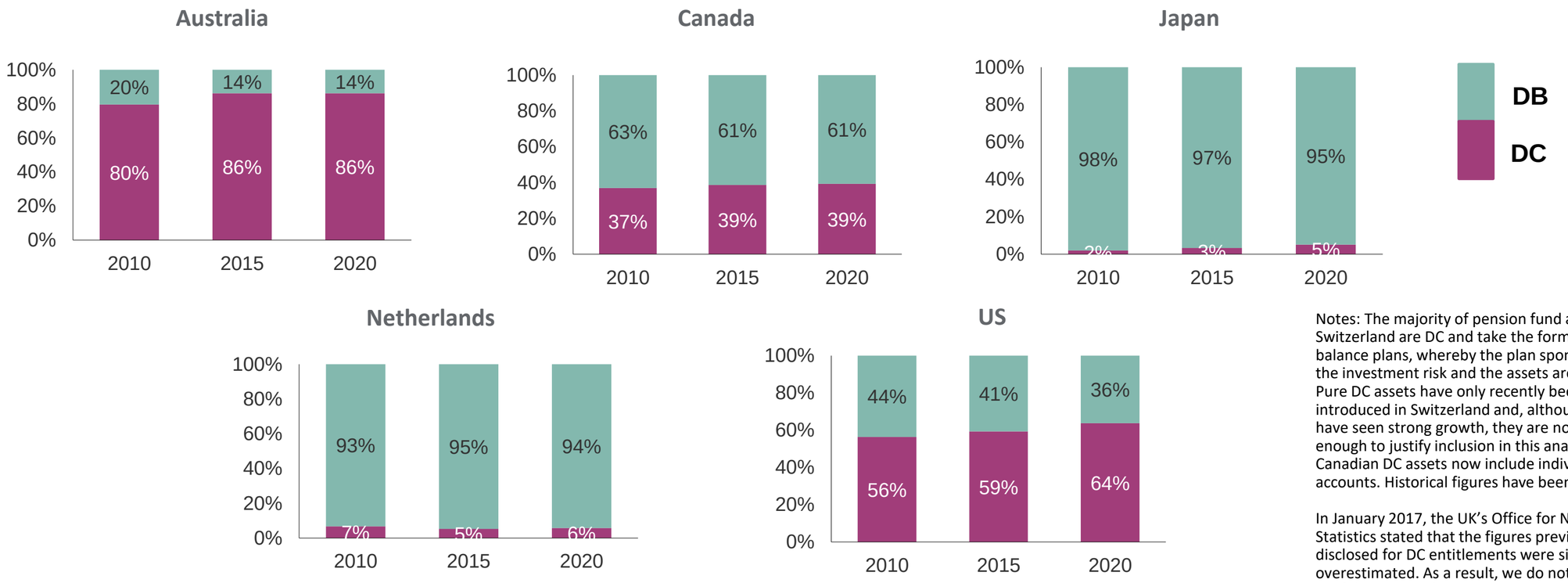
P7

DB/DC split over the last ten years



Source: Thinking Ahead Institute and secondary sources

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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 2019 (except for Australia and Brazil which is from June 2020) collected by Willis Towers Watson and from various secondary sources
  - Estimates as at year-end 2020 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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Contact Details

Paul Deane-Williams, +44 1737 274397
Paul.Deane-Williams@willistowerswatson.com

Website: www.thinkingaheadinstitute.org/en
LinkedIn: Thinking Ahead Institute
Twitter: @InstituteTAG

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