Week 11:
Understanding Retirement Savings Behaviour

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Next Steps as We Approach the End of Semester

Rescheduled lecture – Week 12

- Next week's lecture is rescheduled
- It will **not** take place on Thursday 23 April
- Instead: Friday 24 April 2026, 10:00 a.m., LR3

Reading diaries

- I will start marking soon – feedback is due in around 3 weeks
- If enough of you respond to the MFQ, I will do everything I can to turn them around sooner

Final essay reminder

- The 2022 UK mini-budget and the gilt market crisis through a behavioural lens
- 2,000 words (±10%, excl. references), worth 30% of total module mark
- Deadline: 11 May 2026, 12pm (noon) via MMS
- Full details and supplied readings on Moodle

Module Feedback Questionnaire (MFQ)

Behavioural Finance

Students

https://go.blueja.io/TVoULFqtNEeP4QzFfXQ-BA

Please complete the MFQ

- Your feedback helps improve this module for future cohorts
- The questionnaire is anonymous
- It takes only a few minutes

Scan the QR code or visit:

https://go.blueja.io/TVoULFqtNEeP4QzFfXQ-BA

The link is also available on Moodle.

Readings and Topics

Required readings:

- Ackert & Deaves, Chapter 17 “Understanding Retirement Saving Behaviour”
- Deaves (2024) *Household Finance*, Chapter 6 “Planners” and Chapter 7 “Savers”
- *The Economist* (2024), “European pensions are in dire need of reform”

Topics covered:

1. Why retirement saving matters: demographics, the DB→DC shift, and the European pensions crunch
2. Why people fail to save: low literacy, present bias, and information overload
3. What doesn’t work: education, advice, and tax subsidies
4. What does work: auto-enrolment, defaults, and Save More Tomorrow
5. Decumulation: annuity aversion and biased mortality beliefs

Outline

The UK Picture in 2024

The European Picture

Why People Fail to Save

What Does Not Work

What Does Work

Getting the Money Out

Conclusions

You Are the First Generation Who Has to Manage Your Own Retirement

The great risk shift

- Your grandparents retired on defined-benefit pensions – the employer bore longevity, inflation, and market risk
- You will retire on defined-contribution plans – you bear all three risks yourself
- In 1980, 84% of US private-sector pension participants were in DB plans; by 2020, only 17% were

A hard decision problem

1. How much should I save?
2. How should I invest it?
3. How should I draw it down?
4. And – when should I start?

→ Standard economics says the answer is obvious: smooth lifetime consumption. Behavioural economics explains why, in practice, almost nobody does.

The UK Picture in 2024

Three Out of Four UK Adults Now Have a Private Pension

Coverage has widened

FCA *Financial Lives 2024* survey of 17,950 UK adults:

- 75% (40.7 million) have some private pension provision – up from 65% in 2017
- 58% (31.6 million) have a pension currently *in accumulation*
- 24% (13.0 million) are already drawing income from a pension
- 80% of employees currently contribute to a workplace pension – the auto-enrolment effect

DC has overtaken DB

- 44% of adults (23.7m) hold a *DC* pension in accumulation – up from 37% in 2017
- Only 22% (11.7m) hold a *DB* pension – concentrated in public-sector and older workers
- Among employees aged 45–54, coverage reaches 86%
- Among the self-employed, only 24% currently contribute to any pension

→ Auto-enrolment (phased in from 2012) has done most of the heavy lifting. Employees have been quietly pulled into saving – the self-employed have not.

But 9.3 Million UK Adults Still Have No Private Pension at All

Who is left behind (FLS 2024)

- 17% of UK adults (9.3m) have no private pension provision – zero, in any form
- 47% of 18–24 year olds
- 54% of the unemployed; 29% of the self-employed
- 43% of adults in households earning under £15,000
- 20% of women versus 14% of men
- The gap is systematically concentrated in the groups with the lowest capacity to self-insure

Reasons given (adults 50+)

Reason	2024
Can't afford to pay in	33%
Too late to start	33%
Will rely on partner's pension	13%
Not thought about it	10%
Prefer other ways to save	9%
Don't trust providers	5%

"Can't afford" was 26% in 2017 – a notable rise.

→ Headline coverage hides the distributional story. Policy that only moves the median does not reach those most at risk.

Source: FCA Financial Lives 2024 survey (May 2025 release).

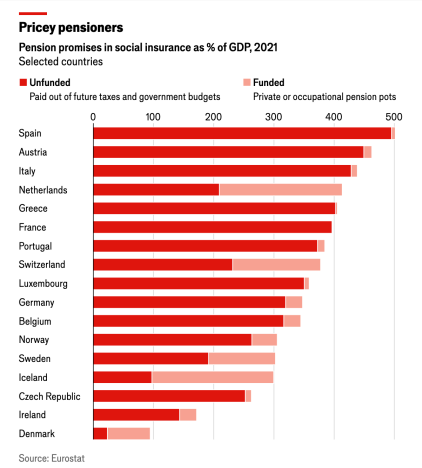
The European Picture

European Pensions Are a Ticking Fiscal Time Bomb

Pension promises on the books

- Unfunded pay-as-you-go promises dwarf funded pots across continental Europe
- In Spain, pension liabilities exceed 500% of GDP
- The UK is unusual in having a large funded private pension sector
- Governments cannot actuarially pay without higher taxes, later retirement, or lower benefits

→ The question is not "how much should *I* save", but why state pensions alone will not carry the load.



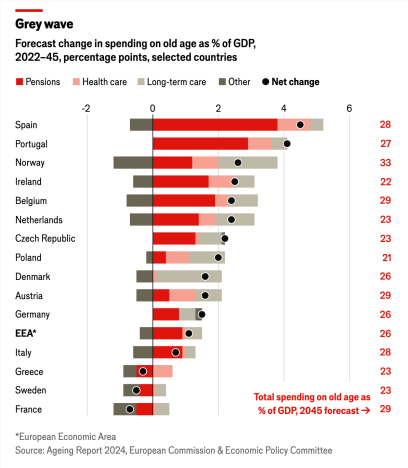
Source: *The Economist*

A Grey Wave Is Pushing Old-Age Spending Higher

Demographic arithmetic

- Across the OECD, old-age spending is projected to rise sharply between 2022 and 2045
- The worst-hit are southern and Mediterranean economies: Spain, Portugal, Slovenia
- The driver is not policy but biology – falling fertility and longer lives
- A shrinking working-age population must support a growing pensioner one

→ Every percentage point of GDP spent on pensions is a point not spent on schools, hospitals, or the climate transition.



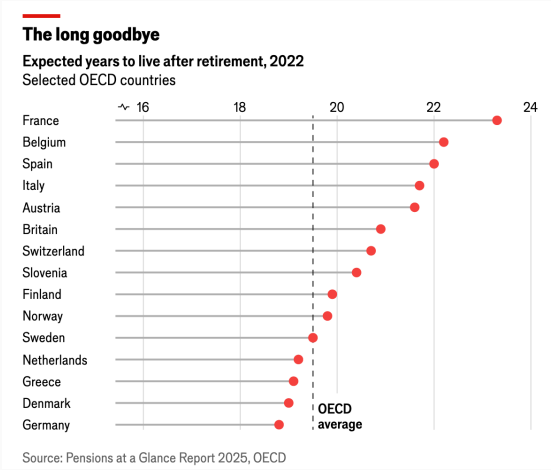
Source: *The Economist*

Retirement Has Become a Very Long Holiday

The long goodbye

- Average OECD worker now spends 18–24 years in retirement
- In France, expected retirement exceeds 23 years – a quarter of a typical lifespan
- A 40-year career must fund a 23-year retirement at a replacement ratio high enough to avoid hardship

→ The private DC decisions you make in your twenties matter: the state is less able to be the safety net it once was.



Source: *The Economist*

Even Free Money Goes Unclaimed

Stylised fact 1: UK DB opt-outs

- Benartzi & Thaler (2007): 51% of UK workers offered a fully employer-funded DB pension *decline* it
- No employee contribution required – pure free money
- This should be impossible in a rational model
- *Caveat:* this is pre-auto-enrolment UK evidence (studies from 1990s–2000s). Since 2012, auto-enrolment has transformed the landscape – the behavioural puzzle is exactly why architecture mattered so much

Stylised fact 2: US over-59½ arbitrage

- Choi, Laibson & Madrian: among workers aged over 59½, who face no tax penalty for withdrawal, 40% still leave employer matching contributions on the table
- The pure arbitrage trade – contribute, match, withdraw – delivers 25–100% instant returns

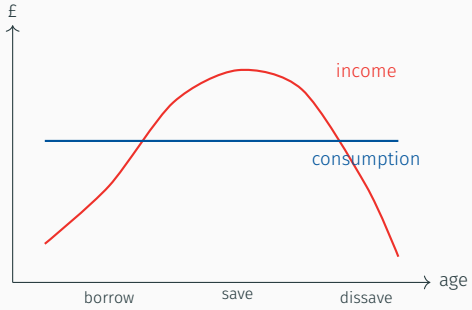
→ If the standard model cannot explain people refusing free money, we need a better model of savings decisions – one that takes psychology seriously.

Why People Fail to Save

The Classical Model Says Consumption Should Be Smooth

The lifecycle hypothesis

- Modigliani & Brumberg (1954): rational agents save to transfer consumption from high-income years to low-income years
- Income is hump-shaped: low early, high mid-career, zero in retirement
- Consumption should be flat: borrow when young, save in middle age, dissave in retirement
- Result: a smooth consumption path and a near-zero bequest



→ Lily the rational planner smooths perfectly. Real-world savers – who we now meet – do not look like Lily.

Javier Uses a Rule of Thumb – and Falls Short

The setup

Javier is 35, earns $50,000, and saves 10% of salary into a DC pension. He plans to retire at 65 and live to 85. He targets a 70% replacement ratio, a common rule of thumb.

His employer matches 50% up to 6% of salary.

What actually happens

- At 10% savings, Javier reaches only a 56% replacement ratio in retirement – well short of his target
- To hit 70%, he needs to save 15%, giving him 68.6%
- At 10% he must either work longer, accept a lower living standard, or face hardship

The Center for Retirement Research's National Retirement Risk Index (reported in Deaves 2024) puts 43% of US households on a savings trajectory that leaves them "at risk" in retirement.

→ Seemingly sensible rules of thumb produce dramatic shortfalls. So what is stopping people from saving more?

Diagnosis 1: Financial Literacy Is Low – Even the “Big Three”

Lusardi & Mitchell’s Big Three

1. **Compound interest:** if you put $100 at 2% and leave it for 5 years, will you have more than, less than, or exactly $102?
2. **Inflation:** if inflation is 2% and interest is 1%, can you buy more, less, or the same in a year?
3. **Diversification:** is a single stock riskier than a stock mutual fund?

US HRS 2004 results

- Compound interest correct: 67%
- Inflation correct: 75%
- Diversification correct: 52%
- All three correct: only 34%

Women, the young, and the old all score markedly lower. Literacy is strongly predictive of wealth, planning, and stock-market participation.

→ Two-thirds of households cannot reliably answer three basic questions. How can they be expected to run a 40-year DC pension?

Diagnosis 2: Present Bias Crushes Retirement Saving

Hyperbolic (quasi-hyperbolic) discounting

Laibson's β-δ model: today counts fully, but *every* future period (from tomorrow onwards) is discounted by the same extra factor $\beta < 1$.

$$U_t = u_t + \beta \sum_{s=1}^{\infty} \delta^s u_{t+s}$$

- $\beta = 1$: standard exponential, no present bias
- $\beta < 1$: today is uniquely privileged – tomorrow and ten years from now are penalised identically relative to now. This "now vs not-now" kink is what makes the model *quasi*-hyperbolic (discrete-time simplification of a hyperbolic curve)

The dynamic inconsistency

- At t: "I'll save more next year"
- At $t + 1$: "Just one more year"
- A sophisticate knows this and commits; a naïf keeps promising
- Procrastination is not laziness; it is rational given the preferences

Present bias predicts exactly the pattern we see: people agree saving is important, but reliably delay starting.

→ You cannot educate your way out of a preference problem. The bias is in the utility function itself.

Three Vladimirs Show How β Destroys Saving

	Classical	Present-biased		
Period	$\beta = 1.00$	$\beta = 0.85$	$\beta = 0.70$	$\beta = 0.55$
$t = 1$ (young, $y =$ \$40k)	save \$10k	save \$7k	save \$4k	dissave \$2k
$t = 2$ (middle, $y =$ \$60k)	save \$20k	save \$18k	save \$15k	save \$9k
$t = 3$ (retired, $y =$ \$0)	spend \$30k	spend \$25k	spend \$19k	spend \$7k
Replacement ratio	**75%**	**62%**	**48%**	**18%**

Source: adapted from Deaves (2024) *Household Finance*, Table 7.1

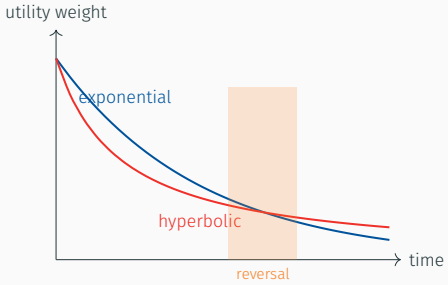
- With mild present bias ($\beta = 0.85$), the replacement ratio falls by 13 percentage points
- At $\beta = 0.55$, Vladimir actually borrows in period 1 and limps through retirement on 18% of prior income

$\rightarrow$ A small shift in the discount factor produces a dramatic shift in retirement adequacy – this is what behavioural realism looks like.

Hyperbolic Discounting Explains Why We Always Start “Tomorrow”

Shape of the two curves

- The exponential curve falls at a constant percentage rate – the same tomorrow as it does in 20 years
- The hyperbolic curve falls steeply at first and then flattens – the near future is specially painful to postpone
- When the two curves cross, preferences reverse
- Laibson’s β-δ is the discrete-time analogue: a sharp one-off drop between “now” and “not-now”, exponential thereafter



→ “I’ll definitely start saving next month.” Next month: “I’ll definitely start saving next month.”

Diagnosis 3: Information Overload Produces the $1/n$ Heuristic

The naïve diversification rule

Benartzi & Thaler (2001): given n funds, many 401(k) savers simply allocate $1/n$ to each, regardless of what the funds are.

- UCLA faculty, given two equity funds and one bond fund: 75% in equities
- TWA pilots, given one equity and two bond funds: 34% in equities
- Same decision, different menu, completely different outcome

Information overload

- Participation *peaks* at about two funds and falls 1.5–2 percentage points for every additional ten funds offered
- Changing the enrolment form from 4 lines to 8 lines of fund options raised take-up from 10% to 40%
- Choice overload produces inaction – the status quo wins

→ The *menu* of choices matters enormously. People outsource asset allocation to whoever designs the form.

What Does Not Work

Financial Education: Two Meta-Analyses Disagree

The pessimistic view

Fernandes, Lynch & Netemeyer (2014):

- 168 papers, meta-analysis
- Financial education explains just 0.1% of variance in downstream financial behaviour
- Effects decay to zero within 20 months
- Willis (2008): financial literacy is a “futile” policy – too much to learn, too rarely

The optimistic view

Kaiser, Lusardi, Menkhoff & Urban (2022):

- 76 randomised experiments – a higher bar than the 2014 review
- Financial education raises financial knowledge by 0.20 standard deviations
- Raises financial *behaviour* by 0.10 SD – about 5× the Fernandes estimate
- Effects are durable

→ Kaiser et al. is the stronger evidence – RCTs only, larger sample, more recent – and the field has largely moved on from the 2014 pessimism. Education *does* work, but the effect is modest. It is not the lever that moves national retirement outcomes by itself – which is why it sits on the bottom rung of the intervention ladder.

Financial Advice Is Compromised by Conflicted Incentives

The India insurance audit

Anagol, Cole & Sarkar (2017):

- Auditors visit Indian insurance agents asking for advice
- Term insurance plus saving is 6× better value than whole-life insurance for the auditor profile
- But agents overwhelmingly recommend whole-life – because the commission is higher
- Asking for term life by name does not change the recommendation

Advisors in rich countries too

- Foerster et al. (2017): Canadian advisors shape clients' portfolios more than client characteristics do
- 7% of US financial advisors have misconduct records
- Zingales: $138bn in financial-industry penalties between 2012 and 2014
- Bhattacharya et al. (2012): offered *free* unbiased advice, only 5% of German savers took it up – and those who needed it most were least likely to accept

→ Unbiased advice exists but is rarely taken. Biased advice is cheap, easy, and systematically sold.

Tax Subsidies Crowd Out Saving Almost One-for-One

Chetty et al. (2014), Denmark

- Denmark's natural experiment: a change in the pension-savings subsidy for top-income earners
- Administrative data on 4 million households tracks saving across *all* accounts – not just the tax-favoured ones
- The question: does a $1 tax break create $1 of new saving, or just shuffle money across accounts?

The headline result

- 99% of the tax subsidy is crowded out by reduced saving elsewhere
- For every $1 of government spending on the subsidy, saving rises by just $0.01
- The 15% of savers who are active (they actually respond to the incentive) are not the ones who need to save more
- The 85% passive majority is untouched

→ Tax policy aimed at the 15% who already save is expensive. The policy lever that would reach the passive 85% has to be something else.

What Does Work

Auto-Enrolment: Madrian & Shea's Natural Experiment

The setup

A large US firm switched its 401(k) default in 1998:

- **Before:** new hires had to *opt in* to contribute – the default was no contribution
- **After:** new hires were *automatically enrolled* at 3% into a money-market fund, and had to opt *out*
- The economic options were *identical* – only the default changed

The effect

- 401(k) participation at 3 months of tenure: 37% → 86%
- Benartzi & Thaler (2007): in replication studies, opt-in plans settle at 20% and auto-enrolment plans at 90%
- Participation gap widens for the young, low-income and minorities – exactly the groups policymakers worry about
- Effects persist for years, not months

→ A change in a single pre-ticked box raises participation by 50 percentage points. The default is the single most powerful instrument in household finance.

Seven Mechanisms Make Defaults So Sticky

1. Complexity aversion: the decision is hard; the default is easy
2. Procrastination: opting out requires an action today
3. Limited self-control: I know I should, but later
4. Endorsement effect: the default feels like a recommendation
5. Loss aversion: deviations feel like losses relative to the reference point
6. Status quo bias (Samuelson & Zeckhauser): preference for whatever is already there
7. Anchoring: the default rate becomes the anchor for what a "normal" contribution is

The deeper point

The default works because the *costs of changing it* are not the monetary costs of contributing. They are cognitive, emotional, and temporal. Choice architects raise or lower those costs without ever touching the budget constraint.

→ When you design a menu, a form, or a default, you are writing the decision for most of the people who will see it.

Save More Tomorrow: Thaler & Benartzi's SMarT Plan

The design

Four behavioural ingredients:

1. Commit now to increases that start later (beats present bias)
2. Tie increases to pay rises, so take-home pay never falls (beats loss aversion)
3. Make the increases automatic (beats status quo bias)
4. Allow opt-out any time (libertarian)

SMarT pilot results

- Pilot at a mid-sized US manufacturer in 1998
- Starting saving rate: 3.5%
- After 4 pay raises: 13.6% – a quadrupling over 40 months
- Retention: 80% of enrollees stayed in through all four raises (original pilot; later rollouts lower but still substantial)

The biggest gains went to those who had *refused* a one-off rate increase – exactly the people most in need of help.

→ SMarT does not fight present bias – it redirects it. Tomorrow-me pays the costs; today-me gets the warm glow of having done the right thing.

Automatic Contributions Create *Real* New Saving

Two levers, very different effects

Chetty et al. (2014) compare the Danish tax subsidy to automatic employer contributions for the same population:

- Tax subsidy: \$1 spent → \$0.01 in new saving (99% crowd-out)
- Automatic contribution: \$1 added → \$0.80 in new saving (only 20% crowd-out)
- The automatic lever is 80× more efficient per dollar of fiscal cost

Why the gap?

- The 85% passive majority *do not respond* to price incentives
- But they *do* accept the default contribution, because it takes no action
- The same people who ignore a tax break quietly absorb an automatic deduction
- Policy aimed at the passive majority has to bypass the decision rather than incentivise it

→ If you remember one number from this lecture: \$0.01 versus \$0.80. The architecture lever is 80 times more powerful than the information/price lever.

The Intervention Ladder: What Lifts Participation, and by How Much?

Intervention	Mechanism	Effect on participation
Financial education seminar	Information, human capital	+5 to +10 pp (decaying)
Simplified enrolment form	Reduce choice costs	+10 to +30 pp
Active-decision requirement	Force a yes/no, break status quo	+25 pp
Automatic enrolment	Flip the default	+50 pp
Auto-enrolment + SMarT	Flip default and lock in future increases	Rate 3.5% → 13.6%
Automatic employer contribution	Bypass the decision altogether	$0.80 of every $1 new

- The further down the ladder, the less you rely on the individual to make a good decision – and the harder the libertarian case, though opt-outs remain available in every row

→ Every rung down the ladder assumes the individual is a little less of a neoclassical optimiser – and works a little better.

Getting the Money Out

The Annuity Puzzle: Nobody Buys the Product Economists Recommend

The theory

- Yaari (1965): with no bequest motive, a rational retiree should annuitise all their wealth – a life annuity dominates self-managed drawdown
- Davidoff, Brown & Diamond (2005): even with modest bequest motives, annuitising "most" of retirement wealth is optimal
- Yet under 5% of US retirees voluntarily buy an annuity

Framing is the whole story

Brown, Kling, Mullainathan & Wrobel (2008):

- Frame the annuity as an investment: "earn \$650/month for life, but if you die early you lose the principal"
- Take-up: 21%
- Frame the annuity as consumption: "spend \$650/month for life, guaranteed"
- Take-up: 72%
- *Caveat:* these are hypothetical-choice vignettes, not real money, and subsequent replications have found smaller effects – but the qualitative framing pattern survives

→ A large swing from a wording change. The "puzzle" is not a puzzle about risk preferences – it is a puzzle about framing.

Biased Mortality Beliefs Distort Decumulation Too

The young and the old both get mortality wrong

Heimer, Myrseth & Schoenle (2019):

- Young people overestimate their probability of dying at each age – and under-save
- Older people underestimate their probability of dying – and under-consume
- Both biases come from the same heuristic: extrapolate from vivid, recent, age-mate outcomes

Welfare losses

- Under-saving in middle age: equivalent to a 26% retirement shortfall relative to unbiased
- Under-consumption in old age: retirees leave about 27% of their consumption capacity unspent
- The young save too little; the old spend too little – and the unintended bequest grows

→ Decumulation is not just the inverse of accumulation. The same savers who under-saved as workers then under-consume as retirees – out of fear of running out.

Asset Allocation by Age: The 100-Minus-Age Rule

The rule of thumb

- A common heuristic: *hold (100 – age)% in equities*, the rest in bonds
- 25-year-old: 75% equities; 65-year-old: 35% equities
- Simple, conservative, and approximately aligned with human-capital arguments in the lifecycle literature
- Target-date funds implement a smoother version automatically

Deaves (2005): reality is not this tidy

- In self-directed 401(k)s, the actual distribution of equity shares is wide and flat – far from the simple rule
- Mean equity share: 0.69 for the young, 0.43 for the old
- Many young workers hold near-zero equities; many older workers hold near-100%
- The $1/n$ heuristic, employer-stock overload, and inattention all scramble the picture

→ Target-date funds and lifecycle defaults are the architectural fix – they do the allocation *for* the saver, not *with* them.

Conclusions

Isn't This Paternalism?

The objection

- If the government auto-enrols me, have I really *chosen* to save?
- Doesn't a paternalistic state override my preferences?
- What if my true preference is to consume now?

Libertarian paternalism (Thaler & Sunstein)

- Choice architecture is unavoidable – every form has *some* default
- If the default will influence behaviour either way, the question is only which default to pick
- Opt-out remains costless: anyone can undo the nudge
- Typical opt-out rates after auto-enrolment: 10–15%

→ There is no neutral default. The choice is between a well-designed default and an accidental one.

Key Takeaways across Six Themes

Theme	Key mechanism	Signature finding
The landscape	DB→DC shift plus demographic ageing	Spain pension liabilities >500% of GDP
Why people fail	Low literacy and present bias	Only 34% get all three Big Three questions right
What doesn't work	Education, advice, tax subsidies	Denmark: $0.01 new saving per $1 of subsidy
What does work	Defaults, auto-enrolment, SMarT	Madrian–Shea: 37% → 86% participation
SMarT	Commit now, increase later, tied to raises	3.5% → 13.6% over 40 months
Decumulation	Annuity framing and mortality beliefs	Investment vs consumption frame: 21% vs 72%

The Lecture in One Sentence – and One for You

Policy takeaway

Retirement saving is not a knowledge problem –
it is a choice-architecture problem,
and defaults work 80× better than tax breaks.

Personal takeaway

- Use the same mechanisms on yourself that good policy uses on others
- Set up automatic monthly contributions to a pension or ISA the day you receive a payslip
- Commit *future* pay rises to saving – your own private SMarT plan
- Pick a target-date fund and stop tinkering

→ If you fix the architecture of your own decisions today, you never have to rely on the willpower of a future you who might not show up.

Closing Quiz

Interactive quiz on Vevox

Test your understanding of:
the DB-to-DC shift, present bias, the Big Three,
auto-enrolment, SMarT, and the annuity puzzle

Please open Vevox and enter the session code

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