Welcome to the Gray Parade

Pronatal transfers, pensions, and pricing the value of encouraging births in an aging society

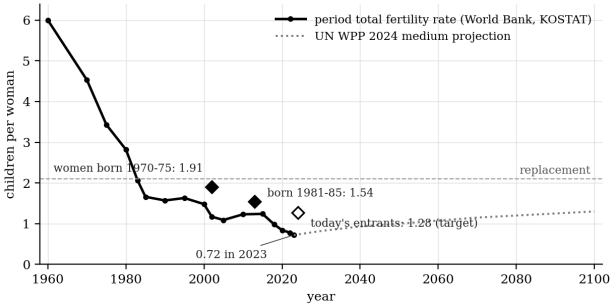
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NHH · Trinity College Dublin

Draft deck, November 9, 2026

What is the value of encouraging births?

Bye, bye, baby! Korea hits lowest fertility ever recorded



Diamonds: completed fertility of the cohorts the model is fitted to (filled) and pushed to (hollow), placed at their decision age.

- Period fertility of 0.72 in 2023.
- A pay-as-you-go pension built for a much younger country. The National Pension Service projects its fund to run out in the mid-2050s.
- Policymakers implemented two responses:
  - the 2025 pension act increase in contribution and replacement target
  - cash for parents: raised in 2024, and a package announced for 2027

The two pension laws, and the two transfers

What the names in this talk mean. Every welfare number compares a policy with the 2025 act.

The old law (before March 2025)

- Contributions 9% of covered wages, replacement rate sliding to 40% by 2028.
- Pension age rising to 65 by 2033 (a 1998 law).

The 2025 act (March 2025)

- Contributions up half a point a year from 2026, 9% to 13% in 2033.
- Replacement rate fixed at 43%. Pension age as before.

The 2024 transfer (law, at 2024 levels)

- Parental benefit (1,000,000 won a month at age 0, 500,000 at age 1) plus child allowance (100,000 a month to age 8).
- 0.55 years of average net earnings per child.

The 2027 package (announced, not law)

- A birth grant of 10 to 15 million won, then 200,000 won a month to age 12.
- 0.9 years of earnings per child, replacing the 2024 transfer.

How can a government encourage births? What's the social value of doing so?

Any answer is going to need to address the following:

1. **What are children worth to their parents?** Without it, fertility cannot be modeled or fit to the data, and a transfer has no welfare reading.

2. **How much can government tools alter fertility decisions?** How many births a won of transfers buys, which puts a price on a marginal birth.

3. **A choice of welfare function.** A stance on whom to count: people alive today, the children a policy adds, and the future workers who will pay for today's old.

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3. **A choice of welfare function.** A stance on whom to count: people alive today, the children a policy adds, and the future workers who will pay for today's old.

We will show when the choice of the third one matters!

This paper

- **Model.** An overlapping-generations model of Korea. Households choose whether to have children, how many, and how much to spend on each, under earnings risk. Children grow up to be the next generation's workers and taxpayers.
- **Parents value their children's lives.** Not just their number and schooling, but how their lives go, including the taxes and pensions they will face.
- **Institutional setting**: We start with Korea's actual populations and completed fertility. Estimate the model matching completed fertility and allow child costs to rise over time to match the fall in fertility. From 2023 fertility responds endogenously to the policies introduced as scheduled, and account for taxes needed to pay for them.
- **Who counts.** Nine planner criteria, plus each living family's own valuation of the policy.

Preview of findings

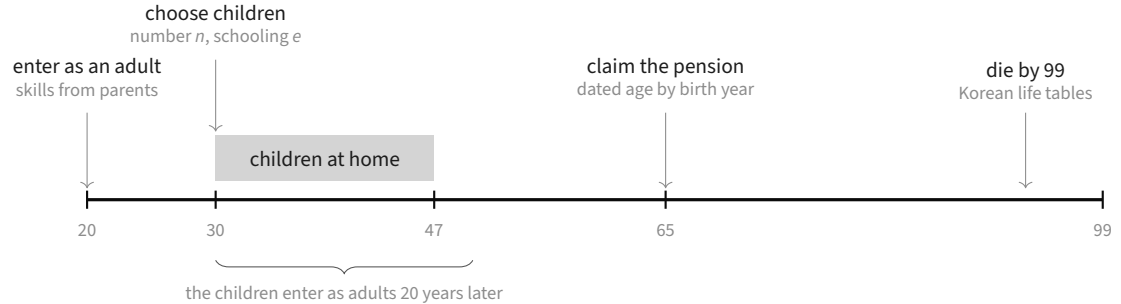
- **Pension reforms perform similarly in term of aggregate welfare.** Welfare gains from the old law and the 2025 act are similar for every planner. The act's real effect is ten more years of fund (depletion in 2072, not 2062).
- **Cash buys births.** The 2024 transfer lifts forward fertility from 1.33 to 1.70, the 2027 package to 1.90.
- **Welfare gains depend on criteria.**
  - Planners who count the added people gain 14 to 84% from the 2024 transfer.
  - Planners who count welfare per head lose 2 to 6%.
  - **The living:** Families alive in 2023 gain 0.2% by their own valuation, and one in five gains at all.

Where this sits

- Pronatal policy in quantitative models
  - **Korea:** Kim et al. (2024), on the same KLIPS cohort we estimate on. Parental leave: Kim and Yum (2025).
  - **Japan and East Asia, with pensions:** Okamoto (2020, 2025), Hagiwara (2025), Zhou (2022), Coeurdacier, Guibaud and Jin (2014)
  - **Quantity and quality:** Becker and Lewis (1973), de la Croix and Doepke (2003), Doepke et al. (2023)
- Pensions and aging in general equilibrium
  - Auerbach and Kotlikoff (1987), İmrohoroğlu et al. (1995), Conesa and Krueger (1999), Nishiyama and Smetters (2007), Krueger and Ludwig (2007), Kotlikoff et al. (2007), İmrohoroğlu and Kitao (2012); dated reforms on an actual pyramid: Kitao (2014, 2015), Song et al. (2015)
- Welfare when policy changes who is born
  - Golosov et al. (2007), Schoonbroodt and Tertilt (2014); critical levels: Blackorby, Bossert and Donaldson (2005)
  - Dynastic preferences: Barro and Becker (1989), Córdoba and Ripoll (2019); dynastic pension welfare: Fuster, İmrohoroğlu and İmrohoroğlu (2007)

The model

One household's life



- Each year: work, consume, save. Earnings follow a life-cycle profile with persistent risk.
- One fertility decision at 30, made once. The same simplification as Kim et al. (2024), and a real limitation for questions about timing.

What a child costs

- **Consumption.** Household consumption is shared through an equivalence scale while the children are at home.
- **Care, ages 0–5.** set to 12% of average net earnings per child-year; the state covers it in the baseline.
- **Earnings.** Parents earn less in every year a child is at home, shaped by Korean event studies and falling mostly on the first child. Its size rises over time to fit the fall in fertility. No policy we price moves it: the policies change the money cost of a child, not the earnings cost.
- **Becoming a parent.** A fixed cost of the first child, the same for every household and every year.
- **Schooling, ages 6–17.** Private education is chosen. The bill is paid at the decision, with a borrowing line that lets parents spread it over the school years.
- **Cash from the state.** Each pronatal policy is a schedule of payments by the child's age.

Every age but 30: a standard life-cycle problem

State: assets a, skill h, productivity z, and the children n while they are at home

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Ages 20–99 except 30, in year t

$$V_{j,t}(a,h,z,n) \;=\; \max_{c,\,a'} \; \frac{\big(c/\Lambda_j(n)\big)^{1-\sigma}}{1-\sigma} \;+\; \beta\,\psi_j\,\mathbb{E}\big[V_{j+1,t+1}(a',h,z',n)\big]$$

$$\text{working:}\quad c + a' = (1-\tau_t)\,w_t\,h\,\epsilon_j\,z\,m_k(n) \;+\; (1+r_t)\,a \;-\; n\,x_{k,t}, \qquad a' \geq -L_k(n)$$

$$\text{retired:}\quad c + a' = b_{t,c} \;+\; (1+r_t)\,a$$

- Children at home (ages 31–47, child age $k = j - 30$): equivalence scale $\Lambda_j(n)$, earnings penalty $m_k(n)$, money cost per child $x_{k,t}$ net of care subsidies and pronatal cash. Otherwise $\Lambda = m = 1, x = 0$.
- $L_k(n)$: the school-years borrowing line. $b_{t,c}$: cohort c's pension under year t's law. τ_t: the payroll tax.
- After 30, n is fixed and households maximize their own consumption value. Before 30, the continuation V_{30} is the value of the fertility decision.

At 30: how many children, and how much schooling

The fertility decision

$$U_{30,t}(a,h,z) = \mathbb{E}_{\varepsilon} \max_{n\in\{0,\dots,4\}} \left\{ U_t(n) - c_0\,\mathbf{1}[n \geq 1] + \sigma_\varepsilon\,\varepsilon_n \right\}$$

$$U_t(n) = \max_{e,\,a'} \underbrace{\frac{C^{1-\eta}}{1-\eta}}_{\text{own consumption}} + \alpha\, w(n)\, \underbrace{\mathbb{E}_{z'}\left[U_{20,t+20}(0,q,z')\right]}_{\text{the children's lives}}$$

$$\text{s.t.} \quad c + a' + \theta_e\, e\, n = (1-\tau_t)\, w_t\, h\, \epsilon_{30}\, z\, m_0(n) + (1+r_t)\, a - n\, x_{0,t}, \qquad q = A_h\big(\kappa\, e + (1-\kappa)\, h\big)^{\eta_h}$$

- C is the constant consumption per year, from 30 on, worth as much as $\frac{(c/\Lambda(n))^{1-\sigma}}{1-\sigma} + \beta\psi_{30}\,\mathbb{E}\big[V_{31,t+1}(a',h,z',n)\big]$.
- ε_n: a logit taste shock that spreads households across sizes. c_0: a fixed cost of the first child, the same for everyone, set once so that 2.9% of the 1970–75 cohort stays childless.
- The children enter at 20 with no assets, skill q and a fresh draw z'. Their U_{20} is the same problem, solved by the model.

What makes the model dynastic



Each generation counts the next one's life

$$U_{\text{parent}} = O_{\text{parent}} + \alpha\, w(n)\, \mathbb{E}\big[U_{\text{child}}\big], \qquad U_{\text{child}} = O_{\text{child}} + \alpha\, w(n')\, \mathbb{E}\big[U_{\text{grandchild}}\big]$$

$$\Rightarrow \quad U_{\text{parent}} = O_{\text{parent}} \;+\; \alpha\, w(n)\, \mathbb{E}\big[O_{\text{child}}\big] \;+\; \alpha\, w(n)\, \alpha\, w(n')\, \mathbb{E}\big[O_{\text{grandchild}}\big] \;+\; \cdots$$

- Each generation makes its own choices: saving, schooling, fertility. None chooses for their children.
- But each parent counts the children's lives as the children will live them. Substitute forward and the parent counts the whole family line, with the weight shrinking each generation.
- $\alpha w(n)$ is the discount between generations: 0.14 on one child's life, 0.20 on two children's together. This is Barro and Becker's dynasty, in the form of Córdoba and Ripoll (2019).

Government: one payroll budget

- **Pension.** Korea's National Pension, with the law before 2025 and the 2025 act as dated schedules: the contribution rate by year, the replacement target, the claim age by birth year, and the fund at its actual size.
- **Closure.** Once the fund is exhausted, a rule keeps the system paying: the payroll rate rises (or, with a cap, benefits adjust).
- **Pronatal cash.** Paid from a payroll tax by workers in the same year.
- **Prices.** The interest rate and the wage clear every year from capital and effective labor.

Estimation: Korean parents who have finished having children

	Data	Model
Mothers		
Share with one	0.202	0.222
Share with two	0.650	0.609
Share with three or more	0.149	0.169
Mean completed fertility	1.965	1.969
Spending per child, 2 vs 1	0.924	0.750
Spending per child, 3+ vs 1	0.681	0.462
Child's skill on parents' income	0.320	0.337
Fertility on income	0.082	0.052

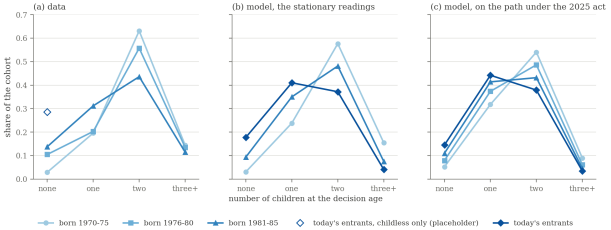
KLIPS women born 1970–75; KOSTAT Private Education Expenditures Survey 2024; Kim et al. (2024). All 12 targeted moments in Appendix.

- Eight parameters by SMM, matching fertility moments of KLIPS women born 1970–75 and KOSTAT Private Education Expenditures.
- Matches moments on how fertility and spending respond to income and prices.
- The fit is on mothers. Childlessness set by the fixed cost of the first child, and estimates separately in a second step.

From the 1970s cohort to today's parents

- The women we estimate on had 1.9 children. Korea's birth rates have been about 1.2 since the 2010s, and the pension arithmetic runs on today's level.
- We hold every preference parameter at its estimate and let children get dearer. Two knobs: the earnings cost of children and their money cost.
- Three readings. Preferences are estimated matching fertility of 1970–75 cohort. The 1981–85 cohort fertility is matched keeping preference fixed and estimating the two knobs. Today's entrants extend the same line until completed fertility is 1.275.
- The fit puts the whole rise on the earnings cost: 1.9 times the 1970s level by 2013, 2.5 times today. The money cost stays near zero.

Fertility across cohorts: what the data show and the model predicts



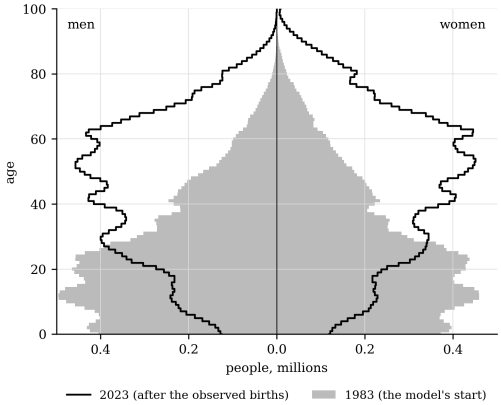
	1970–75	1981–85	today
Mean, data	1.907	1.540	1.275
Mean, model	1.875	1.544	1.279
Childless, data	0.029	0.138	*0.29*
Childless, model	0.031	0.094	0.177

- first cohort childlessness matched by fixed cost of the first child, after estimating other preferences.
- Its rise is predicted from rising child costs.

(b): stationary calculations. Each cohort is placed in a separate economy where conditions remain fixed over time (wages, interest rates and taxes).

(c): changing economic path under the 2025 act. Households face—and anticipate—changing child costs, demographics, pension rules, wages, interest rates and taxes.

The transition



Korea's population by age. UN WPP 2024.

- Historical starting point: begin with Korea's 1983 population and use observed births through 2023.
- Policy simulation: households choose future births; wages, interest rates and taxes adjust each year.
- Welfare comparison: evaluate policies from 2023, counting existing generations and future generations.

Whose welfare counts when a policy changes who is born?

Who counts

Criterion	What it adds up	Discount across birth years
Population planners: more people can raise the sum		
Total utilitarian, three rates	everyone's lifetime value	$\delta \in \{0.95, 0.97, 0.99\}$
P-efficiency	everyone's lifetime value	$\delta = 1$
Per-head planners: only how well each person lives		
Average utilitarian, three rates	each birth year's average	$\delta \in \{0.95, 0.97, 0.99\}$
A-efficiency	each birth year's average	$\delta = 1$
Rawlsian	the worst-off birth year	–
The living	each living person's family, by its own valuation	–

- Counted: everyone alive in 2023 as well as everyone born later, for the rest of their lives. Reported as consumption equivalents.
- Total welfare rises when an additional person's wellbeing exceeds a chosen threshold (we set it at zero).
- Welfare gains for families alive in 2023 accounts for their concern for descendants. It does not depend on the planner's discount rate or critical level.

Results

every policy against the 2025 act

The experiments

Five transitions from the same 1983 start. The pension law and the transfer differ.

Cell	Pension law	Transfer to parents	Paid from
2025 act (the base)	2025 act: 9% to 13% by 2033, 43%	none (free childcare, in every cell)	–
Old law	9%, sliding to 40%	none	–
2025 act + 2024 transfer	the 2025 act	the parental benefit and child allowance, 0.55 years of earnings per child	2024
Old law + 2024 transfer	the old law	the same	2024
2025 act + 2027 package	the 2025 act	the 2027 package instead of the 2024 transfer, 0.9 years per child	2027

- **What a cell changes.**
  - The contribution rate and the replacement target by year, and the transfer by the child's age from its start year.
  - Nothing else: the same preferences, child costs, pension age, fund, 1983 population and observed births to 2023.
- **Who pays.** One payroll tax pays the cheques and the transfer in the same year.
  The fund covers the pension's gap until depletion, then the payroll tax rises to pay the promised cheque.
- **What households know.** The dated laws and the rising child costs. Prices clear every year.

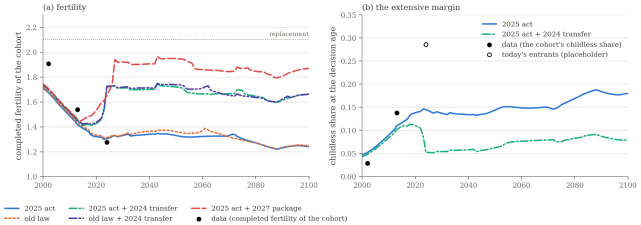
The pension law first

The old law against the 2025 act

	2025 act	Old law
Contribution rate	9% to 13%	9%
Fund peak (multiple of GDP)	2047 (0.96)	2041 (0.73)
Fund runs out	2072	2062
Payroll tax, 2050	7.8%	5.9%
Payroll tax, peak	17.8% (2073)	16.9% (2066)
Forward fertility	1.33	1.35
Planners' mean of nine		+0.8
[min, max]		[−0.0, +2.5]
The living (share gaining)		+0.15 (50%)

- The old law beats the act by < 1 point for every planner (it raises current workers' taxes).
- Although the act postpones the fund's depletion by 10 years longer.
- After depletion payroll tax rise to pay pensions, at about 17 to 18% of earnings at the peak.
- Fertility barely moves.

Cash buys births



	Forward fertility
2025 act	1.33
Old law	1.35
2025 act + 2024 transfer	1.70
Old law + 2024 transfer	1.72
2025 act + 2027 package	1.90

- The 2024 transfer adds 0.37 children per woman, the 2027 package 0.57.
- In the long run: 1.16 under the act, 1.63 with the 2024 transfer, 1.85 with the 2027 package.

What each policy is worth

Consumption equivalents in percent against the 2025 act, scored from 2023

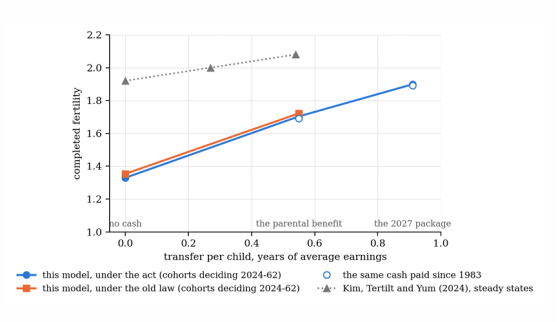
	Old law	2025 act + 2024 transfer	Old law + 2024 transfer	2025 act + 2027 package
Population planners				
Total utilitarian, $\delta = 0.95$	+0.5	+14.4	+15.0	+20.7
$\delta = 0.97$	+0.9	+24.9	+25.9	+38.4
$\delta = 0.99$	+1.8	+52.6	+54.8	+90.2
P-efficiency	+2.5	+83.8	+87.3	+154.7
Per-head planners				
Average utilitarian, $\delta = 0.95$	−0.02	−2.24	−2.15	−3.90
$\delta = 0.97$	+0.01	−2.34	−2.24	−4.20
$\delta = 0.99$	+0.15	−2.63	−2.45	−4.89
A-efficiency	+0.28	−2.91	−2.63	−5.48
Rawlsian	+1.42	−5.68	−4.39	−9.95
The living				
Own family's valuation (share gaining)	+0.15 (50%)	+0.21 (20%)	+0.40 (24%)	−0.02 (20%)
Forward fertility (2025 act 1.33)	1.35	1.70	1.72	1.90
Payroll tax 2050 (2025 act 7.8%)	5.9%	9.3%	7.4%	10.7%
Fund runs out (2025 act 2072)	2062	2075	2063	2078

What each policy is worth, depends on welfare measure

- **Population planners are for the 2024 transfer.** The total utilitarians gain 14 to 53%, P-efficiency 84%. The added children live lives worth living, and these planners count them.
- **Per-head planners are against it.** The average utilitarians lose 2.2 to 2.6%, A-efficiency 2.9%, the Rawlsian 5.7%. The transfer raises the payroll tax to 9.3% in 2050 against 7.8%, and more people do not raise an average.
- **The 2027 package is the 2024 transfer scaled up.** 1.5 times the births (0.57 against 0.37), 1.4 to 1.8 times the population planners' gain, and the per-head loss scaled up by as much.
- **The value of a birth is similar across policies.** P-efficiency gains 224 points per unit of forward fertility under the 2024 transfer and 272 under the 2027 package.

Buy, buy, baby

What a marginal birth costs under each plan



	2024 transfer	2027 package
Transfer per child, years of earnings	0.55	0.91
Forward fertility (2025 act: 1.33)	1.70	1.90
Births per year of earnings	0.68	0.63
Money to inframarginal births	78%	70%
Outlay per marginal birth, years	2.5	3.0
Outlay 2030, share of wage bill	1.7%	2.8%

- A year of earnings per child buys 0.7 births per woman here, 0.3 in Kim et al. (2024)'s steady states.
- Three quarters of the money goes to children who would have been born anyway, so a marginal birth costs 2.5 to 3 years of earnings.

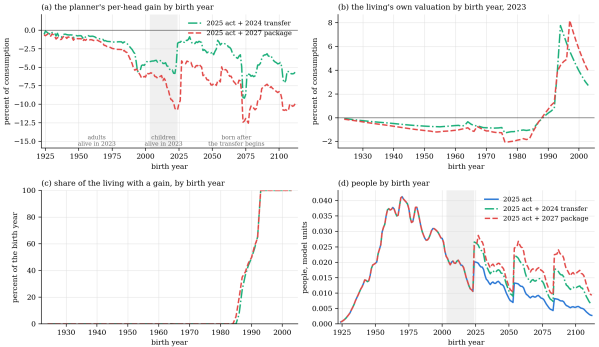
Where the gain comes from

Each policy in three steps, against the 2025 act, scored from 2023

	Forward fertility	Planners' mean of nine [min, max]	The living (share gaining)
2025 act + 2024 transfer			
Households respond, at the act's prices and payroll tax	1.74	+22.8 [−1.1, +100.6]	+1.51 (82%)
+ the payroll tax that pays for it	1.74	+21.9 [−2.2, +99.3]	+0.29 (22%)
+ prices (the full policy)	1.70	+17.8 [−5.7, +83.8]	+0.21 (20%)
2025 act + 2027 package			
Households respond, at the act's prices and payroll tax	1.94	+40.0 [−2.7, +190.3]	+1.94 (82%)
+ the payroll tax that pays for it	1.94	+37.8 [−4.7, +185.5]	+0.20 (26%)
+ prices (the full policy)	1.90	+30.6 [−10.0, +154.7]	−0.02 (20%)

- **The living gain only until they pay.** Before the tax, four in five of the living gain. The payroll tax that pays for the transfer takes most of it, and one in five is left gaining.
- **Prices take a fifth of the planners' gain**, for both policies, and trim forward fertility by 0.04.
- **The per-head planners' loss is mostly prices.**

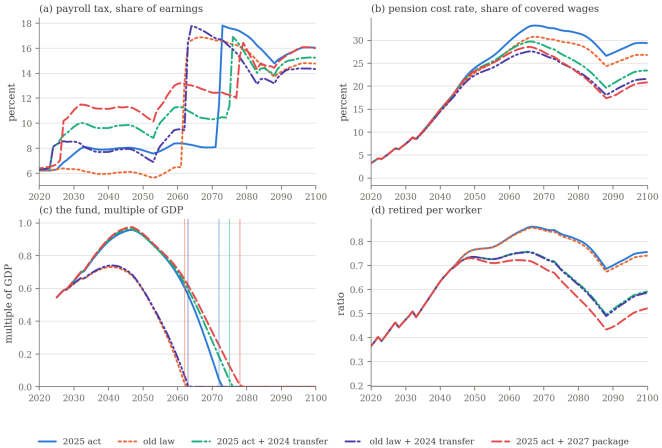
Who gains



- By own consumption every birth year loses from the 2024 transfer:
  - adults of 2023 by 1.9%
  - the children of 2023 by 4.5%
  - those born later by 3%

  Welfare gains come from having more people, not better-off people.
- Living generation gain 0.2% (value children's lives),
  Only 25% gaining: those born after 1985.

What the births do for the pension



- Under baseline act fund's end in 2072. The 2024 transfer delays end to 2075, the 2027 package to 2078. Neither avoids it.
- The transfer is paid first: the payroll tax under 2024 transfer is 9.3% in 2050, against 7.8% wihtout it.
- Lagged effects of transfer on pension sustainability: by 2100, under the act 0.75 retiree per worker, 0.59 with 2024 transfer and 0.53 with 2027 package.

What we know is off, and what it does to the results

- **Too little of the fall is childlessness.** In the data mothers' fertility went from 1.96 to 1.79 while childlessness went from 3 to 29%. Today the model has mothers at 1.55 and 18% childless. The missing piece is the marriage market: an extension, and a different paper.
- **How sharp the decision to become a parent is.** We use the sharpest the model allows, and the history of childlessness favors it. At twice the dispersion the transfer buys two thirds of the births and the population planners gain about 40% less. No sign changes except the per-head planners at the far end (backup).
- **No income gradient in childlessness.** The cost of the first child is the same for everyone. In the data the bottom fifth is more often childless (5.3% against 1 to 2% at the top).
- **Counting the new parents.** A household the transfer moves into parenthood is credited with its full gain from having children, not net of the cost of the first child. A check that nets it out is to come.
- **Three or more children** is undershot (8% of 1981–85 mothers against 13%).
- **Placeholders.** Today's childless share (29%) and today's fertility target (1.275).

Conclusions

- The 2025 act and the old law deliver similar welfare for every planner. The act buys the fund ten more years.
- Cash buys births: 0.37 children per woman for the 2024 transfer, 0.57 for the 2027 package. Whether that is worth it depends on who counts. Yes if the added people count, no if only welfare per head does. The living are indifferent.
- The births a policy buys today arrive after the dependency ratio has doubled (0.38 in 2023, 0.77 in 2050). They do not rescue today’s pensions, and they lower the pension’s cost only late in the century.

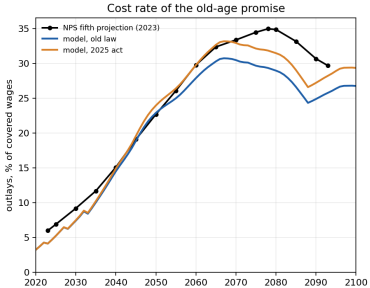
Backup

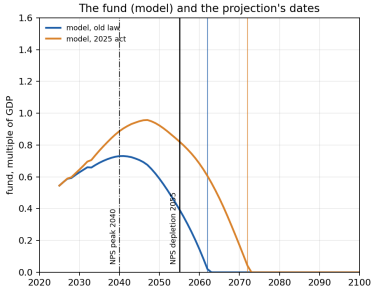
The 2025 pension act

- Contribution rate from 9% to 13%, in steps of 0.5 points a year from 2026 to 2033.
- Target replacement rate 43% from 2026.
- Childbirth credit: 12 months for the first child from 2026, 12 for the second, 18 for each later child.
- No change to the pension age.

Ministry of Health and Welfare, pension reform Q&A (checked 26 Oct 2026).

The pension block against the National Pension Service's books





Cost rate, share of covered wages	2023	2040	2050	2070	2093
NPS fifth projection (old law)	6.0%	15.1%	22.7%	33.4%	29.7%
Model, old law	4.1%	14.5%	22.9%	30.5%	25.8%
Model, the 2025 act	4.1%	14.9%	24.0%	33.0%	28.3%

The fund peaks in 2041 in the model under the old law (NPS: 2040) and runs out in 2062 (NPS: 2055). Outlays 1.4% of GDP in 2023 (NPS 1.6%), contributions 3.0% (2.4%). NPS / MOHW 2023; `output/pension_validation_v6.md`.

Estimated parameters

	Estimate	Mainly disciplined by
Weight on children's lives, α	0.141	mean completed fertility
Weights by number, $w(2), w(3), w(4)$, with $w(1) = 1$	1.39, 1.51, 1.54	the family-size distribution
Curvature across generations, η	0.779	the income relations
Weight of purchased schooling, κ	0.909	spending level and ratios
Returns in the skill technology, η_h	0.505	intergenerational persistence
Taste-shock scale, σ_ε	0.064	spread of family size
Calibrated once on the 1970–75 cohort's childless share, then held fixed		
Fixed cost of the first child, c_0	0.280	childless share 0.029

Estimated jointly; the last column is a reading aid, not a one-to-one identification claim. c_0 is 22% of the median household's value at 30. Fixed: $\sigma = 2$, $\beta = 0.961$, the schooling price, child costs, the earnings penalty's shape, the borrowing line (25% of average net earnings), the consumption floor (5%), life tables, pension rules.

Model fit, the twelve targeted moments

	Data	Model
Mothers' family size (KLIPS, born 1970–75)		
Share with one	0.202	0.222
Share with two	0.650	0.609
Share with three or more	0.149	0.169
Mean	1.965	1.969
Private education (KOSTAT 2024)		
Per-child spending, 2 vs 1	0.924	0.750
Per-child spending, 3+ vs 1	0.681	0.462
One child's share of the budget	0.079	0.084
Not targeted		
Mean, all women	1.907	1.912
Childless, bottom income fifth	0.053	0.031

	Data	Model
Persistence (KLIPS, Kim et al. 2024)		
Child's skill on parents' income	0.320	0.337
Income relations (KLIPS, Kim et al. 2024)		
Spending on income, one child	1.016	0.655
Spending on income, two	0.790	0.719
Spending on income, three+	0.869	0.864
Fertility on income	0.082	0.052

Estimate of 29 Oct (`output/smm_recursive_budget_polish_fit.md`), with a childless share of 0.029 imposed during estimation. Under the fixed cost of the first child the 1970–75 mean is 1.875.

How sharp is the decision to become a parent?

The 2024 transfer against the 2025 act, scored from 2023, at four dispersions of the entry decision

	Sharpest (ours)	Twice	Four times	Share imposed
Childless 2013 / 2024 (data 0.138 / *0.29*)	0.094 / 0.177	0.052 / 0.082	0.041 / 0.053	imposed
Fit to the 1981–85 cohort (lower is better)	0.38	1.02	1.27	–
Forward fertility, cash / act	1.70 / 1.33	1.53 / 1.28	1.49 / 1.28	1.45 / 1.27
Planners' mean of nine	+17.8	+10.5	+9.5	+8.7
Total utilitarian, δ = 0.95 / 0.97 / 0.99	+14 / +25 / +53	+9 / +16 / +31	+8 / +14 / +27	+8 / +12 / +23
P-efficiency	+83.8	+47.9	+40.7	+34.2
Average utilitarian, δ = 0.95 / 0.97 / 0.99	−2.2 / −2.3 / −2.6	−1.3 / −1.4 / −1.6	−0.9 / −0.8 / −0.7	+0.1 / +0.4 / +0.9
A-efficiency; Rawlsian	−2.9; −5.7	−1.7; −3.3	−0.7; −1.4	+1.2; −0.8
The living (share gaining)	+0.21 (20%)	+0.06 (20%)	+0.02 (21%)	−0.03 (21%)
P-efficiency per unit of forward fertility	224	196	191	190

- The value per birth to a population planner is flat. The births the transfer buys fall as the decision gets less sharp.
- The history of childlessness favors the sharp end: every wider dispersion predicts less of the rise and fits the 1980s cohort worse.

When the scoring starts

Planners' mean of nine [min, max] and the living's own valuation (share gaining), against the 2025 act

	From 1983	From 2023 (ours)	From 2025
Old law	+0.5 [−0.0, +2.4]	+0.8 [−0.0, +2.5]	+0.9 [−0.0, +2.5]
the living	−0.02 (23%)	+0.15 (50%)	+0.19 (52%)
2025 act + 2024 transfer	+12.6 [−2.2, +76.1]	+17.8 [−5.7, +83.8]	+18.5 [−5.7, +85.0]
the living	−0.07 (6%)	+0.21 (20%)	+0.23 (20%)
Old law + 2024 transfer	+13.3 [−1.9, +79.3]	+18.8 [−4.4, +87.3]	+19.5 [−4.4, +88.6]
the living	−0.09 (8%)	+0.40 (24%)	+0.47 (24%)
2025 act + 2027 package	+22.1 [−4.3, +138.9]	+30.6 [−10.0, +154.7]	+31.9 [−10.0, +157.2]
the living	−0.10 (9%)	−0.02 (20%)	+0.03 (21%)

`output/ledger_v6_dyn_entry.md`.

The standard alternative: a warm glow

$$U = \sum_j \beta^j \psi_j \, u\left(\frac{c_j}{\Lambda_j(n)}\right) + \beta^{j_F} \psi_{j_F} \, \phi \, w(n) \, q^{\eta_q}$$

- Parents enjoy the number and schooling of their children for their own sake, whatever the children's lives turn out to be.
- Estimated on the same data, it moves fertility about *2.5 times* as much per won as the dynastic model, more than the Korean evidence supports.
- Its planner criteria split on the pronatal cells: totals *up*, averages and the worst-off cohort *down*.
- The two models are not yet comparable: different estimates, different fertility responses. A like-for-like estimation and a warm-glow cell matched to the dynastic fertility response would tell preferences apart from fit.

Warm-glow ledger of 24 Oct, before the pension fix and the extensive margin. The one warm-glow check on the final specification is not yet run.

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