Social Security and the Increasing Longevity Gap

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- SS tax rate (10.6% of wages) will cover 79% of promised benefits.
- Fiscal crisis caused by increased longevity (baby-boom also at play but temporary): retirees are living longer and collecting benefits over longer retirement period.
- Inescapable reality: benefits must be reduced or taxes must increase.

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New/simple measure of progressivity

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- Abstract from population and wage growth.

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• Notice the budget doesn't balance separately for each wage type. SS pools contributions to pay life annuity to the living, and there is cross subsidization across wage groups because (i) benefits depend on wages and (ii) survival probabilities depend on wages.

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- Variance of the implicit transfer share is our measure of progressivity:

$$\text{var}(\delta(w)) = \int_0^1 g(w)[\delta(w) - \mathbb{E}(\delta(w))]^2 dw.$$

Effect of growing life expectancy gap

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- For comparison, we have two calibrations of $S(t|w)$ by wage type: 1930 birth cohort and 1960 birth cohort (Auerbach et al. (2017)).

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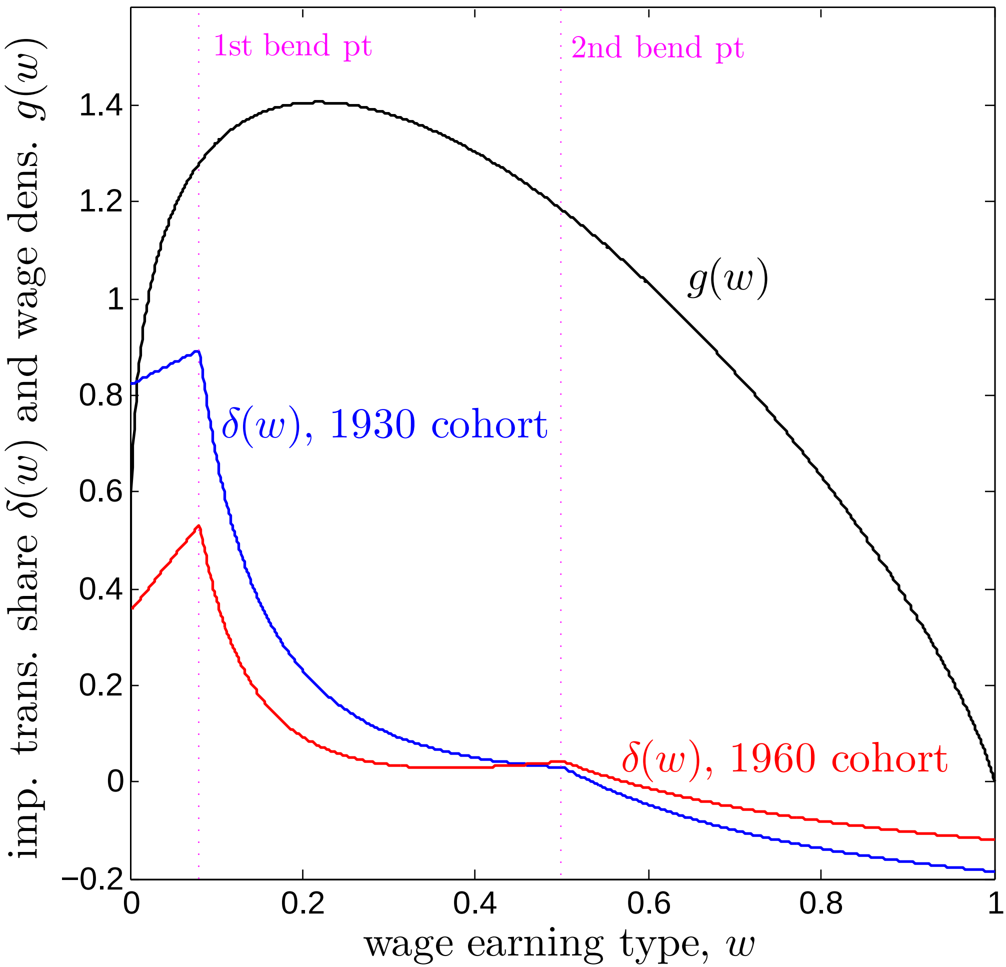
- Social Security loses three-quarters of its progressivity as the life expectancy gap widens!

Figure 1. Implicit Transfer Shares in US Social Security



Note: The transfer shares for the 1960 birth cohort are calculated under the assumption that policy makers pursue across the board tax increases or across the board proportional benefit cuts (rather than "fair" reform).

Two proposals

- Rewrite the implicit transfer share

$$\delta(w) \equiv \frac{\Delta(w)}{\tau \int_0^{t_R} S(t|w) w dt} = \frac{b(w)}{w\tau R(w)} - 1,$$

where

$$R(w) = \frac{\int_0^{t_R} S(t|w)dt}{\int_{t_R}^{T} S(t|w)dt}.$$

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- One way to do this is to hold constant over time the product $\tau R(w)$ within each wage type, while leaving benefits intact.

Option 1: Fair Tax Reform continued...

That is, policy makers would create a wage-dependent (progressive) tax $\tau(w)$ that adjusts according to the following proposal for some future calendar date $s > 0$

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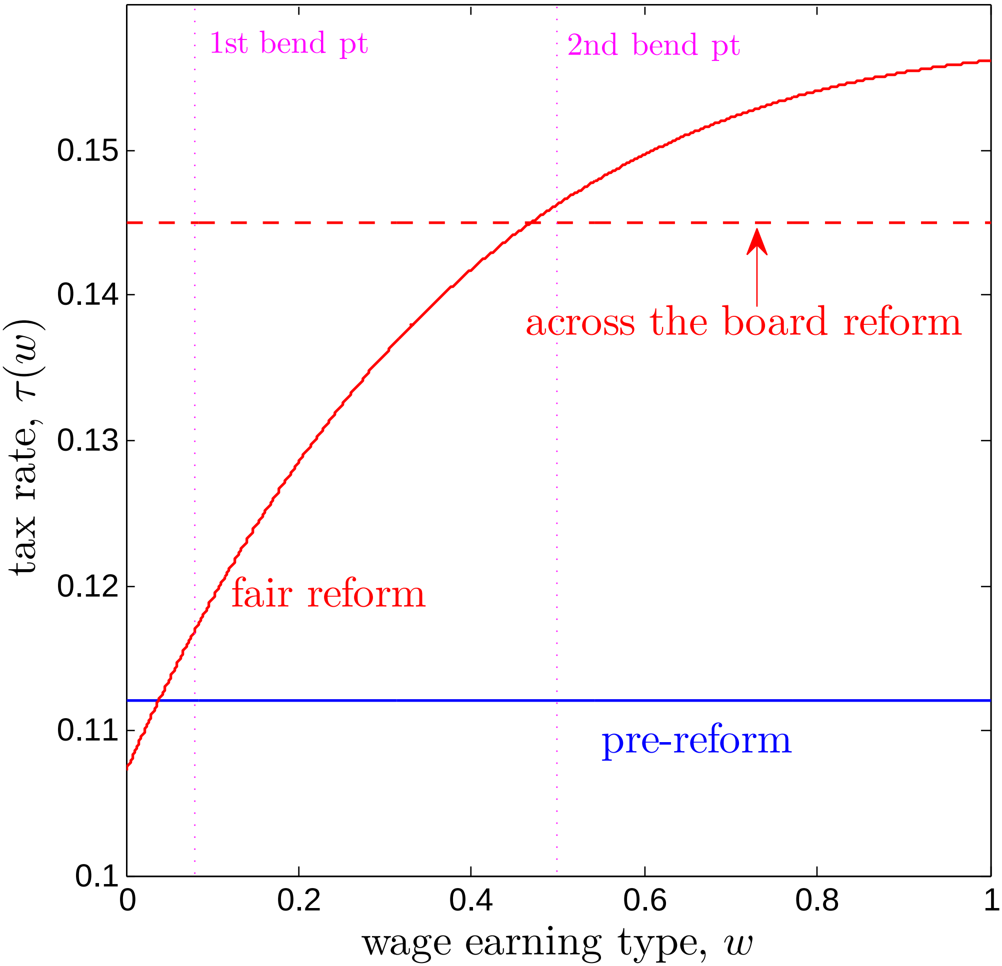
• Wage types with the greatest longevity gains (the largest reduction in the ratio of workers to retirees) would face the largest increase in their contributions because they are responsible for placing the most strain on the Social Security budget.

Figure 2. Social Security Tax Reform



Note: The pre-reform tax balances the budget under life expectancies from the 1930 birth cohort. The across the board reform tax balances the budget under life expectancies from the 1960 birth cohort. The fair tax reform balances the budget under life expectancies from the 1960 birth cohort and preserves progressivity.

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- Specifically: to hold $\text{var}(\delta(w))$ constant over time (and thereby preserve progressivity), it is enough to hold $b(w)/R(w)$ constant over time within each wage type (holding the tax rate fixed), since this holds the transfer shares themselves $\delta(w) = \frac{b(w)}{w\tau R(w)} - 1$ constant over time for each w.

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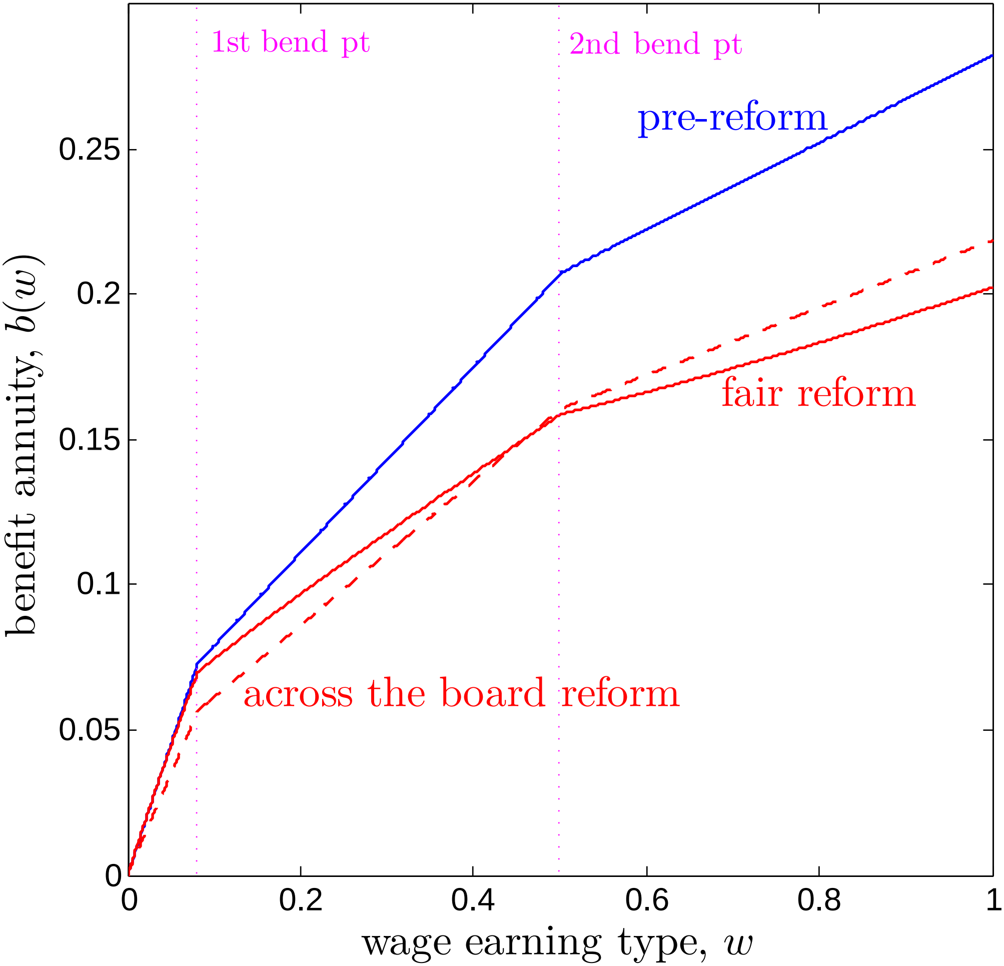
- Our fair benefit reform: slopes would change from their current values of 90%, 32% and 15% down to 86%, 21%, and 9%.

Figure 3. Social Security Benefit Reform



Note: Pre-reform benefits are current US law. Across the board benefit reform balances the budget under life expectancies from the 1960 birth cohort. The fair tax reform balances the budget under life expectancies from the 1960 birth cohort and preserves progressivity.

Welfare gains

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- At $t = 0$ individuals learn their wage type w and take as given $\tau(w)$ and $b(w)$,

$$\max : U = \int_0^T e^{-\rho t} S(t|w) u(c(t)) dt,$$

subject to

$$\dot{k}(t) = rk(t) + (1 - \tau(w))w - c(t), \text{ for } t \in [0, t_R],$$

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- $\mathbb{E}(U) = \int_0^1 \int_0^T g(w) e^{-\rho t} S(t|w) u(c^*(t|w)) dt dw.$
- CV is the percentage of lifetime consumption that individuals are willing to give up to live in a world with fair reform

$$\int_0^1 \int_0^T g \cdot e^{-\rho t} \cdot S \cdot u(c_F^*(1 - CV)) dt dw = \int_0^1 \int_0^T g \cdot e^{-\rho t} \cdot S \cdot u(c_{AB}^*) dt dw.$$

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     - Above results correspond to CRRA $= 1.5$. As we approach risk neutrality, the welfare gains vanish.

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- We stay out of this debate. We acknowledge that our welfare calculations depend on our assumption that wage earnings are uncertain.

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