

The Posner Argument for Transferring Health Spending from Old Women to Old Men

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Abstract

Richard Posner suggests several arguments for increasing health care spending on males and reducing it on females in his book *Aging and Old Age*. I offer a new formalization of his verbal argument. Keywords: Aging, Health Economics.

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On pages 273-278 of *Aging and Old Age*, Richard Posner discusses a variety of arguments for reallocating government resources from ailments of old women to ailments of old men. This note represents a formalization of two of the main arguments for this, arguments that rely on diminishing marginal utility and on the utility of marriage.

Assume that everyone in a population is married. Let L_m and L_w be real numbers that denote the lifespan of men and women, and assume that $L_w > L_m$ under current policy. Let the utility functions of men and women be

$$U_m = f(L_m) \tag{1}$$

and

$$U_w = f(L_m + \theta(L_w - L_m)), \tag{2}$$

with $f' > 0$, $f'' < 0$, and $\theta < 1$. Let us take society's total benefit to be $U_m + U_w$, which weights the utility of both sexes equally.

The man's utility function is simple, since his entire life is married. The woman's utility is a function of $L_m + \theta(L_w - L_m)$ because she lives L_m married years and $(L_w - L_m)$ widowed.

Note two important features of these assumptions: (a) $f'' < 0$, so marginal utility diminishes with lifespan, which can be interpreted as the ordinary human response to increased consumption or as a result of the poor health humans experience in their later years. (b) $\theta < 1$, so the woman's utility is higher if her husband is still alive.¹

PROPOSITION: Society's marginal gain from increasing the male lifetime exceeds the marginal loss from reducing the female lifetime.

¹One could deduce $\theta < 1$ rather than assuming it, since anyone for whom it is false could get divorced. Anyone for whom death rather than divorce ends a marriage must prefer marriage to being single, anti-divorce scruples aside. (And, of course, assuming that the death is not a murder.)

PROOF: Reducing the woman's lifetime has a marginal cost of

$$f'_w(L_m + \theta(L_w - L_m)) \cdot \theta, \quad (3)$$

which is the marginal cost to her of reducing her widowed life, starting from her long base lifetime of L_w .

Increasing the man's lifetime has a marginal benefit of

$$f'_m(L_m) + f'_w(L_m + \theta(L_w - L_m)) \cdot (1 - \theta), \quad (4)$$

which is the net marginal benefit to the woman of increasing her married lifetime but reducing her period of widowhood, plus the marginal benefit to the man of increasing his married lifetime.

Expression (4) exceeds expression (3) for three reasons. (i) Because $L_w > L_m$, $L_m + \theta(L_w - L_m) > L_m$ and so $f'_w(L_m + \theta(L_w - L_m)) < f'_w(L_m)$. (ii) Because $\theta < 1$, and given reason (i), $f'_w(L_m + \theta(L_w - L_m)) \cdot \theta < f'_w(L_m) \cdot \theta$. (iii) $f'_m > 0$, so the second term in equation (4) is positive. Therefore, the marginal effect on social welfare of increasing the man's lifetime is greater than the effect of reducing the woman's, which was to be shown.

The three reasons in the proof each have intuitive explanations.

First, the man starts from a shorter lifetime, and hence values extra life more: $f'_m > f'_w$, because $L_m < L_m + \theta(L_w - L_m)$ and $f'' < 0$. Even if $\theta = 1$, so living alone would be no worse than living married, this would remain true. Hence, assumption (a) alone would be sufficient for the Proposition.

Second, increasing the woman's lifespan does not benefit her as much because single life is not as happy as married life: $\theta < 1$. Even if $f'' = 0$, so there were no

diminishing returns to extra lifespan, this would remain true, because $f'_w \cdot \theta < f'_m$. Hence, assumption (b) alone would be sufficient for the Proposition.

Third, increasing the man's lifespan benefits both himself and the woman, because it reduces her period of widowhood: the marginal benefit includes the extra term $f'_w \cdot (1 - \theta)$. Even if $f'' = 0$, so there were no diminishing returns to extra lifespan, this would remain true. This is another reason why assumption (b) is sufficient to prove the Proposition.

As Posner notes in his book, implementation of the policy suggested by these arguments depends on other variables such as the marginal cost of increasing lifespans, which may be higher for men than for women. The argument is a powerful one, however, and this note shows that it is rigorous enough to be consistently modelled.

REFERENCES

Posner, Richard (1995) *Aging and Old Age*, Chicago: University of Chicago Press, 1995.