Same Sex Marriage, The Great Equalizer

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A: Because same sex marriage changes the *expectations* of marriage market participants, changing the outcomes of everyone, **making genders equal**

Baseline Model

- Continuum of *types*, generically denoted $x, y \in [0, 1]$, total mass 1, cdf $G(\cdot)$
- Family production function $f(x, y)$, increasing in both arguments, symmetric, continuous
- If married, output is shared by Nash bargaining:

$$v(x) + \overbrace{\frac{f(x, y) - v(x) - v(y)}{2}}^{s(x,y)}$$

- If not married, pay search costs $c > 0$. No time discount

$$v(x) = -c + \int_0^1 \max\left[v(x) + \frac{f(x, y) - v(x) - v(y)}{2}, v(x)\right] dG(y)$$

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$$v(x) = -c + \int_0^1 \max\left[v(x) + \frac{f(x,y) - v(x) - v(y)}{2}, v(x)\right] dG(y) \Rightarrow$$

$$2c = \int_0^1 \max\left[s(x,y), 0\right] dG(y) = \int_{\{y: s(x,y) \geq 0\}} s(x,y) dG(y)$$

Results of Atakan (2006)

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- Under regularity conditions, equilibrium $v(x) : [0,1] \to R$ exists, generically not unique; $v(x)$ is continuous
- Under supermodularity of $f(x,y)$:
  - $\{y : s(x,y) \geq 0\}$ is an interval, contains x, increases in x
  - Positive assortative matching

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- However, total disregard for gender.

With Different Genders

- With two genders, $\{m, f\}$, eqm conditions are

$$2c = \int_0^1 [f(x,y) - v_m(x) - v_f(y)]^+ \, dG(y)$$

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- (Conditional) asymmetry: $v_m(x) \neq v_f(x)$.

Equilibrium

We generalize over sexual orientations $t \in T$:

$$a(t_1, t_2) = 0 \Leftrightarrow t_1 \text{ can't marry } t_2.$$

$$a(t_1, t_2) = 1 \Leftrightarrow t_1 \text{ can marry } t_2.$$

Under Lipschitz continuity, equilibrium exists and satisfies the constant surplus condition:

$$2c = \sum_j a(t, j) q_j \int_y [f(x, y) - v_t(x) - v_j(y)]^+ dG_j(y).$$

Easiest Way

Everyone can marry everyone:

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Proposition

In every equilibrium, $v_m(x) = v_f(x)$*.*

Proof

If there is x_0 where $v_m(x_0) > v_f(x_0)$:

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- for every y, $f(x,y) - v_m(x) - v_f(y) < f(x,y) - v_f(x) - v_f(y)$

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- for every y, $f(x, y) - v_m(x) - v_f(y) < f(x, y) - v_f(x) - v_f(y)$
- and therefore

$$\mathbf{E}\left[f(x, y) - v_m(x) - v_f(y)\right]^{+} < \mathbf{E}\left[f(x, y) - v_f(x) - v_f(y)\right]^{+}$$

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$$\mathbf{E}\left[f(x,y) - v_m(x) - v_f(y)\right]^+ < \mathbf{E}\left[f(x,y) - v_f(x) - v_f(y)\right]^+$$

- for the same reason

$$\mathbf{E}\left[f(x,y) - v_m(x) - v_m(y)\right]^+ < \mathbf{E}\left[f(x,y) - v_f(x) - v_m(y)\right]^+$$

If the total expected surplus of m gender is $2c$, the total expected surplus of f must be above $2c$!

A Bit Harder Way

Everyone can marry opposite gender

$$2c = \int_0^1 [f(x,y) - v_m(x) - v_f(y)]^+ \, dG(y)$$

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Everyone can marry opposite gender and there is a *chance* you can marry same gender

$$2c = \int_0^1 [f(x,y) - v_m(x) - v_f(y)]^+ \, dG(y) +$$

$$+ \, p \int_0^1 [f(x,y) - v_m(x) - v_m(y)]^+ \, dG(y)$$

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In every equilibrium with $p > 0$, $v_m(x) = v_f(x)$.

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Take $\Delta_0 = \max_x \underbrace{v_m(x) - v_f(x)}_{\Delta(x)}$, and x_0 is the maximand. Assume $\Delta_0 \geq \max_x(v_f(x) - v_m(x))$; rename genders otherwise.

Proof

$$\int [f(x,y) - v_f(x_0) - v_f(y) - \Delta(y)]^+ \, dG(y) \geq$$

$$\geq \int [f(x,y) - v_f(x_0) - v_f(y) - \Delta_0]^+ \, dGy.$$

$$p \int [f(x,y) - v_f(x_0) - v_f(y)]^+ \, dG(y) \geq$$

$$\geq p \int [f(x,y) - v_f(x_0) - v_f(y) - \Delta_0 - \Delta(y)]^+ \, dGy.$$

Can there be $=$?

Not $=$

$$\int [f(x,y) - v_f(x_0) - v_f(y) - \Delta(y)]^+ \, dG(y) =$$

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$$\Rightarrow \Delta(y) = -\Delta_0.$$

Even Harder Way

All can marry opposite gender

$$2c = \int_0^1 \left[f(x,y) - v_{mh}(x) - v_{fh}(y) \right]^+ dG(y)$$

$$2c = \int_0^1 \left[f(x,y) - v_{mb}(x) - v_{fh}(y) \right]^+ dG(y)$$

Even Harder Way

All can marry opposite gender, *some* can marry same gender

$$2c = \int_0^1 [f(x, y) - v_{mh}(x) - v_{fh}(y)]^+ \, dG(y) +$$

$$+ q \int_0^1 [f(x, y) - v_{mh}(x) - v_{fb}(y)]^+ \, dG(y)$$

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Proposition

In equilibrium with $q > 0$, $v_{mh}(x) = v_{fh}(x) \leq v_{mb}(x) = v_{fb}(x)$.

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  - Somewhat harder to achieve if it is *harder* to partake in same sex marriage
  - Even harder if some people *cannot* partake in same sex marriage
- Mathematically, requires symmetry across distributions
  - Hard to hope for equality without symmetry