A Marriage-Market Perspective of Career Choices

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- However, no paper has studied two decisions jointly in a *general equilibrium* setting.
- The main contribution of the paper is to *study career choices in a general equilibrium marriage-market framework*.

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- They subsequently enter the marriage market based on their realized incomes.
- A set of variables is endogenously determined in equilibrium: careers choices, marriage timing, income distributions, marriage matching, and the division of marriage surplus.

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3. Men's income inequality is larger than women's.

4. Men tend to choose a risky career and marry late, and women tend to choose a safe career and marry early.

5. Unmarried men are more likely than married men to choose a risky career, whereas unmarried women are less likely than married women to choose a risky career.

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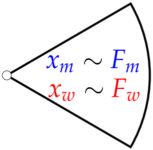
   - Previous papers rely on gender differences in risk preferences or competitiveness: Niederle and Vesterlund (2007, QJE), Kleinjans (2008), Gill and Prowse (2014, QE), Wozniak et al. (2014, JoLE).

Model

Model

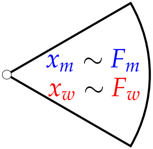
Time is discrete and infinite, $t = 1, 2, \ldots$

Model



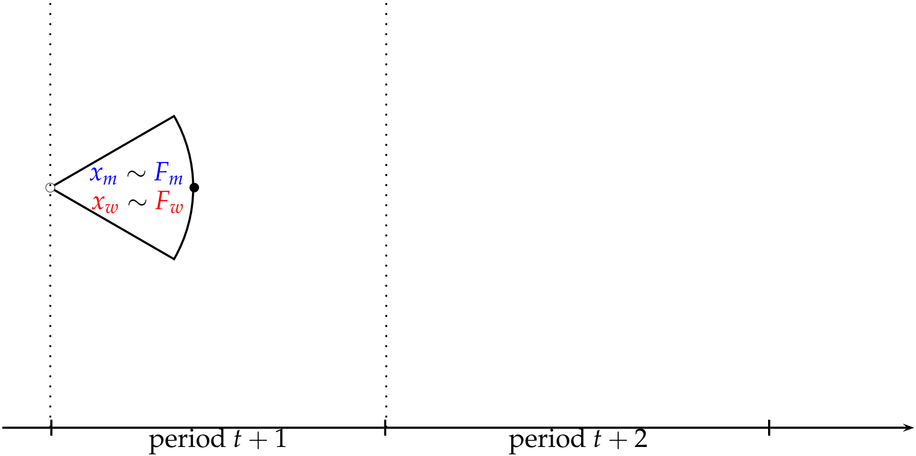
Each period, mass 1 of men and mass 1 of women become adults.

Model



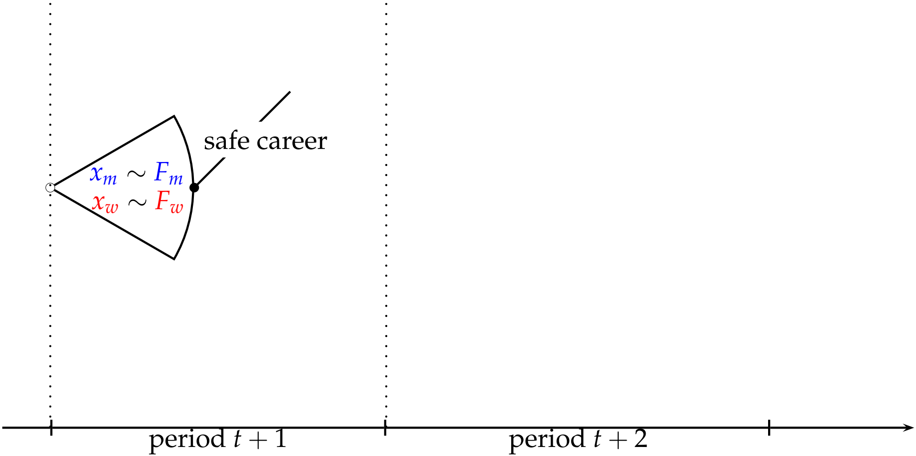
Their abilities x_m and x_w are distributed according to F_m and F_w.

Model



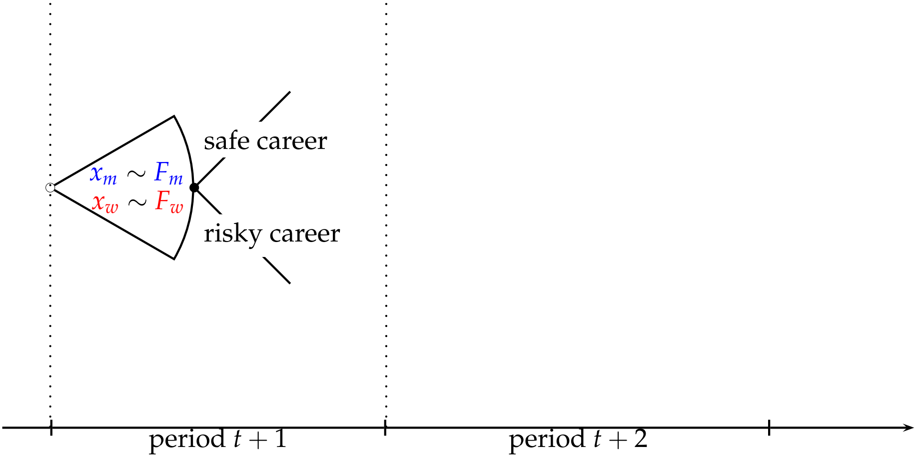
They make career and marriage decisions in two periods.

Model



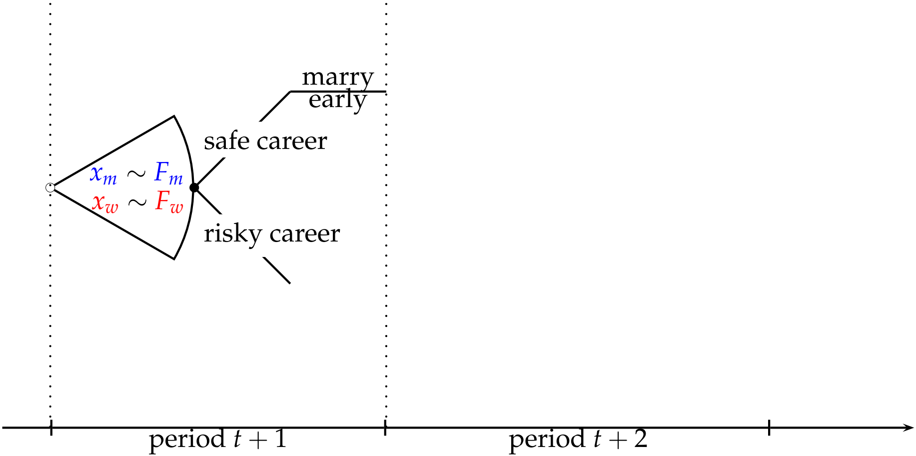
Each chooses either a safe career,

Model



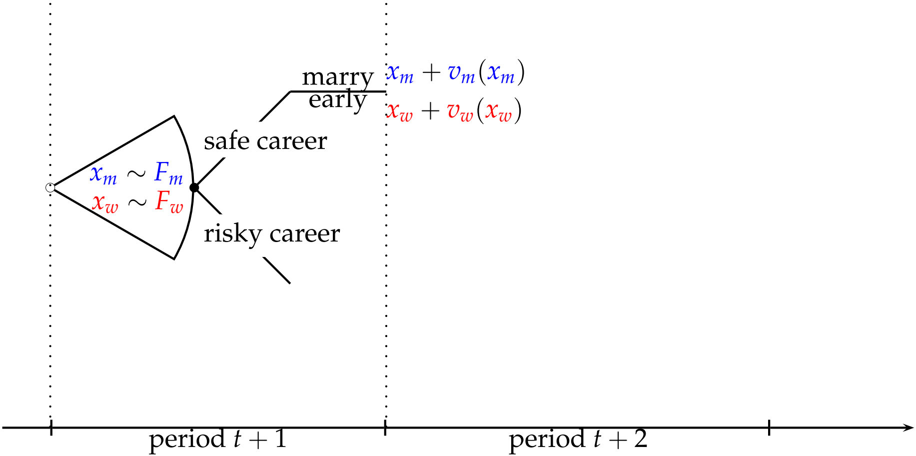
Each chooses either a safe career, or a risky career.

Model



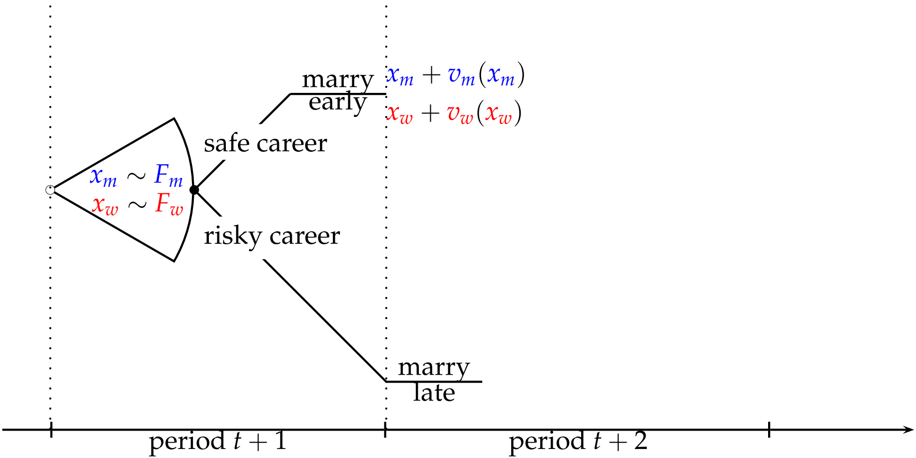
A person who chooses a safe career is assumed, for now, to marry early.

Model



He/she gets an income reflecting his/her ability, plus a marriage payoff.

Model



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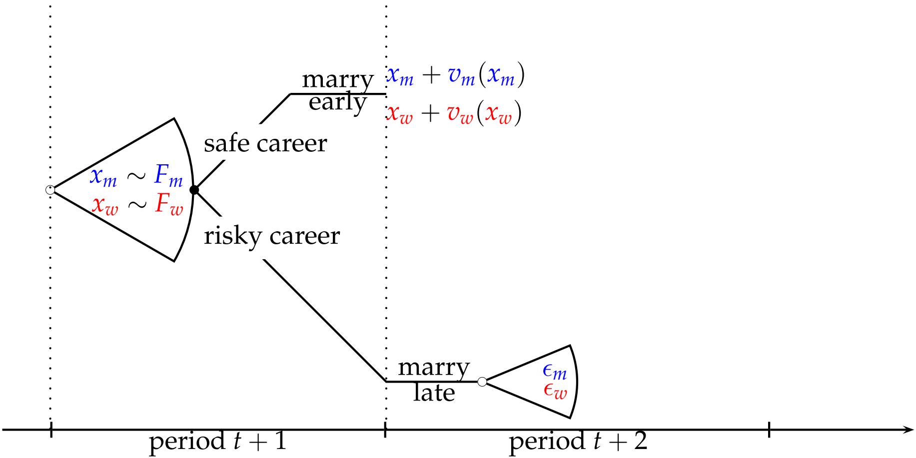

The income from the risky career noisily reflects one's ability.

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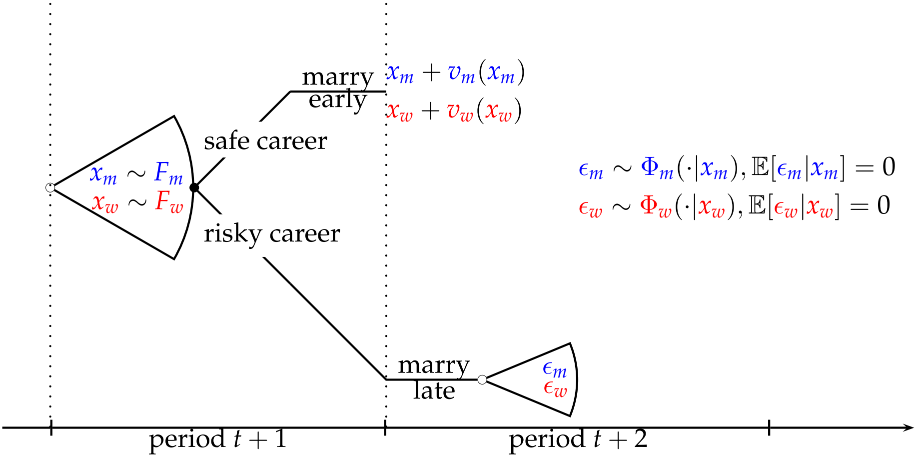
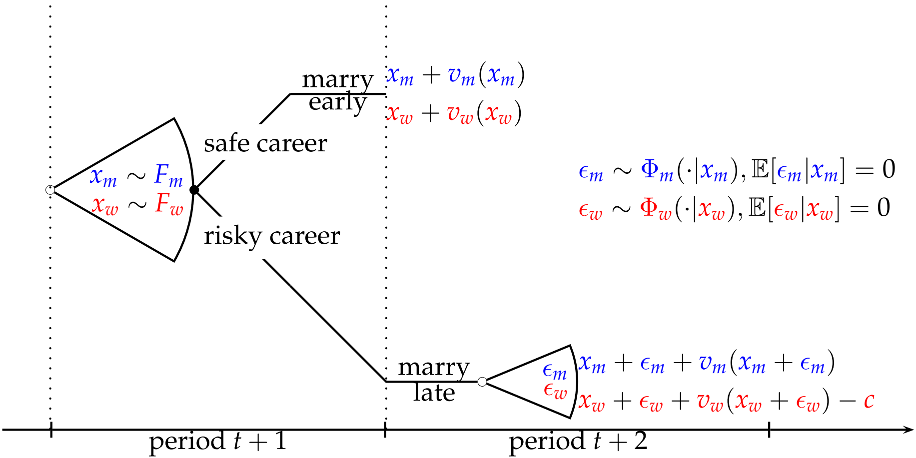


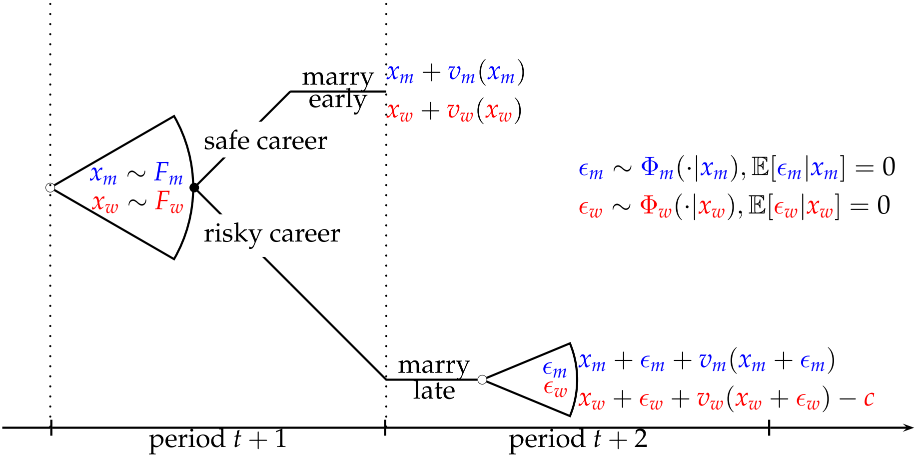
The risky career's income is a mean-preserving spread of true ability.

Model



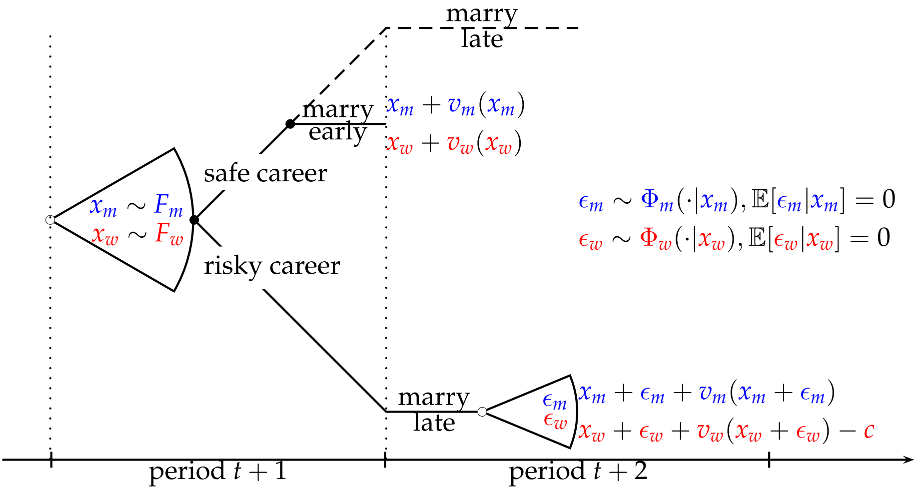
A risky-career person also gets a lifetime income plus marriage payoff.

Model



The only gender difference: women who marry late incur a cost c.

Model



A person who chooses a safe career could marry late.

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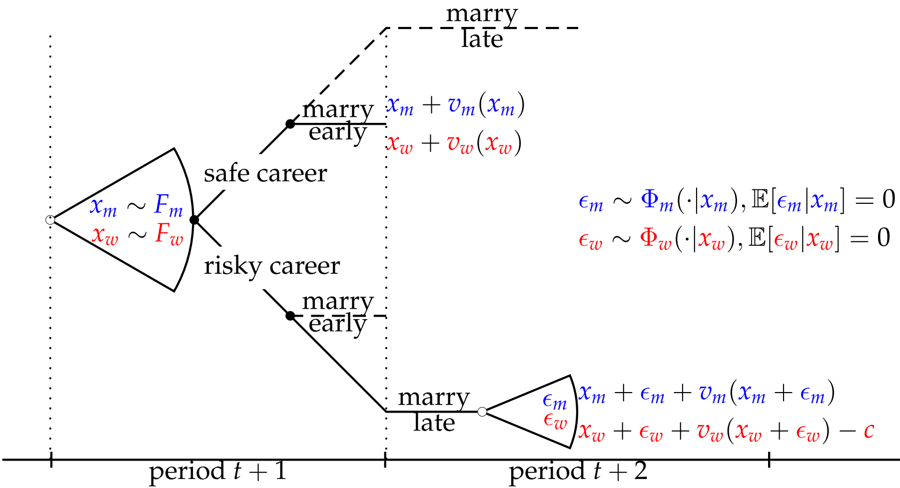

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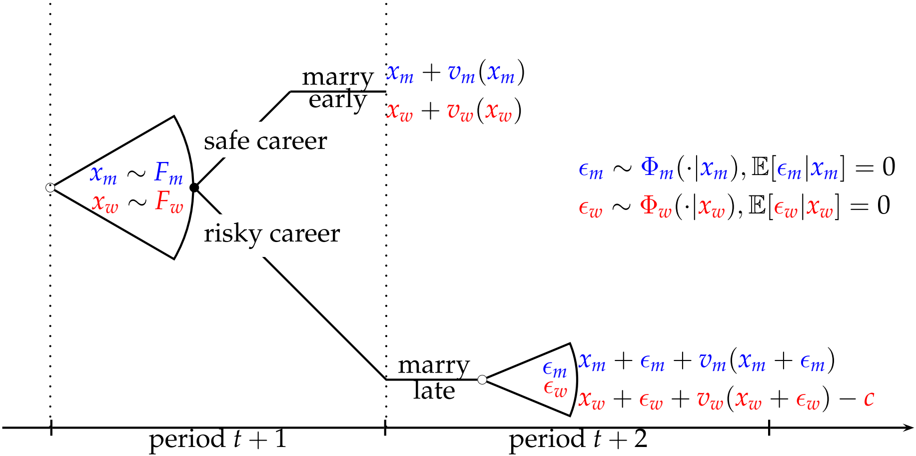

Let's ignore those possibilities, for now.

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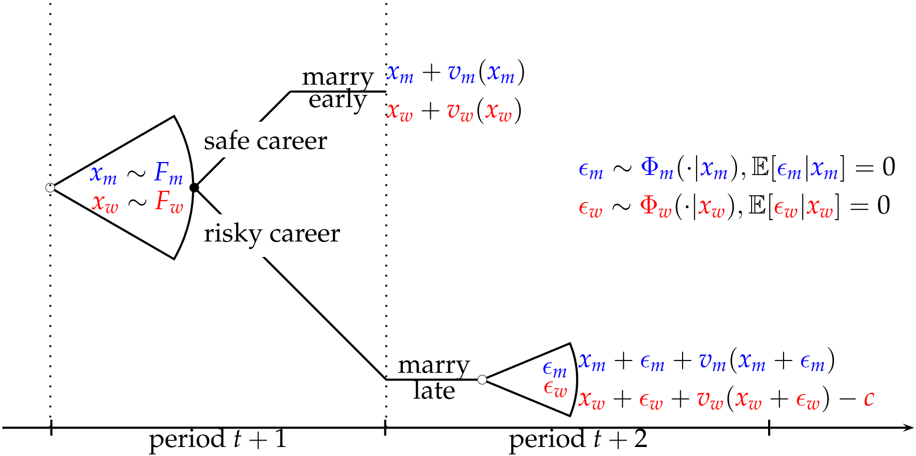

This decision tree illustrates a person's career and marriage decisions.

Career Choices σ_m and σ_w

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$$G_m(y_m) = \int_{\underline{x}_m}^{\bar{x}_m} \Big[\underbrace{\sigma_m(x_m)\Phi_m(y_m - x_m|x_m)}_{x_m \text{ chooses a risky career and gets income less than } y_m} + \underbrace{1_{x_m \le y_m}(1 - \sigma_m(x_m))}_{x_m \le y_m \text{ chooses a safe career}} \Big] dF_m(x_m).$$

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- Career choices σ_w induce women's income distribution G_w

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- Public good provision justifies $s(y_m, y_w)$

$$= \max_{q_m+q_w+Q \leq y_m+y_w} (q_m Q + q_w Q) - \max_{q_m+Q \leq y_m} q_m Q - \max_{q_w+Q \leq y_w} q_w Q$$

$$= \frac{(y_m + y_w)^2}{4} - \frac{y_m^2}{4} - \frac{y_w^2}{4} = \frac{1}{2} y_m y_w.$$

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  - Marriage market outcome (G^*, v_m^*, v_w^*) is a stable outcome of equilibrium matching market (G_m^*, G_w^*).

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Men's Equilibrium Career Choice σ_m^*

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Lemma 1

Every man chooses the risky career in equilibrium: $\sigma_m^*(x_m) = 1$ *for all* x_m.

Proof of Lemma 1

Safe versus Risky Career

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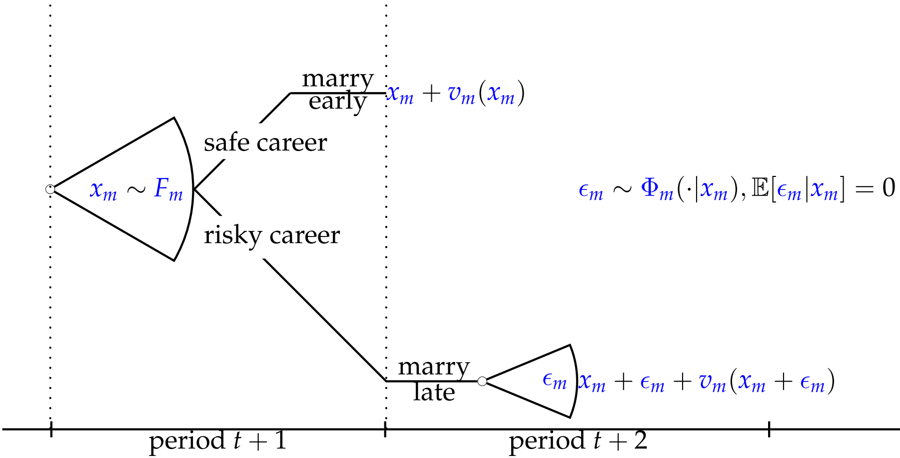

This decision tree illustrates an ability x_m man's career choice.

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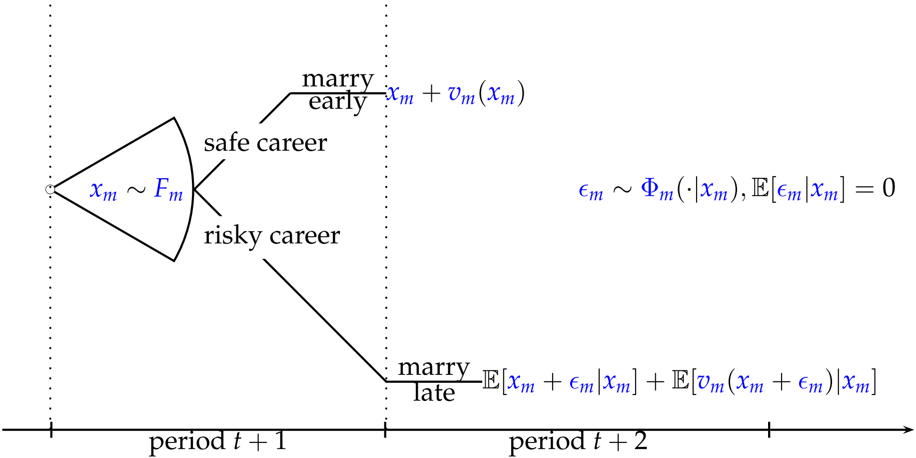

Each man makes career choices based on expected lifetime payoffs.

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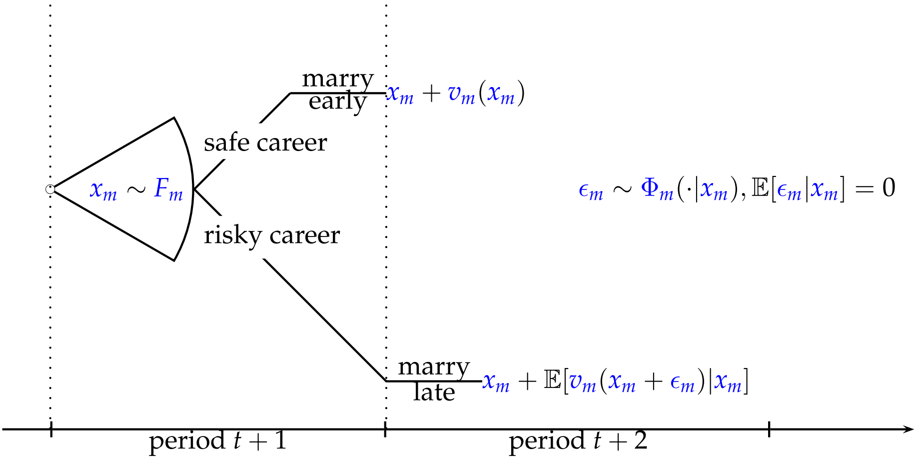

It suffices to show $\mathbb{E}[v_m(x_m + \epsilon_m)|x_m] > v_m(x_m)$, i.e., v_m is strictly convex.

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- Married y_m and $y_w(y_m)$ share the entire surplus,

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$$v_m(y_m) = y_m \cdot y_w(y_m) - v_w(y_w(y_m)).$$

- y_m does not want to marry any woman other than $y_w(y_m)$,

$$v_m(y_m) + v_w(y_w) \geq y_m y_w \quad \forall y_w \neq y_w(y_m).$$

Proof of Lemma 1

Link between Stability and Competition

- Married y_m and $y_w(y_m)$ share the entire surplus,

$$v_m(y_m) = y_m \cdot y_w(y_m) - v_w(y_w(y_m)).$$

- y_m does not want to marry any woman other than $y_w(y_m)$,

$$v_m(y_m) \geq y_m y_w - v_w(y_w) \quad \forall y_w \neq y_w(y_m).$$

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$$y_w(y_m) = \text{argmax}_{y_w}[y_m y_w - v_w(y_w)],$$

  and gets the highest possible payoff

$$v_m(y_m) = \max_{y_w}[y_m y_w - v_w(y_w)].$$

Proof of Lemma 1

Linear Surplus Leads to (Weakly) Convex Payoff

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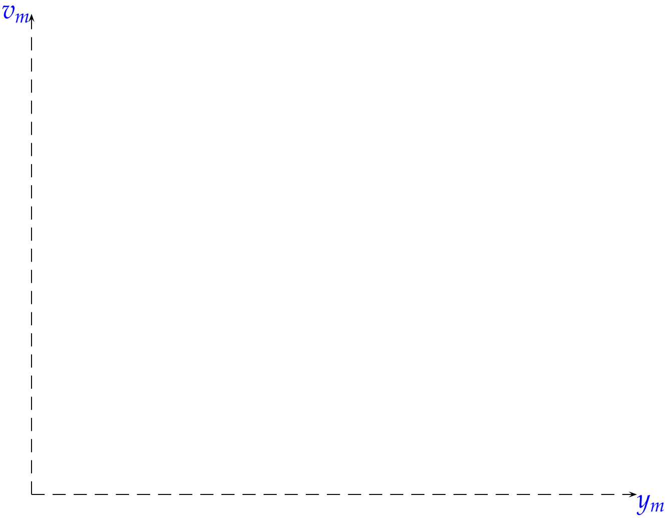

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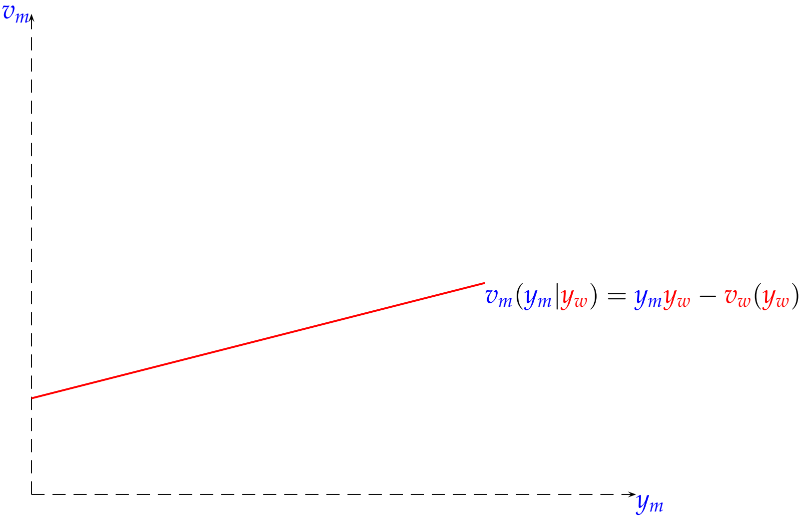

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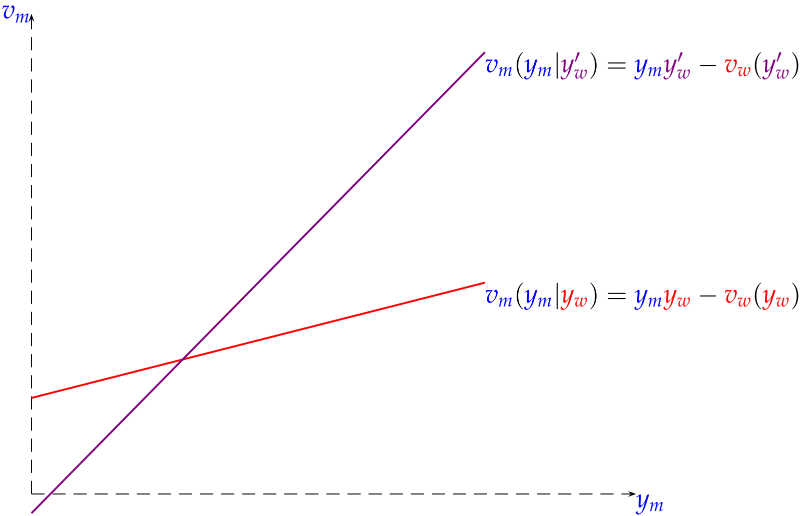

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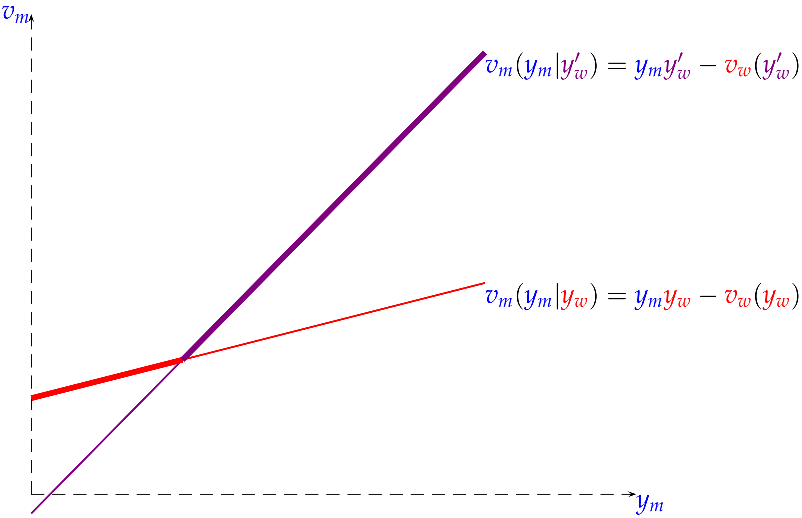

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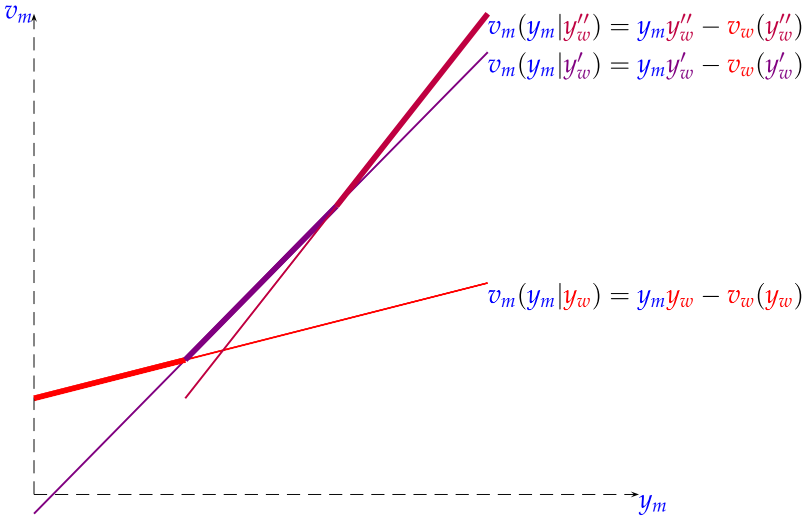

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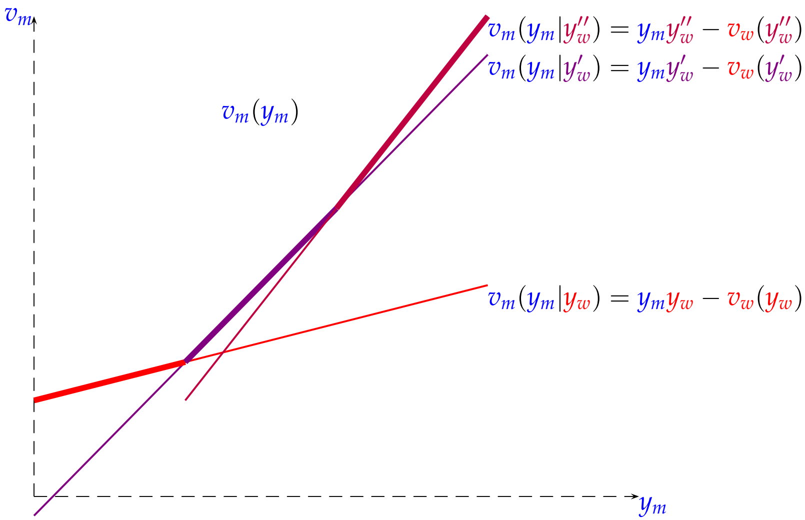

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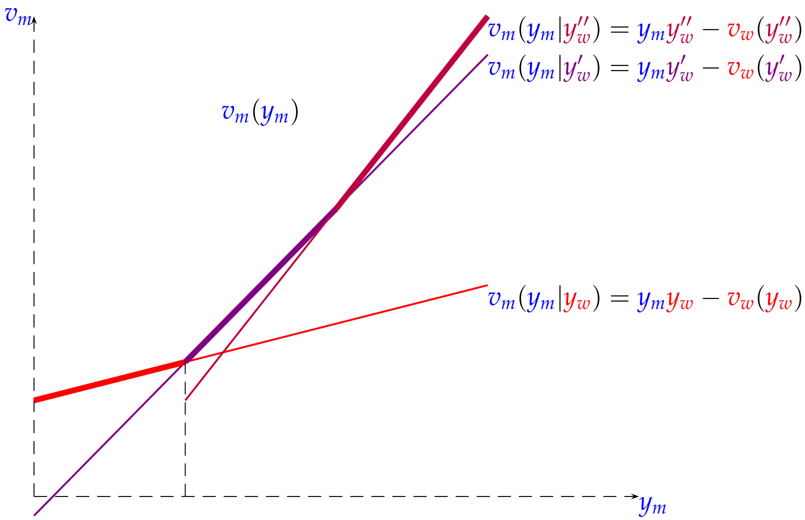

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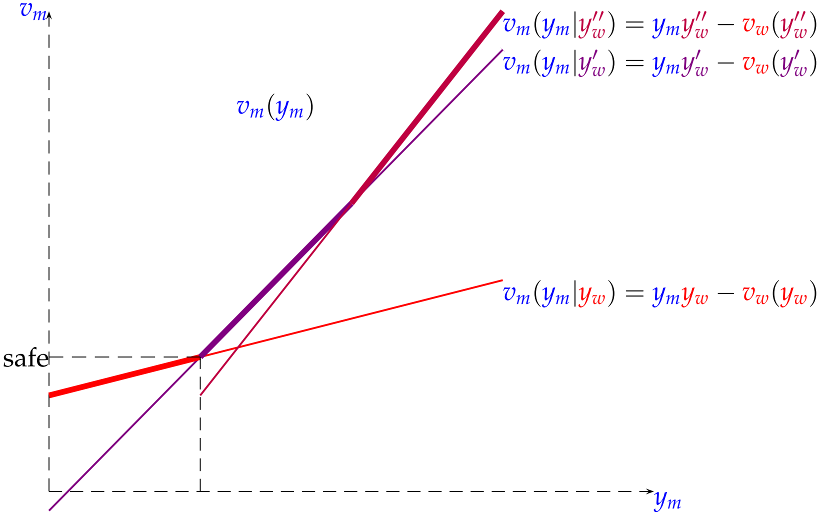

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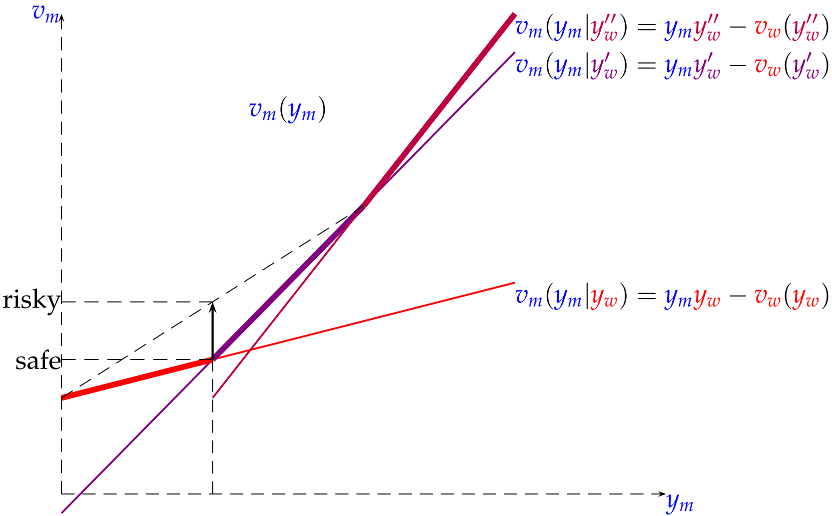

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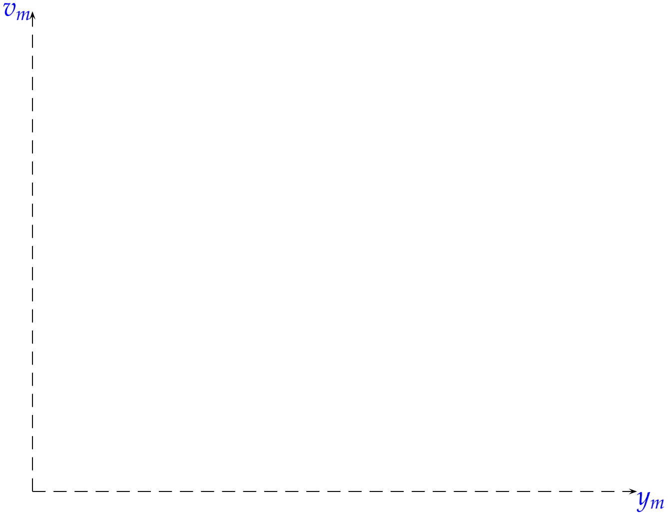
Linear Surplus and Income Heterogeneity Lead to Strictly Convex Payoff



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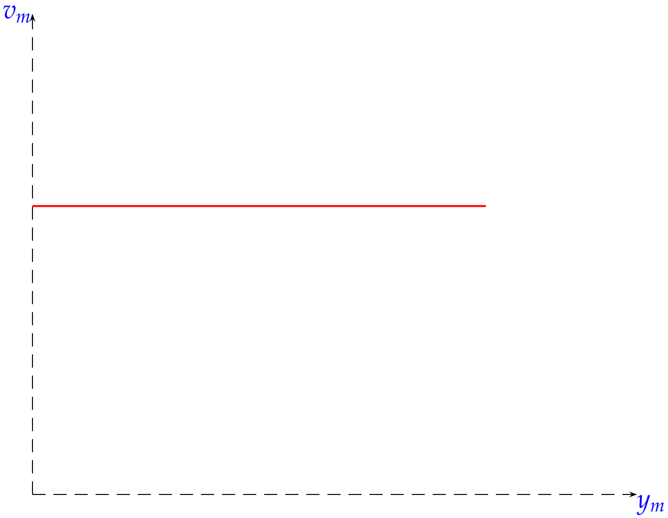

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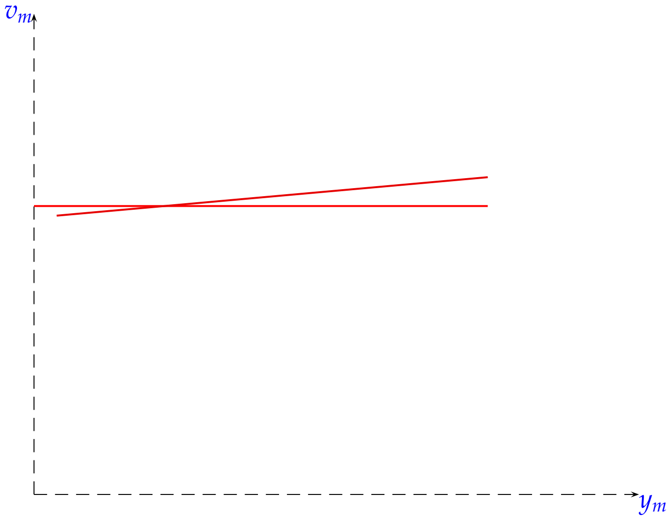

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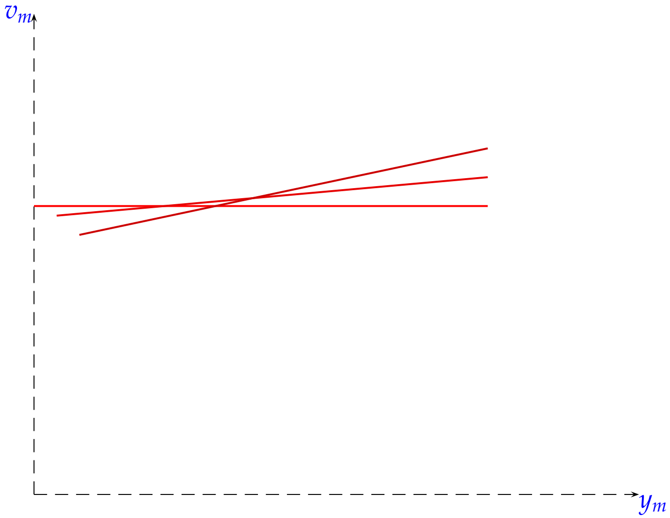

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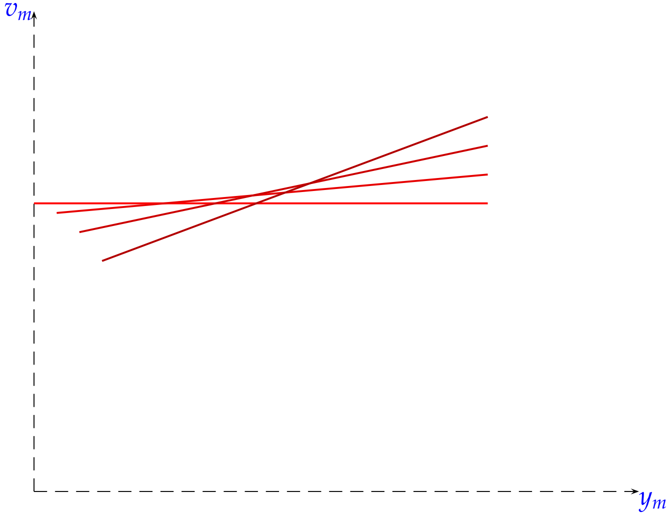

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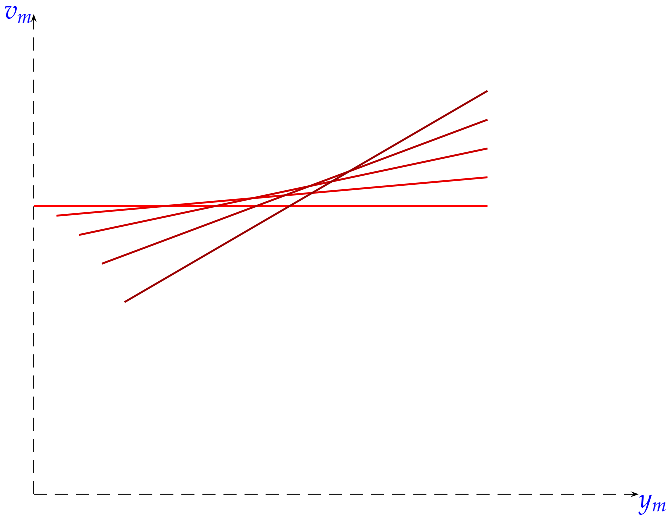

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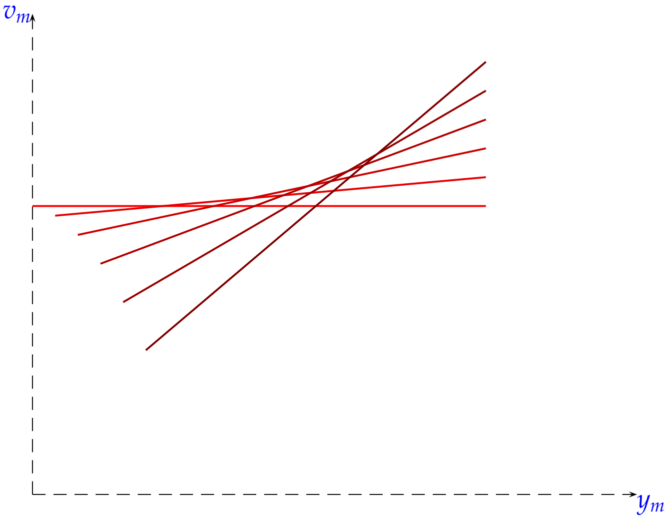

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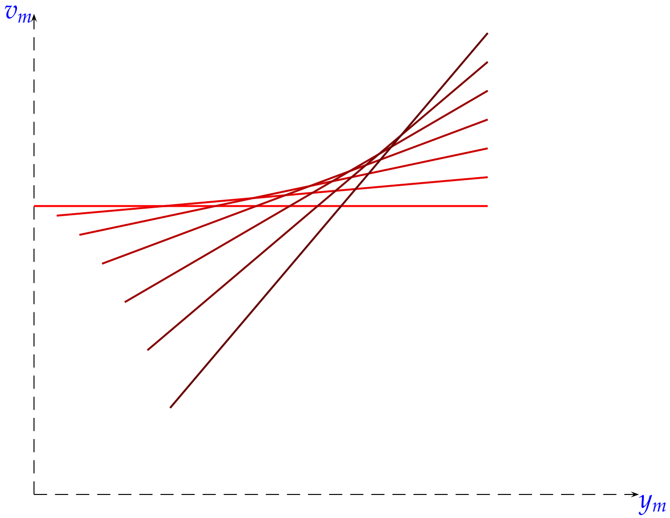

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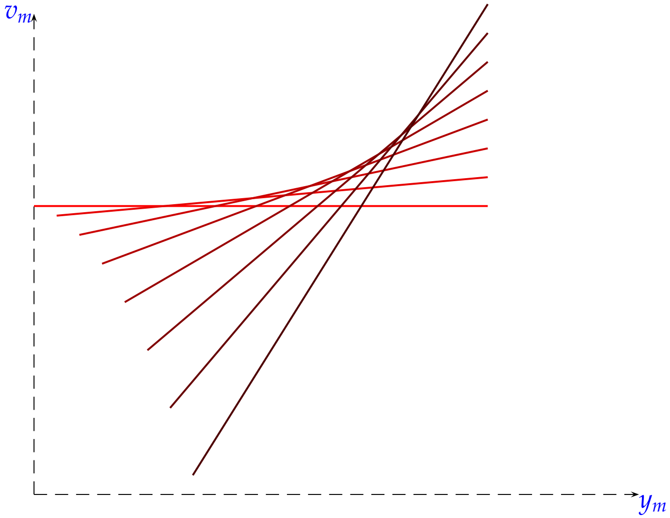

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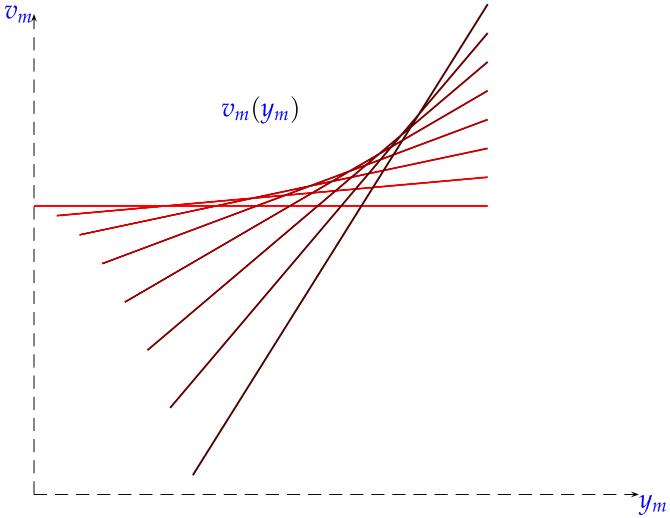

Justification of Risky Career Choices

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Proposition 1

A risk-averse person may choose a risky career that yields a lower expected income with higher income variance, because the marriage market matches the person to the payoff-maximizing partner based on his realized income.

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- *A concrete example: A business major may choose to be a trader that has a low expected income and volatile returns, because the marriage market matches the person to the optimal partner based on his realization.*

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- *A concrete example: A business major may choose to be a trader that has a low expected income and volatile returns, because the marriage market matches the person to the optimal partner based on his realization.*
- *Generalizable to other matching markets: A financial portfolio manager may choose a portfolio that has a lower expected financial return and higher volatility, because the market matches the manager to the optimal investors based on his realized returns*

Proof of Proposition 1

Concave Surplus Leads to Partially Convex Payoff

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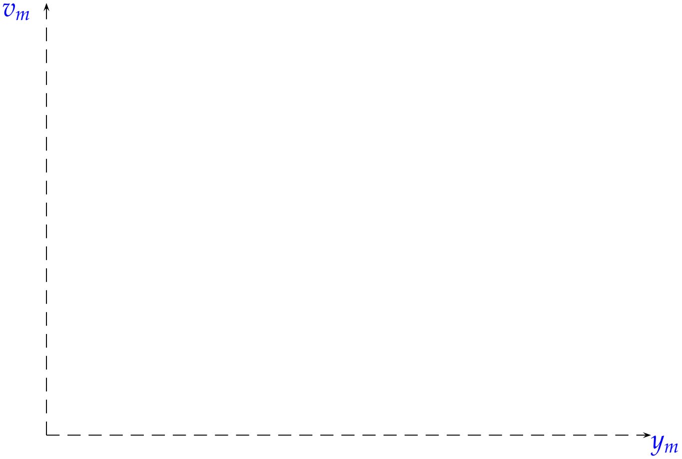

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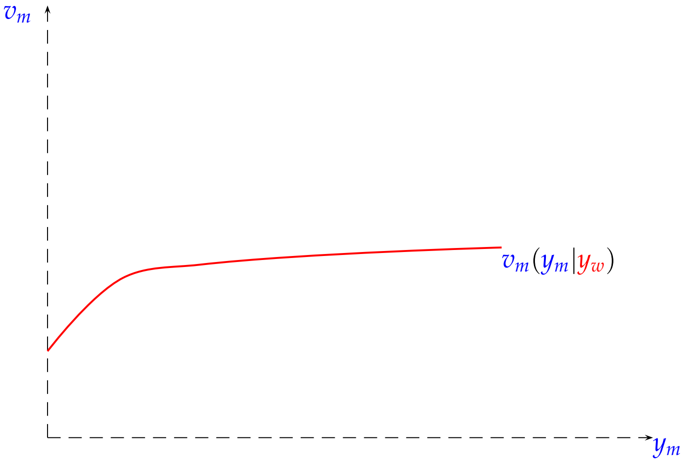

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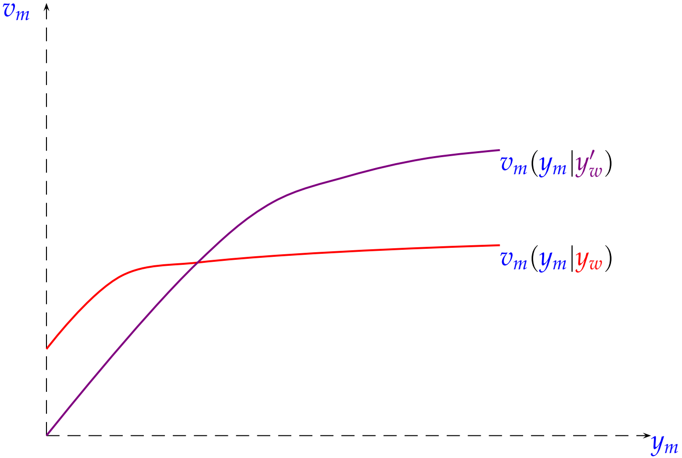

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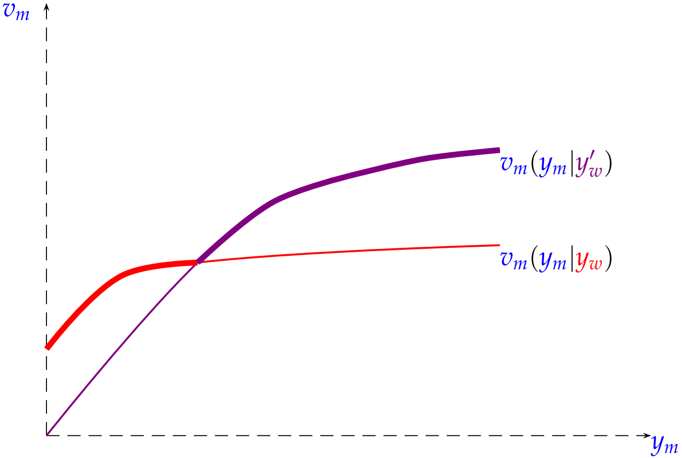

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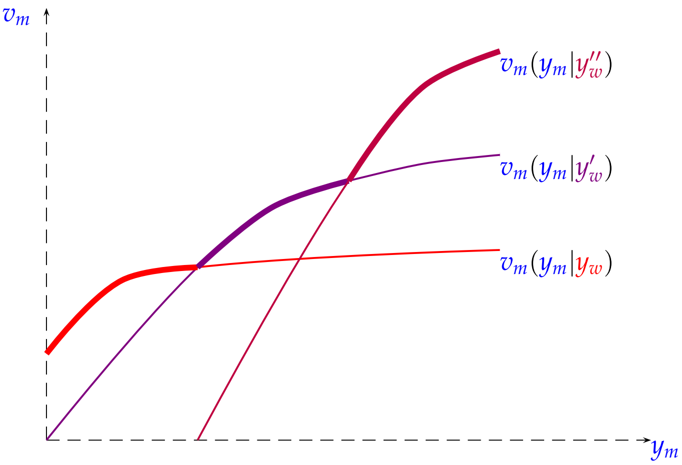

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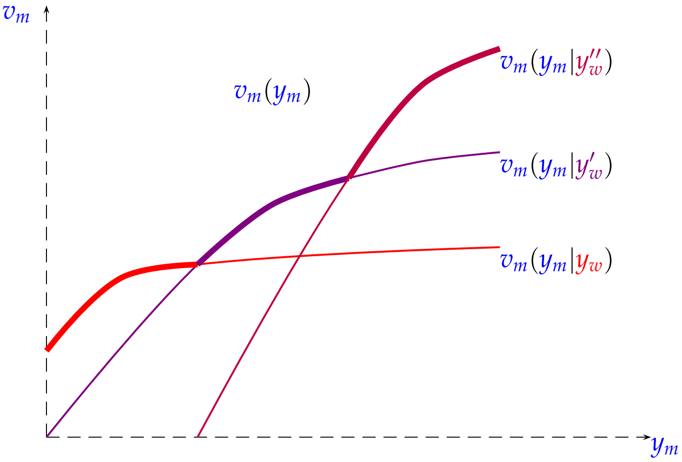

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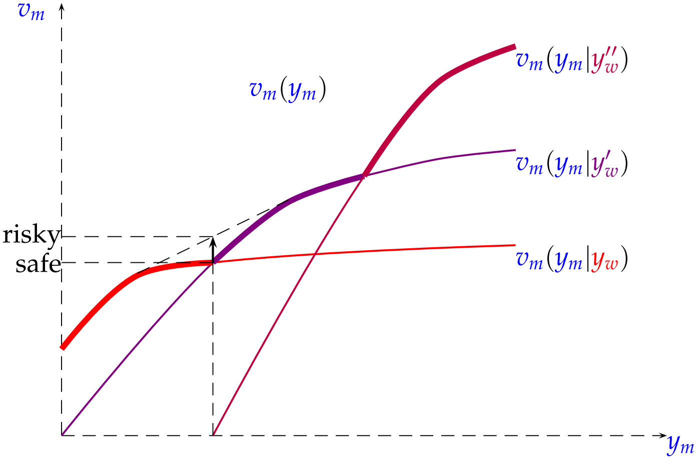


Women's Equilibrium Career Choice σ_w^*

Women's Equilibrium Career Choice σ_w^*

Lemma 2

(For a range of c,) Some women choose the risky career and some choose the safe career in equilibrium.

Gender Differences in Career Choices

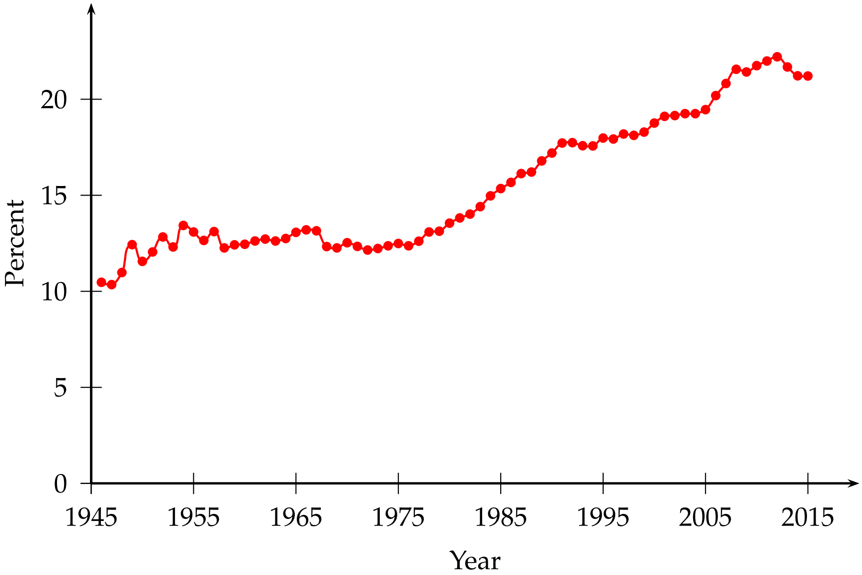
Gender Differences in Career Choices

Proposition 2

More men than women choose the risky career:

$$\int \sigma_m^*(x_m) dF_m(x_m) > \int \sigma_w^*(x_w) dF_w(x_w).$$

Percent of Female Entrepreneurs in the United States



Equilibrium Income Distributions G_m^* and G_w^*

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- σ_m^* induce men's income distribution $G_m^*(y_m) =$

$$\int_{\underline{x}_m}^{\overline{x}_m} \Phi_m(y_m - x_m | x_m) dF_m(x_m).$$

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- σ_w^* induce women's income distribution $G_w^*(y_w) =$

$$\int_{\underline{x}_w}^{\overline{x}_w} \left[\sigma_w^*(x_w)\Phi_w(y_w - x_w|x_w) + 1_{x_w \leq y_w}(1 - \sigma_w^*(x_w))\right] dF_w(x_w).$$

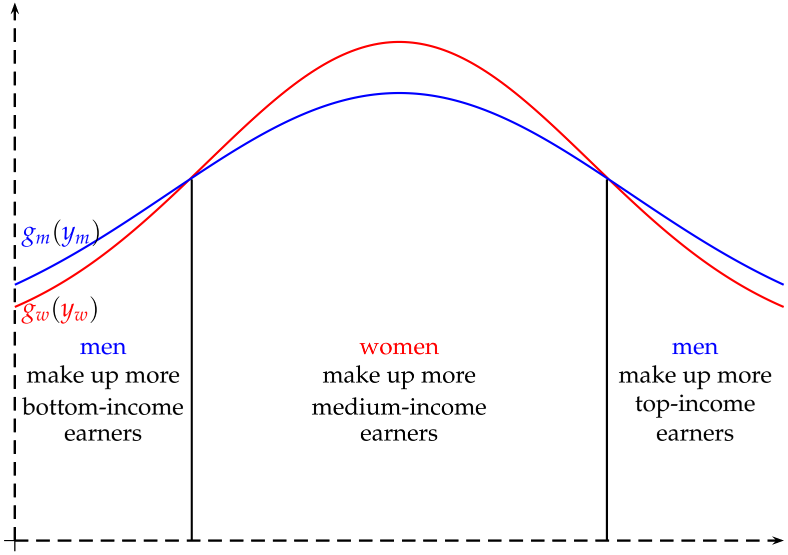
Gender Difference in Income Inequalities

Gender Difference in Income Inequalities

Proposition 3

Suppose that ability distributions and career opportunities are gender-symmetric. Men's income inequality is larger than women's income inequality: if $F_m = F_w$ *and* $\Phi_m = \Phi_w$*, then* G_m^* *is a mean-preserving spread of* G_w^**.*

Gender Difference in Income Distributions



Ability Inequality versus Income Inequality

Ability Inequality versus Income Inequality

Remark 2

Inequality in incomes is larger than inequality in abilities, because of voluntary risk-taking by both men and women: G_m^* *is a mean-preserving spread of* F_m*, and* G_w^* *is a mean-preserving spread of* F_w*.*

Three Propositions from the Benchmark Model

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Marriage Timing

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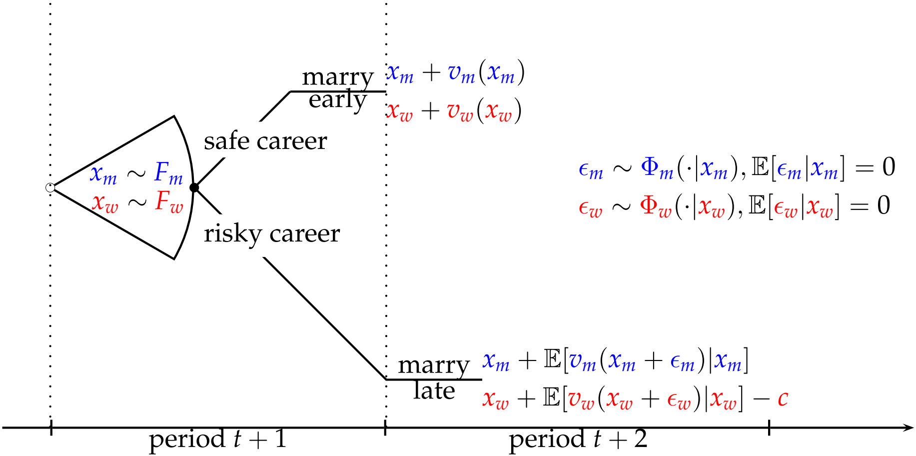

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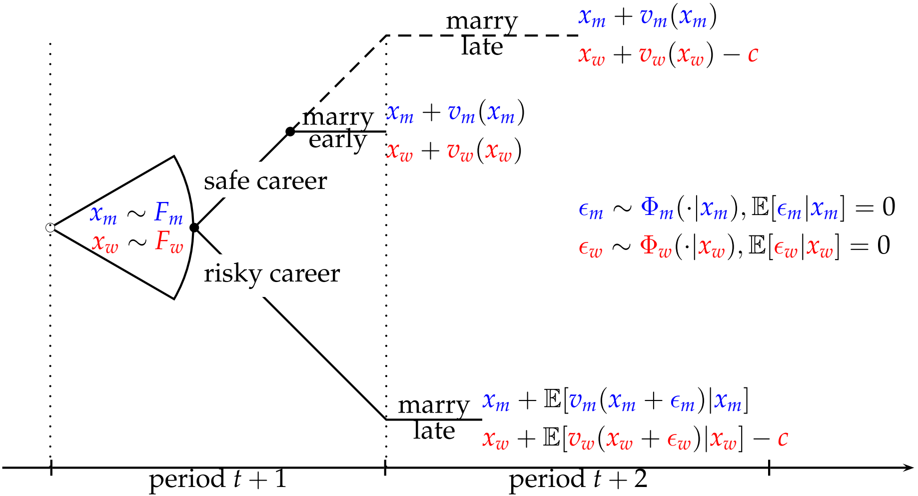

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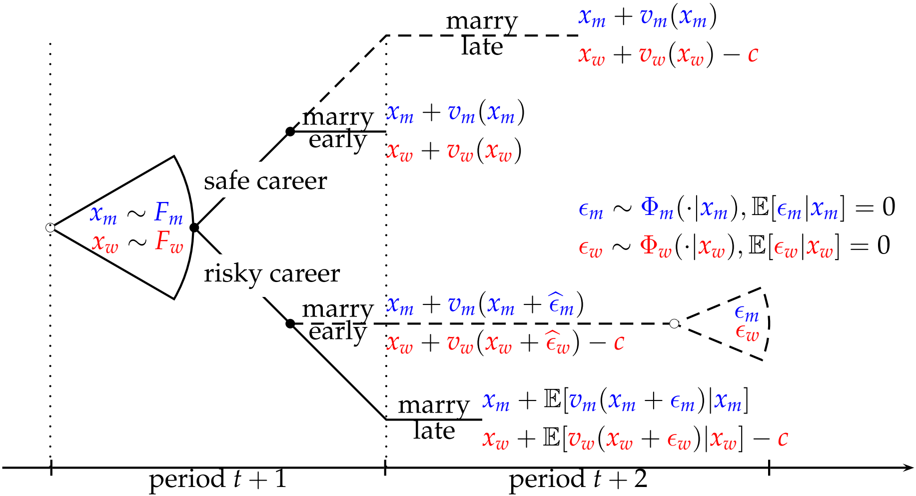

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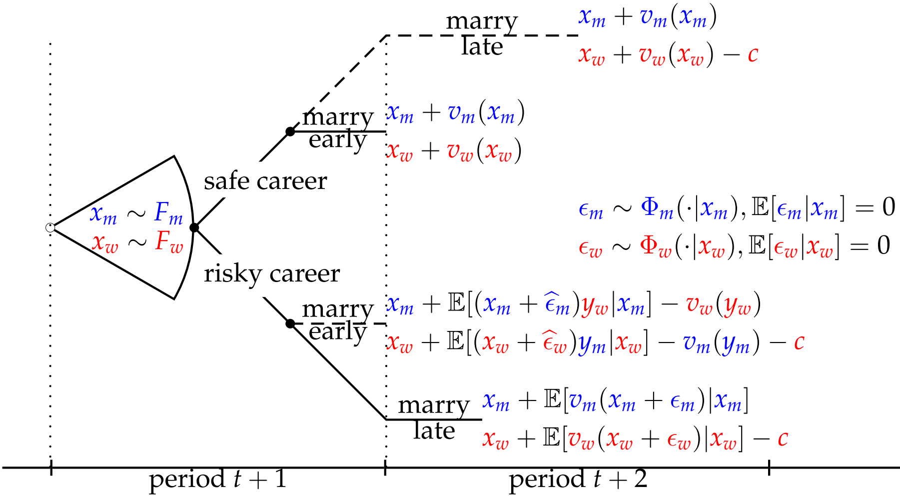

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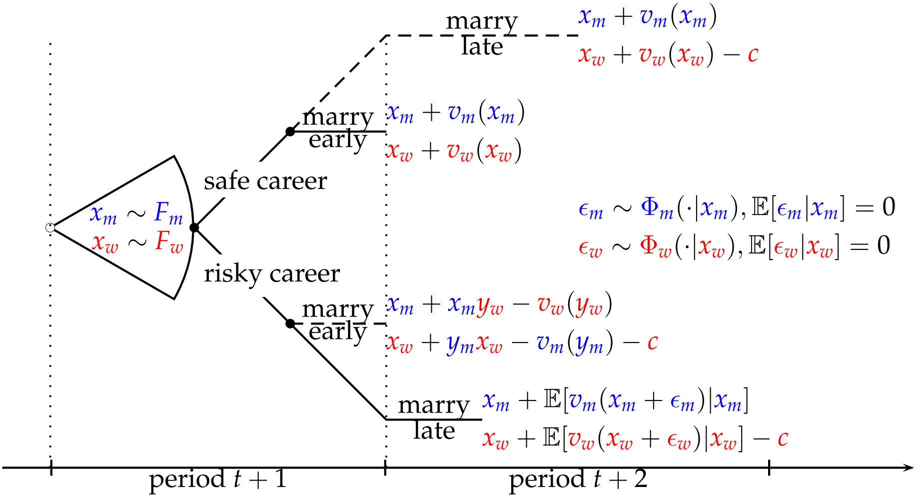

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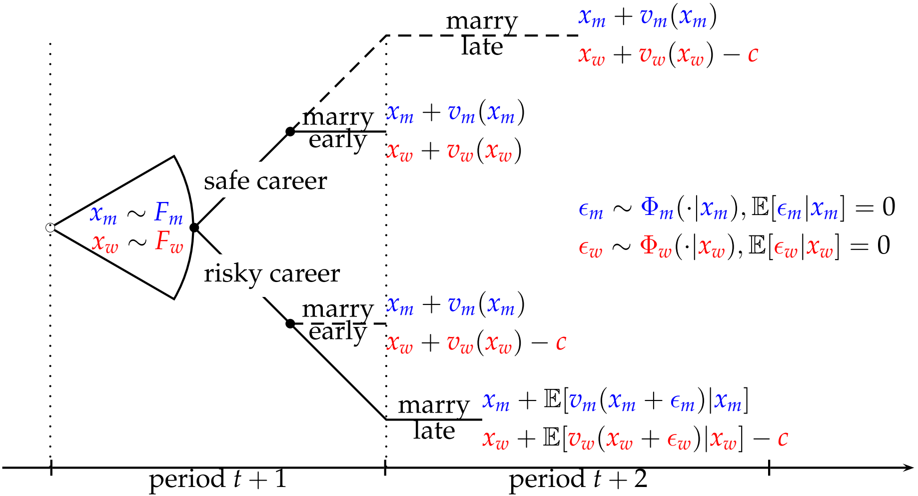

Marriage Timing

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Lemma 3

Those who choose the risky career marry late and those who choose the safe career marry early.

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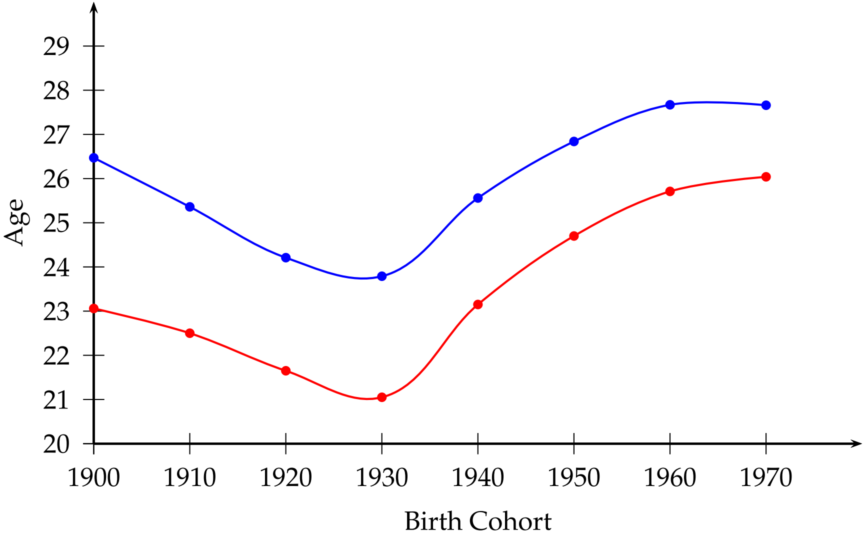
Proposition 4

Men tend to choose the risky career and marry late, whereas women tend to choose the safe career and marry early.

Average Marriage Age in the United States

Birth Cohorts 1900s-1970s



Men's Pre- versus Post-Marital Career Choice

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- Pre-Marital: An unmarried man

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  - Safe: $x_m + v_m(x_m)$.

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  - Risky: $x_m + \mathbb{E}[v_m(x_m + \epsilon_m)|x_m] \succ$ Safe.

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  - Risky: $x_m + \mathbb{E}[(x_m + \epsilon_m)y_w(x_m)|x_m] - v_w(y_w(x_m)) =$ $x_m + x_m y_w(x_m) - v_w(y_w(x_m)) \sim$ Safe.

Women's Pre- versus Post-Marital Career Choice

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- Pre-Marital: An unmarried woman

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Women's Pre- versus Post-Marital Career Choice

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    $\max_{y_m} y_m(x_w + \epsilon_w) - v_m(y_m) - k\}|x_w] \succeq$ Safe.

Pre- versus Post-Marital Career Choice

Proposition 5

Unmarried men are more likely than married men to choose the risky career, whereas married women are more likely than unmarried women to choose the risky career.

Summary of Results

1. Risk-averse people may choose jobs with low mean income and high income variance due to marriage-market incentives.

2. Unmarried men are more likely than unmarried women to choose risky careers due to differential fecundity.

3. Inequality in incomes is larger for men than for women.

4. Men choose risky careers and marry late, and women tend to choose safe careers and marry early.

5. Unmarried men are more likely than married men to choose risky careers, whereas unmarried women are less likely than married women to choose risky careers.

THANK YOU!

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