Allow for dowries/bride price

short side of market can get transfer from long side

a) Walrasian market

b) frictional market

Walrasian Markets

Assume that ex-post marriage market is Walrasian

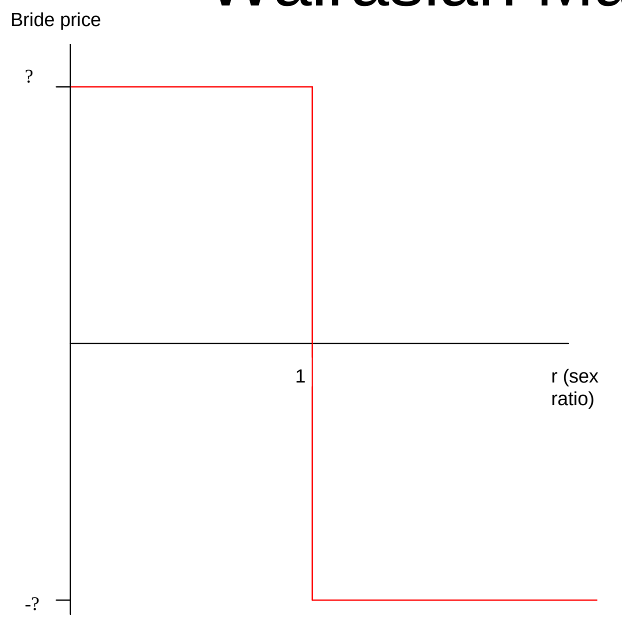
Let t denote the transfer from boys to girls, i.e. bride price.

In a Walrasian market, $t = \rho$ if $r < 1$ and $t = -\rho$ if $r > 1$.If $r = 1$, then any $t \in [-\rho, \rho]$ is a market clearing price.

Focus on a rational expectations equilibrium

Parents make choices on gender, anticipating a bride price

Walrasian Market



Equals the realized bride price.

sex ratio cannot be unbalanced in a rational expectations equilibrium.

If $r^* < 1$, so that $t^* = \rho$, strictly better to have a girl

$r^* = 1$ is unique rational expectations allocation

continuum of equilibrium prices t^* such that choice is not exercised

Outcome is socially efficient

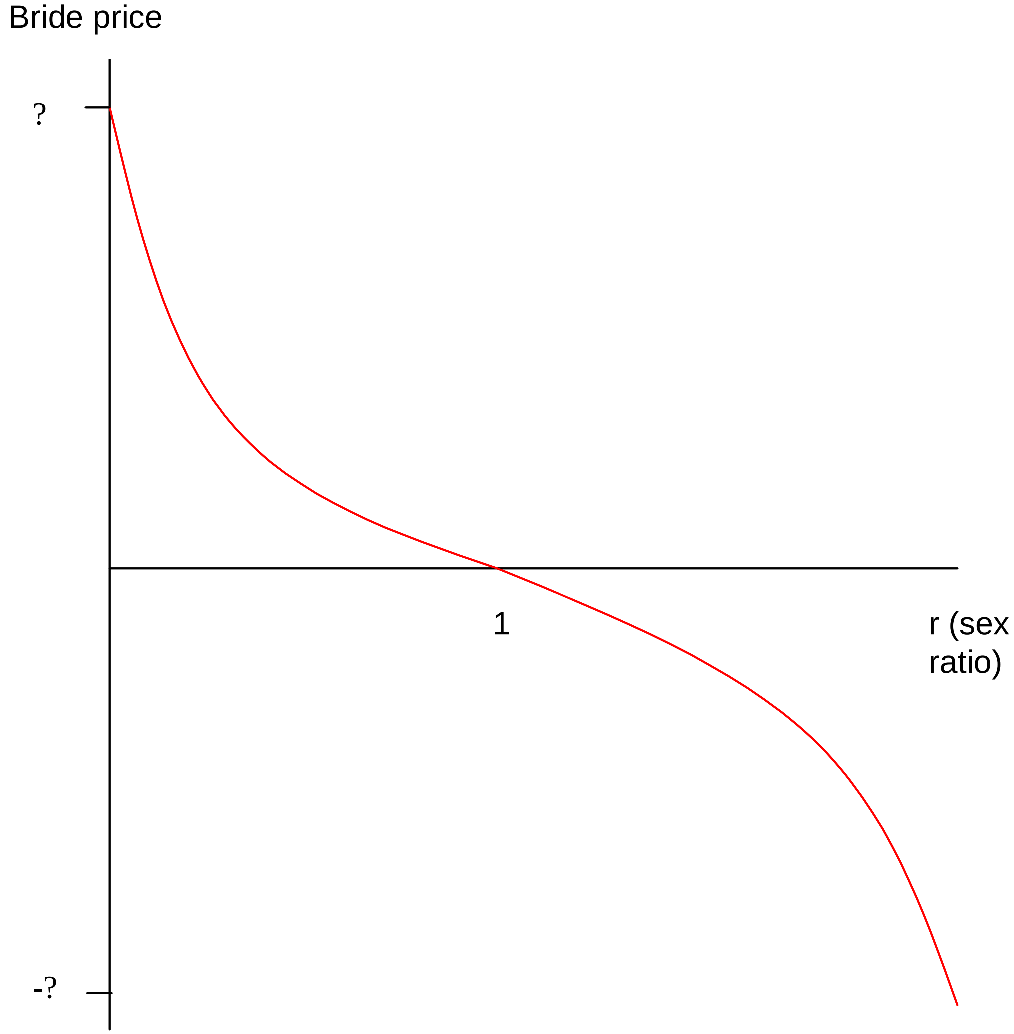
Frictional Matching

Walrasian model: equilibrium price moves discontinuously with sex ratio r

Decentralized matching, with bride-price as outcome of bargaining

If r is equal to 1, $t = 0$,

t will be small is r is close to 1.



Bride price
?
-?
1
r (sex ratio)

Results

With frictional matching, $r^* < 1$ and $t > 0$

both price and quantity adjust to equilibrate the market

Equilibrium sex ratio r^* inefficiently low – $x^* < x^o$

Socially optimal sex ratio $x^o < 1$

Improvement in selection technology reduces welfare

Qualitatively, results similar to model without prices

Fertility, selection and sex ratio

One-child policy in China

what is its effect on the sex ratio?

Suppose that a family has n children

m boys, $f = n - m$ girls

ℓ of these children are matched in the marriage market.

Parental utility is

$$V(m, f, \ell) = u(m) + v(f) + \rho(\ell)$$

$u(.)$, $v\,(.)$ and $\rho(.)$ are strictly concave functions. assume that

$$[u(1) + v(n-1)] - v(n) > 2c,$$

marginal utility of the first boy is larger than the marginal utility of the n-th girl

Assume also that

$$u(m+1) + v(n-m-1) - u(m) - v(n-m) < 2c \text{ if } m > 0,$$

(no incentive to select for boys after getting 1 boy)

$\hat{r}(n)$ is sex ratio that results from decision rule:

select only at last birth, if and only if $n-1$ girls

$$\hat{r}(n) = \frac{(0.5)^{n-1}\left\{\frac{n-1}{2n}\right\} + \left[1-(0.5)^{n-1}\right]}{(0.5)^{n-1}\left\{\frac{n+1}{2n}\right\} + \left[1-(0.5)^{n-1}\right]}.$$

As n increases, $\hat{r}(n)$ tends to 1

n	2	3	4	5	6
$\hat{r}$	0.714	0.909	0.957	0.987	0.995

This is basic intuition why r declines as fertility falls

What about marriage market considerations?

If $r \leq 1$, girls matched for sure

boy matched with probability r.

Payoff from selection at the last birth is

$$u(1) + v(n-1) + r\rho(n) + (1-r)\rho(n-1) - 2c.$$

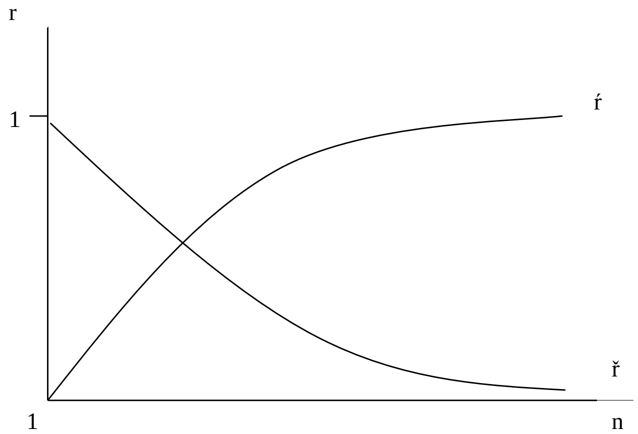
Payoff from keeping a girl is

$$v(n) + \rho(n)$$

the payoff gain from selection is given by

Let $\tilde{r}(n)$ be the value of r such that two payoffs are equal

$\tilde{r}(n)$ is decreasing in n



Equilibrium sex ratio for any value of $n, r^*(n)$ is

$$r^*(n) = \max\{\tilde{r}(n), \hat{r}(n)\}.$$

Effect of family size on sex ratio is not monotone

reduction in fertility may reduce the sex ratio, but further declines will increase it

the sex ratio

In societies without large gender bias, parents still have gender related preferences

In vitro fertilization permits sex selection with low financial/psychological costs

UK: Human Fertilization and Embryology Authority recommended against allowing selection for "social reasons" such as family balancing.

Allowing choice – increases welfare directly

but may cause gender imbalance – if parents more likely to exercise selection when they have girls than when they have boys

Angrist & Evans (1998)– evidence of family balancing concerns in US

Table 1: Prob. of having 3rd child, US

1st two children	1980	1990
GB	0.372	0.344
BB or GG	0.432	0.407
Difference	0.060	0.063
GG	0.441	0.412
BB	0.423	0.401
Difference	0.018	0.011

Dahl and Moretti (2007): some evidence that US parents (esp men) prefer boys

Preferences for gender balancing

direct utility from pair of children

$$u(1) + v(1) > u(2)$$

$$u(1) + v(1) > v(2)$$

$$\rho(2) > \rho(1)$$

If either preferences are asymmetric or technology is asymmetric, then equilibrium sex ratio may be unbalanced.

This is socially inefficient due to congestion externality

Social optimality: balanced sex ratio where either everyone exercises choice for second child

Conclusion

unbalanced sex ratios can be explained as an equilibrium phenomenon

Parents not stupid (take into account imbalance)

Congestion externality implies that selection is inefficient

Prices partially offset but need not overcome problem

Family balancing concerns: selection can improve welfare, but measures may need to be taken to prevent imbalance