

Racial Intermarriage and Household Production

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Introduction

Introduction

- ▶ Being black in the US has been associated with a wide range of disadvantages:
 1. Blacks earn less than Whites.
 2. Blacks have relatively lower marriage and couple formation rates.
 3. White women seem to be less willing to date black men
Relative to White men in a study of internet dating.
 4. Black men who marry White women have higher education, income and occupational status than black men who marry black women.
- ▶ The disadvantages related to marriage may be related to the establishment of anti-miscegenation laws that led to historically low racial intermarriage rates (Fryer, 2007; Chiswick and Houseworth, 2011). Such laws became unconstitutional in 1967.

Aim of the paper

- ▶ Test whether in the US blacks are also disadvantaged in terms of spending more time on household chores when in couple with whites than when endogamous.
- ▶ Use household chores as a testing ground for Becker's theory of marriage linking marriage markets and intra-marriage distribution.
- ▶ More specifically, we use Becker's (1973) second Demand and Supply model.
 1. Market mechanism influences who marries whom as well as distributions of the gain from marriage.
 2. Some distribution differentials across marriage markets may be a function of racial intermarriage.

Overview

- ▶ Using couples surveyed by the American Time Use Survey (ATUS) 2003-2009 we focus on the association between a spouse's race and the time that respondents allocate to chores.
 1. White women in couple with black partners devote less time to chores and housework than their endogamous counterparts (endogamous marriages are marriages between two people from the same group) \Rightarrow Size of these coefficients is similar to the effect of the presence of children on women's time devoted to chores.
 2. White men also spend less time in housework if intermarried with black women than if endogamous.
 3. When in couple with whites, black women seem to devote more time to chores and housework than when endogamous.
 4. When in couple with whites, black men seem to devote more time to housework than when endogamous.
- ▶ Our findings suggest that blacks pay a price for being in couple with whites rather than being endogamous.

Theoretical Framework

Theoretical Framework

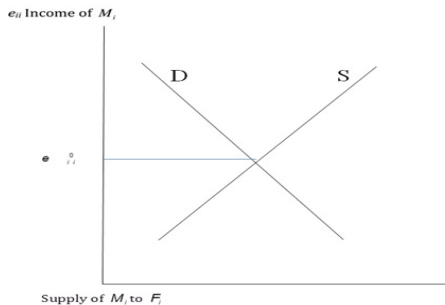
- ▶ This presentation is based on a theory that appeared in Becker's original article on marriage in the JPE in 1973 (soon it will be FOURTY years since that was published!): **Becker's second Demand and Supply model of marriage.**
- ▶ Unlike Becker's first D and S model and his matching model, this model does not appear in the Treatise. Why? NOT because it is not important. In Beckers words: "My Treatise was considered by me to be a complement to my previous work, not a substitute. So I did not go over everything in the earlier papers that I considered to be valid and sometimes even important." (Becker, email communication to S. Grossbard, 2004).
- ▶ No distinctions between marriage and non-marital cohabitation.
- ▶ Second D and S model assumes that there are different types of men M and women F and that they are substitutable.

Theoretical Framework

- ▶ Consider a market for one type of man M_i and one type of woman F_j . e_{ij} measures men' share of the gain from marriage. The supply of men M_i indicates how many men of type M_i are willing to enter marriages with women F_j . Let us call it e_{ij} , the first i denoting the type of woman and the second i the type of man.
- ▶ The higher e_{ij} the more men M_i supply themselves as mates to women F_j . The supply of men is therefore upward-sloping.
- ▶ The higher men' share e_{ij} the lower the share of the gain from marriage left for women, and consequently the fewer the women F_j entering the market for $M_i F_j$ marriages.
- ▶ In market equilibrium, the share e_{ij} is established in the $M_i F_j$ market at the intersection of Demand and Supply. In this marriage market equilibrium prices are thus shares of the gain from marriage. Simultaneously, shares/prices e_{lm} are established in $L \times N$ markets for marriage $M_l F_n$, where $l=i, j, k, \dots, L$ are all the types of women and $n=i, j, k, \dots, N$ are all the types of men.

Theoretical Framework

Figure: Figure 1. Figure 2 in Becker (1973)



Theoretical Framework

- ▶ In terms introduced by Sherwin Rosen (1974), after the publication of Becker's (1973) Theory of Marriage, Becker's second D and S model can be relabeled a **hedonic market model**.
- ▶ It is based on this model that Becker (1973) concluded: "The division of output [i.e., e] is determined here, as in other markets, by marginal productivities—and these are affected
 1. by the human and physical capital of different persons,
 2. by sex ratios(..) and
 3. by **some other variables**."
- ▶ Racial intermarriage is the other variable introduced here.

Theoretical Framework

- ▶ We focus on four markets:
 1. endogamous markets for whites.
 2. endogamous markets for blacks.
 3. markets for black men and white women.
 4. markets for white men and black women.
- ▶ Most individuals prefer more leisure and less work, and are therefore likely to translate their advantages in marriage markets into a lighter workload in home production.
- ▶ Intra-household distributions of the gain from marriage are likely to be positively related to leisure time, and negatively related to time spent doing chores or working in the labor force.
- ▶ Ceteris paribus, we obtain the following predictions:
 1. Whites may get higher distributions when in couple with blacks than when endogamous \Rightarrow US whites spend less time on household chores when in couple with blacks than when endogamous.
 2. Blacks may get lower distributions when in couple with whites than when endogamous \Rightarrow US blacks spend more time on household chores when in couple with whites than when endogamous.

Data and Methods

American Time Use Survey 2003-2009

- ▶ We use the American Time Use Survey (ATUS) 2003-2009.
- ▶ Respondents are randomly selected from a subset of households that have completed their eighth and final month of interviews for the Current Population Survey (CPS).
- ▶ They are interviewed (only once) about how they spent their time on the previous day.
- ▶ Limitation: time use information for only one member of the household \Rightarrow We only know time allocation decisions of one member of the couple.

Sample

- ▶ Non-retired/non-student married or cohabiting respondents between the ages of 21 and 65 who have time diaries that add up to a complete day (1440 minutes).
- ▶ Additionally, we eliminate cases of women with unemployed husbands who are less likely to compensate women for their work at home.
- ▶ For men we do not impose any restriction on the labour status of their female partners.

Time Use Variables

We define Household Chores in two ways:

- ▶ **Chores:** More restrictive definition only includes activities for which women have negative income elasticities, implying that women would rather avoid these activities if they can afford to (elasticities with respect to own years of schooling and own actual earnings be below -0.01). Includes interior cleaning, laundry, grocery shopping, kitchen and food clean-up, travel related to housework, travel to/from the grocery store, and food and drink preparation.
- ▶ **Total Housework:** Broader and widely used definition of chores for men: total time devoted to household production activities excluding childcare. Includes meal preparation and cleanup, laundry, ironing, dusting, vacuuming, indoor household cleaning, indoor design and maintenance (including painting and decorating), time spent obtaining goods and services (i.e., grocery shopping, shopping for other household items, comparison shopping), and time spent on other home production such as home maintenance, outdoor cleaning, and vehicle repair.

Racial Composition: CPS categories

- ▶ **black**: "black only" or "black-white".
- ▶ **White**: "white only".
- ▶ Other categories are not included (Asian, black-Asian, Asian-White).
 1. 15,638 white women (131 interracial couples).
 2. 1,011 black women (50 interracial couples)
 3. 15,627 White men (50 interracial couples)
 4. 1,270 black men (147 interracial couples)
- ▶ We have also estimated our models with alternative definitions of black (e.g., excluding the category "black-white").

Some Descriptives

- ▶ Men devote much less time than women to both Chores and Total Housework: 2 and 3.5 daily hours to Chores and Total Housework in the case of women, and 0.6 and 1.8 hours in the case of men. Consequently our study focuses on explaining women's time devoted to chores.
- ▶ Given that our data provides a much larger number of White women in couple (15,638 observations) than black women in couple (1,011 observations) we first study the association between racial intermarriage and chores performed by White women.

1-equation models

- ▶ OLS regressions of time in household chores as a function of intermarriage and of a number of characteristics of respondents and their spouses as well as characteristics of the household:

$$Chores_{ijt} = \alpha_1 + Intermarried_{ijt}\delta_1 + X_{ijt}\delta_2 + \varepsilon_{ijt} \quad (1)$$

- ▶ $Chores_{ijt}$ is the time devoted to household chores by woman "i" in state "j" and year "t". *Total Housework* is used in regressions for men.
- ▶ $Intermarried_{ijt}$ is a dummy variable indicating whether a respondent "i" in state "j" and year "t" is "married" to a partner who is black in the case of white respondents or white in the case of black respondents.
- ▶ We expect to find $\delta_1 < 0$ in the case of white respondents and $\delta_1 > 0$ in the case of black respondents.
- ▶ X_{ijt} includes demographic and economic characteristics of wives and husbands as well as household characteristics.

1-equation models

- ▶ We estimate separate regressions
 1. for weekdays and weekends.
 2. for married and unmarried couples.
 3. by labor force status: respondent works less than 10 hours a week or 10 or more hours.
- ▶ We test for robustness of our estimates for women by reestimating our models using "total housework" instead of "chores" (Results are consistent).

3-equation model: Sample Selection

- ▶ We follow an approach similar to that used by Meng and Gregory (2005), Fryer (2007), Furtado and Theodoropoulos (2011) and Furtado (2012) and provide a simultaneous estimation of:

1. selection into intermarriage,
2. selection into marriage with an employed husband, and
3. time in chores.

$$\text{Chores}_{ijt} = \alpha_1 + \text{Intermarried}_{ijt}\delta_1 + X_{ijt}\delta_2 + \lambda_{ijt}\delta_3 + \varepsilon_{ijt} \quad (2)$$

$$\text{Husband} - \text{black}_{ijt} = \alpha_2 + P_{jt}\beta_1 + \text{Loving}_{jt}\beta_2 + X_{ijt}\beta_3 + \varepsilon_{ijt} \quad (3)$$

$$\text{Husband} - \text{Employed}_{ijt} = \alpha_3 + \text{State} - FE_{jt}\gamma_1 + X_{ijt}\gamma_2 + \varepsilon_{ijt} \quad (4)$$

- ▶ We estimate this model with all white women (including those women whose partners are not employed).
- ▶ Sample sizes for black women are too small to estimate this 3 equation model.

Selection into interracial couples

- ▶ P_{jt} is the availability ratio ($P_{jt} = \frac{n_{jt}}{N_{jt}}$): n_{jt} is the number of white men available for a woman in state "j" and year "t", and N_{jt} is the total number of all men of marriageable age observed in state of residence "j" and year "t". Respondent's age is defined in 5-year age groups, and we use men who are 2 years older than the women (Amuedo-Dorantes and Grossbard, 2007).
- ▶ Loving' dummies based on Fryer (2007) to control for whether the state of residence of the reference woman has had anti-miscegenation laws, and whether that state was forced to repeal them as a result of the 1967 U.S. Supreme Court decision "Loving v. Virginia". We expect White women to be less likely to be married to black spouses in states that repealed their miscegenation laws only after the "Loving" decision.
- ▶ Variables that identify selection in the employed spouse equation: state unemployment rate and the state minimum wage.

Results

Results for white women

Table: OLS model on the time devoted to *Chores* (hours per day)

	All women	Weekday	Weekend	Married women	Unmarried women	Married women with LLFP	Married women with Non-LLFP
Husband black	-0.330** (0.139)	-0.489*** (0.165)	0.112 (0.246)	-0.380*** (0.146)	-0.108 (0.349)	-0.740** (0.308)	-0.122 (0.172)
Nb of children < 5	0.418*** (0.033)	0.496*** (0.042)	0.216*** (0.046)	0.422*** (0.034)	0.405*** (0.117)	0.337*** (0.063)	0.283*** (0.039)
Nb of children 5-11	0.335*** (0.026)	0.367*** (0.034)	0.267*** (0.036)	0.339*** (0.027)	0.269** (0.116)	0.321*** (0.050)	0.245*** (0.031)
Nb of children 12-17	0.314*** (0.035)	0.356*** (0.045)	0.208*** (0.046)	0.321*** (0.036)	0.265* (0.136)	0.423*** (0.072)	0.241*** (0.038)
N Interracial couples	131	65	66	101	30	30	71
R-Squared	0.108	0.133	0.061	0.107	0.145	0.146	0.084
N Observations	15,638	7,745	7,893	14,772	866	4,106	10,666

Notes: Standard errors in parentheses. *P < 0.1; ** P < 0.05; *** P < 0.01. Age range: women 21-65. Source: ATUS 2003-2009. Chores is measured in hours per day.

Results for white women

- ▶ Relative to white women in couple with White men, white women in couple with black men devoted about 0.33 fewer hours per day to Chores, which indicates that $\delta_1 < 0$ as predicted by the theoretical framework.
- ▶ **Our Interpretation:** existence of a Compensating Differential by race; in absolute value **the presence of a black partner matters as much as the presence of a child under age 5 when it comes to White women's allocation of time to chores.**
- ▶ Racial intermarriage factor:
 1. operates during weekdays more than on weekends
 2. holds for married women only (we predicted a stronger effect for married couples than for unmarried couples), and
 3. is stronger for women with limited labor force participation (LLFP) than for fully employed women (.7 of an hour less).

Results for black women

Table: OLS model on the time devoted to *Chores* (hours per day)

	All Women	Women with Weekday LLFP	
Husband white	0.411 (0.524)	1.231* (0.701)	2.196* (1.129)
Nb of children < 5	0.280** (0.134)	0.334* (0.171)	0.404 (0.265)
Nb of children 5-11	0.281** (0.109)	0.335** (0.148)	0.364 (0.226)
Nb of children 12-17	-0.031 (0.111)	-0.233* (0.124)	0.643** (0.307)
N Interracial couples	50	25	9
R-Squared	0.073	0.106	0.244
N Observations	1,011	501	222

Notes: Standard errors in parentheses. *P < 0.1; ** P < 0.05; *** P < 0.01. Age range: women 21-65.
 Source: ATUS 2003-2009. Chores is measured in hours per day.

Results for black women

- ▶ Here the theory led to a prediction of black women devoting more time to chores if intermarriage than endogamous.
 1. Black women in couple with white men devote 1.2 more hours to chores per weekday than black women in couple with black men.
 2. If they are with no or limited labor force participation, they devote 2.2 more hours of chores per day.
- ▶ Problem: few observations and very few interracial couples.

Results for white women considering selection

Table: Sample selection model on the time devoted to *Chores* (hours per day)

	(1) Husband black	(2) Husband employed	(3) Chores
Husband black	-	-	-0.405*** (0.137)
<u>Residence Characteristics</u>			
Availability ratio	-0.009** (0.004)	-	-
State unemployment rate	-	-0.037*** (0.008)	-
State minimum wage	-	0.005 (0.007)	-
Inverse Mills Ratio	-	-	0.950* (0.499)
N Interracial couples	-	-	160
R-Squared	-	-	0.104
N Observations	17,533	17,533	17,533

Notes: Standard errors in parentheses. *P < 0.1; ** P < 0.05; *** P < 0.01. Age range: women 21-65. Source: ATUS 2003-2009. Chores is measured in hours per day.

Results with Selection

- ▶ At least one instrument used to identify each of the selection equations is statistically significant.
- ▶ Main result: white women in couple with black men devote 0.4 of an hour less per day to chores. That result is very similar to the 0.33 coefficient of chores in the simple model.
- ▶ The rest of the results and the R-squared of the chores regression in the simultaneous model are very similar to the results of the OLS regressions; The inverse of the Mill's ratio reaches low significance (below the 95% level). It thus appears that selection issues do not play a major role here.
- ▶ Therefore the rest of our estimations are based solely on simple equations of chores.

Results for men, *Total Housework*

Table: OLS model on the time devoted to *Total Housework* (hours per day)

	All Men	Weekday	Weekend	Married Men	Men with LLFP	Married men with LLFP
White						
Wife black	-0.587*** (0.196)	-0.589*** (0.210)	-0.561 (0.501)	-0.560** (0.220)	-0.094 (1.226)	0.520 (1.428)
N Interracial couples	50	31	19	41	8	7
R-Squared	0.067	0.013	0.02	0.068	0.07	0.083
N Observations	15,627	7,852	7,775	14,733	1,109	1,012
Black						
Wife white	-0.058 (0.215)	-0.151 (0.267)	0.272 (0.350)	-0.060 (0.241)	1.342** (0.564)	1.701** (0.771)
N Interracial couples	147	73	74	112	16	10
R-Squared	0.034	0.042	0.058	0.042	0.23	0.23
N Observations	1,270	598	672	1,104	205	160

Notes: Standard errors in parentheses. *P < 0.1; ** P < 0.05; *** P < 0.01. Age range: men 21-65. Source: ATUS 2003-2009. Chores is measured in hours per day.

White

- ▶ Relative to their endogamous counterparts, intermarried white men devote 0.6 of an hour less to *Total Housework* per day ($\delta_1 < 0$).
- ▶ The size of the effect is big, given that the overall time devoted to *Total Housework* by men is 1.8 hours per day.
- ▶ The effects of intermarriage only appear on weekdays, and for married men only.

Black

- ▶ Statistically significant effects for black men with limited labor force participation.
- ▶ Small sample sizes.

Conclusions

Conclusions

- ▶ Based Becker's (1973) second Demand and Supply model.
- ▶ We predicted that in the context of the US:
 1. blacks in couple with whites will work more hours at chores (housework)
 2. whites in couple with blacks work fewer hours at chores (housework)

We find that

- ▶ White women work less at chores if intermarried than if endogamous ⇒ Consistent with intermarried white women obtaining more access to the gain from marriage relative to their endogamous counterparts.
- ▶ Black women work more at chores if intermarried than if endogamous ⇒ Consistent with intermarried black women obtaining less access to the gain from marriage relative to their endogamous counterparts.
- ▶ Findings for intermarried and endogamous men go in the same direction.
- ▶ Access to the gain from marriage is a function of demand and supply in marriage markets defined by the ethnicity of both men and women.
- ▶ Blacks pay a price when in couple with whites in the sense that their partners seem to supply a reduced amount of household production relative to what they can expect from a black partner.
- ▶ Racial intermarriage seems to benefit whites in the form of extra time their black partners spend on household production.
- ▶ This may be another disadvantage associated with being black in the US.
- ▶ Further studies will provide more accurate tests allowing verification of the exploratory research we presented.

Conclusions

Table: Example of Time Sheet

Day Person id	Starting Time	Ending Time	Main Activity	Parallel Activity	Alone	Small	Other Family	Other	Where or Mode of Transport
A	6:00	6:10	Sleep						At home
A	6:10	6:20	Sleep						At home
A	6:20	6:30	Sleep						At home
A	6:30	6:40	Sleep						At home
A	6:40	6:50	Sleep						At home
A	6:50	7:00	Sleep						At home
A	7:00	7:10	Showe						At home
A	7:10	7:20	Had breakfast	Read newspaper		Ch			At home
A	7:20	7:30	Dressing						At home
A	7:30	7:40	Walked to bus						By foot
A	7:40	7:50	Bus to job		A				By bus
A	7:50	8:00	Bus to job		A				By bus
A	8:00	8:10	Paid Work					OP	At work
A	8:10	8:20	Paid Work					OP	At work
A	8:20	8:30	Paid Work					OP	At work
A	8:30	8:40	Paid Work					OP	At work
A	8:40	8:50	Paid Work					OP	At work
A	8:50	9:00	Paid Work					OP	At work
A	9:00	9:10	Paid Work					OP	At work
A	9:10	9:20	Paid Work					OP	At work
A	9:20	9:30	Paid Work					OP	At work
A	9:30	9:40	Paid Work					OP	At work

Time devoted to *Chores* and *Total Housework*

Table: Summary statistics of explanatory variables

	All Women	white Women	black Women	All Men	white Men	black Men
Age Respondent	41.022	41.028	40.932	43.269	43.261	43.349
Older husband	0.241	0.237	0.292	0.193	0.189	0.241
Respondent LLFP	0.264	0.266	0.238	0.086	0.078	0.170
Partner LLFP	-	-	-	0.710	0.708	0.726
Respondent 's hourly wage	2.574	2.573	2.590	3.055	3.072	2.883
Partner's hourly wage	2.794	2.798	2.743	1.792	1.787	1.838
Respondent 's education	13.990	13.989	13.997	13.756	13.783	13.463
Partner's education	13.937	13.958	13.647	13.897	13.906	13.803
Respondent disabled	0.023	0.021	0.054	0.033	0.030	0.067
Respondent foreign	0.135	0.135	0.139	0.138	0.139	0.128
Partner foreign	0.137	0.136	0.148	0.138	0.138	0.135
Nb of children >5	0.332	0.331	0.356	0.323	0.322	0.328
Nb of children 5-11	0.457	0.457	0.454	0.458	0.450	0.544
Nb of children 12-17	0.365	0.362	0.397	0.366	0.358	0.457
Hh non-labor income	61.437	62.301	49.594	49.688	50.386	42.272
Urban (vs. Rural) residence	0.807	0.802	0.873	0.804	0.798	0.863
Northeast	0.179	0.182	0.140	0.185	0.188	0.148
Midwest	0.266	0.273	0.174	0.259	0.265	0.188
South	0.347	0.328	0.607	0.348	0.327	0.566
N Interracial couples	181	131	50	197	50	147
N Observations	16,649	15,638	1,011	16,897	15,627	1,270

Time devoted to *Chores* and *Total Housework*

Table: Summary statistics of explanatory variables

	Men		Women	
	Hourly Wage	Employment Equation	Hourly Wage	Employment Equation
Married	0.092*** (0.005)	0.144*** (0.014)	0.049*** (0.006)	-0.394*** (0.010)
Never married	-0.050*** (0.006)	-0.020 (0.020)	-0.027*** (0.005)	-0.016 (0.015)
Ho High-School Degree	-0.203*** (0.005)	-0.129*** (0.015)	-0.224*** (0.007)	-0.418*** (0.009)
Some College	0.105*** (0.004)	0.097*** (0.015)	0.147*** (0.004)	0.213*** (0.010)
College	0.404*** (0.004)	0.221*** (0.015)	0.477*** (0.005)	0.193*** (0.009)
More than College (doctorate)	0.566*** (0.006)	0.243*** (0.021)	0.682*** (0.006)	0.380*** (0.015)
Age	0.045*** (0.002)	0.146*** (0.003)	0.043*** (0.001)	0.116*** (0.003)
Age Squared	-0.044*** (0.002)	-0.189*** (0.003)	-0.043*** (0.002)	-0.158*** (0.004)
black	-0.154*** (0.006)	-0.274*** (0.013)	-0.042*** (0.004)	0.041*** (0.010)
Hispanic	-0.163*** (0.005)	0.154*** (0.014)	-0.076*** (0.004)	-0.057*** (0.010)
North-East	0.072*** (0.005)	0.007 (0.014)	0.081*** (0.004)	0.022** (0.010)
Mid-West	0.011*** (0.004)	0.028** (0.014)	0.016*** (0.005)	0.126*** (0.009)
West	0.083*** (0.005)	-0.071*** (0.014)	0.013*** (0.004)	-0.022** (0.010)
Non-Urban area	0.116*** (0.007)	0.027 (0.027)	0.129*** (0.007)	-0.031* (0.017)
Own kids	-	0.111*** (0.016)	-	-0.109** (0.016)
Number of children j5	-	-0.059*** (0.010)	-	-0.251*** (0.007)
Number of children j18	-	-0.021*** (0.007)	-	-0.100*** (0.005)
Student	-	-1.327*** (0.023)	-	-1.204*** (0.022)
Unemployment rate	-	-0.051*** (0.004)	-	-0.042*** (0.004)
No housing tenure	-	-0.047* (0.024)	-	-0.053*** (0.016)
Farm/Business	-	0.295*** (0.018)	-	0.096*** (0.011)
Constant	1.648*** (0.032)	-1.032*** (0.079)	1.422*** (0.029)	-0.611*** (0.067)
Inverse Mills Ratio	-0.245*** (0.016)	-	-0.095*** (0.012)	-
Observations	98,883	116,313	96,480	138,170