LECTURE: THEORY OF REDISTRIBUTION, WELFARE, LABOR SUPPLY AND FAMILY STRUCTURE

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OUTLINE OF LECTURE:

1. Observations about US patchwork system of public assistance
2. Theory of redistribution (Optimal Transfer Program)
3. Incentives of traditional income support programs (labor supply, family structure)
4. Estimating benefits of redistribution

Theory of Redistribution + Public Assistance Programs

Observations about US system of public assistance:

(1) Lots of benefits provided in kind (not cash)
-simple examination says this is inefficient. Can ↑utility by spending less + providing in cash.

What then explains this?
Paternalism
External benefits to consuming good (vaccines)
Nichols + Zeckhauser (to be discussed)

(2) Categorical eligibility: benefits targeted ("tagged") to certain groups

By family type: female headed households, elderly, etc.

Isn't this inefficient? Distort choices about family structure?

Akerlof: Explores benefits to tagging

U.S. ASSISTANCE FOR THE POOR

Cash programs:

AFDC (now TANF)
EITC
SSI: supplemental income. aged, blind, disabled with low income
General assistance: local cash transfer

In-kind programs:

Food stamps
Medicaid (for AFDC/SSI then expanded)
Housing subsidies (public housing + housing vouchers)

CRITICISMS OF THE US SYSTEM OF SUPPORT

Discourages work
Discourages marriage and formation of two-parent families

"OPTIMAL" WELFARE PROGRAM

As we saw earlier with our analysis of the optimal tax problem, we aim to choose the welfare program to maximize social welfare while taking into account that agents will be maximizing.

Seek to balance equity and efficiency concerns:

- [equity] governments value redistribution (from rich to poor)
- [efficiency] redistribution is costly in terms of efficiency loss due to disincentives of taxes (taking from rich) and transfers (giving to poor)
- [efficiency] categorical programs generate another form of (potential) efficiency loss through distorting choices of the outcomes that categorical programs are defined on (e.g. single mothers and welfare)

Hard to make explicit conclusions because it depends on how much you care about these two parts.

How can we make sense of our system described above thinking about the optimal tax problem and the tradeoffs above?

WHY REDISTRIBUTE?

We already discussed the gains to redistribution in terms of social welfare gains (in our discussion of optimal income taxes). What might be different here with considering the gains to lower income groups?

Altruism: might be additional role for redistribution

Poverty (and redistribution) as a public good? (Orr, *AER* 1976)

- *Non-rival:* my consuming the good does not ↓your opportunity to consume it.
- *non-excludability:* impossible or costly to exclude someone from consuming it.

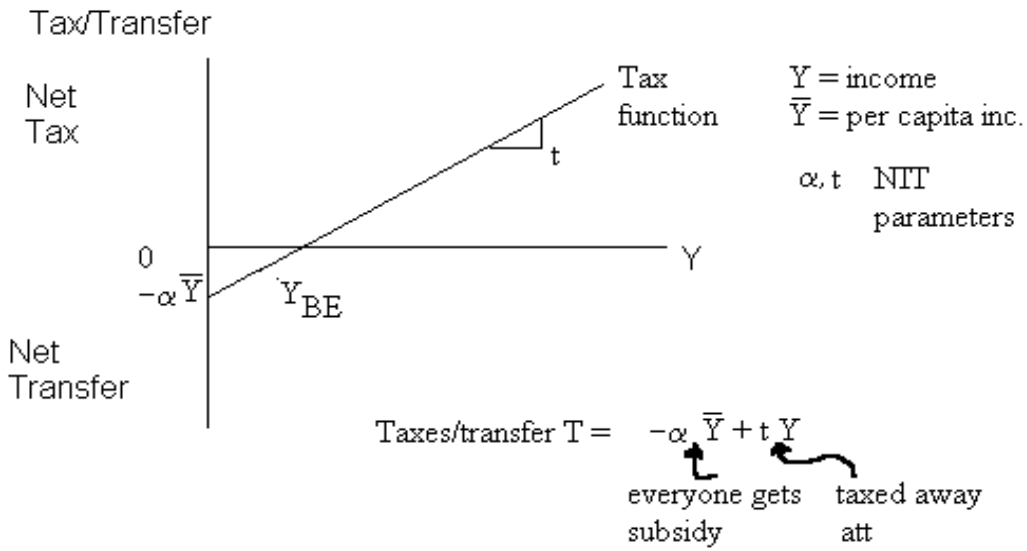
What form should redistribution take? Why are our programs categorical? Why inkind?

POSSIBLE REDISTRIBUTION OPTION #1: Negative Income Tax (NIT)

At the time optimal tax was extended to study public assistance, major debates around eliminating AFDC/tagged programs. Interest into converting our system to a NIT.

Specifically, the NIT would:

- single incorporated transfer + tax system
- universally available to <u>all</u> family types



Benefits:
universal program: no stigma
no distortion to family structure
lower t than in public assistance
"fair"

Costs: no stigma (→more expensive)

REDISTRIBUTION OPTION #2: TAGGING Akerlof AER 1978

<u>Tagging:</u> use some observable characteristic to identify needy groups who will get aid (categorical programs)

Paper compares an optimal income tax with and without tagging.
(There was a debate at the time as to whether we should switch to a universal NIT program.)

Benefits of tagging:
[+] efficiency
- by restricting benefits to smaller group you can afford higher benefits and/or lower t, DWL ↓ (remember DWL goes up with square of tax rate)

[+] SWF
- if tagged groups have higher social welfare weights ⇒ social gains

[–] efficiency
- may encourage *masquerading* as tagged group

<u>Akerlof's main point:</u> If there are observable characteristics that are correlated with ability such as sex, race, age (medicare, social security), disability (DI, SSI), family structure (AFDC/TANF), the government should apply different tax schedules for each category.

Turns out that this hinges on the characteristic being immutable.

Complication when the characteristic that is used for tagging can be manipulated:

- Example is family structure (single motherhood) for US welfare (AFDC/ TANF).
- If more generous schedule available for single mothers, provides an incentive to become a single mother.
- Large literature analyses the effects of welfare programs on family structure
- However, even if there is a response along the tagged characteristic, it is still desirable to use it to tag?
- Key question is how much should tagging be reduced when the characteristic is manipulable?
- Not a good study on this yet...

REDISTRIBUTION OPTION #3: INKIND TRANSFERS

-- U.S. case: focus on inkind rather than cash spending
-- Inefficient if utility of poor is in the rich utility function (or general SWF)
-- Could be optimal if something more specific (child nutrition? insurance status?) is in the rich utility function (or in SWF more generally)

Nichols + Zeckhauser *AER 1982*

- Take standard optimal tax problem and add imperfect identification of ability. *Truly "needy" are not observable*
- This adds an additional distortionary factor: "target inefficiency" non-needy masquerade as needy
- Inkind transfer can break this target inefficiency: by providing assistance for an *indicator good (*at given income + leisure, truly needy demand more of this good)
- *Ordeals*: This argument also applies the optimal amount of "hassles" or ordeals that the recipient must go through to get and maintain eligibility. If the ordeal cost is higher for non-needy than for the needy then increasing the costs helps to create target efficiency.

~ Motivation for Medicaid, Public Housing since sufficiently, unattractive to <u>take</u> these benefits ⇒minimal distortions due to masquerading.

ESTIMATING THE BENEFITS OF REDISTRIBUTION

Gruber "Cash Welfare as a Consumption Smoothing Mechanism for Divorced Mothers" JPUBE 2000

- Evaluates benefits of AFDC by examining the relationship between AFDC benefit generosity and changes in consumption with divorce.
- Seeks to determine the counterfactual: if AFDC was eliminated, would divorce lead to larger reductions in consumption then under current policies?
- Depends on adjustment on other margins: labor supply, private transfers, etc.
- Estimating "crowd out" effect
- Identification: variation across states and over time in generosity of welfare

Data: PSID

- longitudinal data on families, 1968-present
- consumption data: spending on food at home and away; expanded over the years to include housing, utilities, alcohol and cigarettes.
- sample: women 14-64 who are married with children in *t* → unmarried with children in *t+1*

Model (j=state, t=time)

BEN is actual benefits received (endog), assumed 0 in t-1
IV using maximum benefits as instrument (big var by state, year)

reduced form

standard state panel identification strategy
IV captures impact on treated (e.g. on welfare)
reduced form captures average affect, including nonparticipants (so you have to scale it up to get TOT)

Table 2
Basic regression results[a]

	Food + Housing	Food	Housing
AFDC Maximum	0.283	0.189	0.097
	(0.110)	(0.082)	(0.070)
White	54	−73	179
	(474)	(354)	(302)
Black	525	206	383
	(470)	(351)	(300)
Age	8.19	11.9	−5.88
	(13.7)	(10.2)	(8.72)
HS dropout	752	457	304
	(418)	(312)	(267)
HS grad	674	519	120
	(423)	(316)	(270)
Some college	512	304	249
	(417)	(311)	(266)
Change in family	0.471	0.403	0.021
Food needs	(0.118)	(0.088)	(0.075)
Unemployment	−14967	−11253	−4338
Rate	(9025)	(6741)	(5758)
State/year house	40.8	14.91	20.6
Price index	(18.3)	(13.66)	(11.7)
Consumption change at 10th percentile benefits	−1012	−825	−190
Two-Stage Least Squares Estimate			
Benefits Received	0.514	0.343	0.177
	(0.220)	(0.162)	(0.131)

OLS: need to adjust for participation to get TOT (mitigates fall in consumption by $0.28 on the $1.00)

IV: $1 increase in benefits leads to $0.51 increase in housing and food. This is the same as the housing and food expenditure share → little evidence of crowdout.

Table 3
Specification checks[a]

	Food & housing	Food	Housing
Combined maximum			
Combined maximum	0.417	0.270	0.150
	(0.159)	(0.119)	(0.102)
Consumption change at 10th percentile benefits	−1286	−987	−300
2SLS coefficient	0.568	0.368	0.204
	(0.242)	(0.178)	(0.144)
Including lagged characteristics			
AFDC maximum	0.259	0.168	0.094
	(0.110)	(0.082)	(0.071)
Implied consumption change at 0 benefits	−945	−766	−179
2SLS estimate	0.537	0.348	0.194
	(0.252)	(0.185)	(0.151)
Control group regression			
AFDC maximum	0.038	0.018	0.021
	(0.016)	(0.012)	(0.010)
Implied consumption change at 0 benefits	−14.9	−22.3	4.6
Selection probit			
AFDC maximum	0.010		
	(0.021)		
Effect of $1000 AFDC benefit increase	0.00060		

Specification tests:

Control group: estimate same model on those who stay married women (expect 0, get it)

Selection into divorce: estimate sample model for transition into divorce (expect 0, get it)

Possible problems for this research design

- consumption prior to divorce systematically different for those who know they will use AFDC safety net

BEN includes 0s (those who do not take up). Unclear whether results adequately account for selection into who uses AFDC/TANF.

NOTE: Similar project could be done for the EITC. I have not seen such a study.

EFFICIENCY EFFECTS OF "TRADITIONAL" WELFARE PROGRAMS

Literature has focused on impacts on:

- Labor supply
- Family structure

Public assistance typically means:

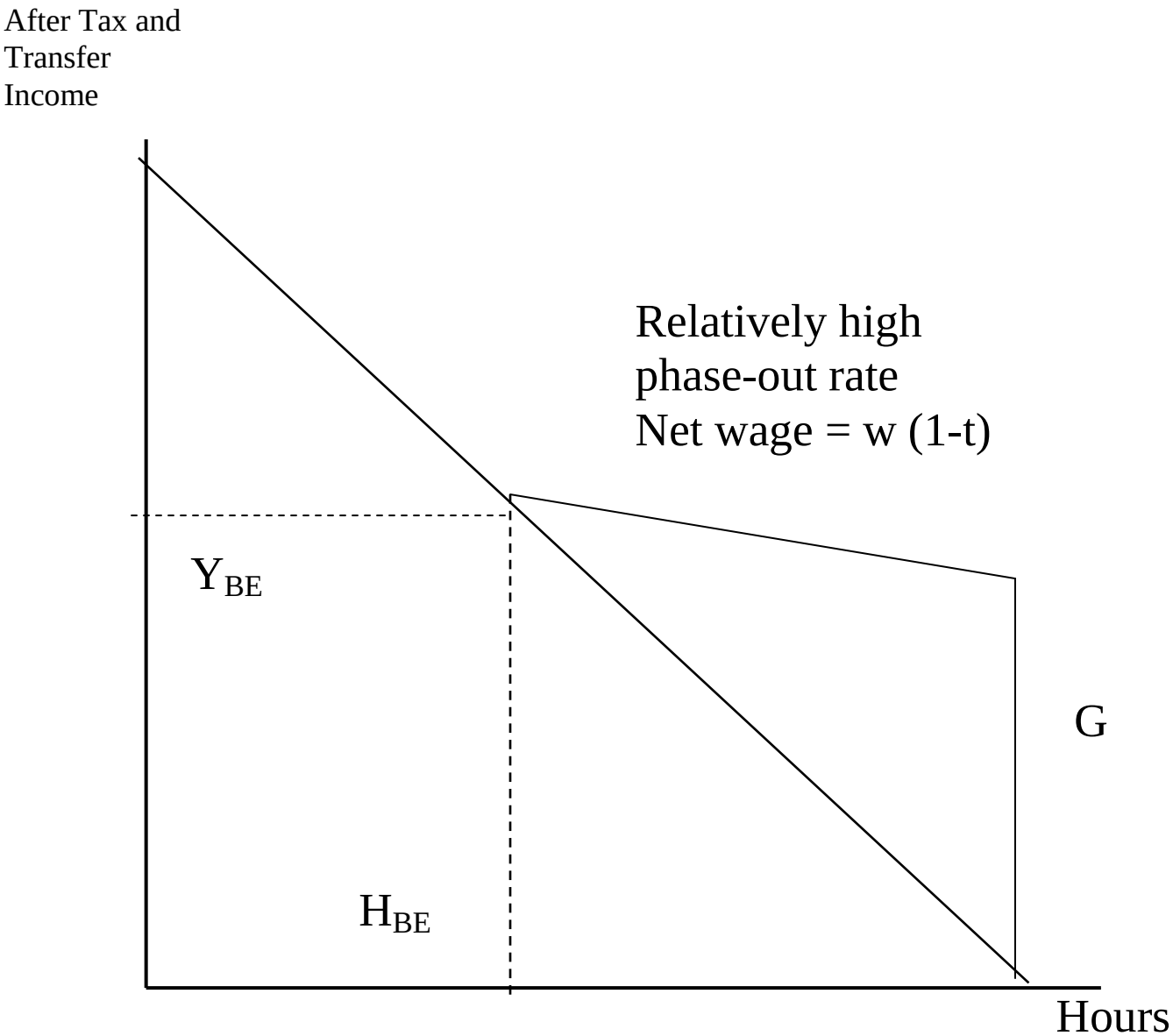
- Eligibility requires having low income, [low assets]
- Benefit structure: guaranteed income with high benefit reduction rate

$$B = G - tE$$

In the US, also true that

- Benefits are tagged (eligible if single parent household)
- Benefits are set by individual states

TRADITIONAL WELFARE AND LABOR SUPPLY



Goal: What is impact of welfare (e.g. G, t) on hours and labor force participation?

	Impact of change in program		
Outcome	↑ G	↓ t	Overall Prog
H_{BE}	+	+	
Y_{BE}	+	+	
Overall pop: LFP	–	+	–
Overall pop: H	–	+ [if substitution effect>income effect]	–
Welfare pop: LFP	? [mech eff +, beh eff –]	+ [mech effect +, beh effect +]	
Welfare pop: H	? [mech eff +, beh eff–]	? [mech effect +, beh eff ?]	

Ashenfelter: mechanical vs behavioral effects

Iron Triangle of welfare:

Goals of welfare:

- increase living standards of the poor (Y↑)
- encourage work
- keep costs down

Can not achieve all three!

- Increasing G: increases cost and reduces work
- Reducing t: increases costs

Lessons from early literature on AFDC and labor supply:

1) Importance of composition effect in considering impact of change in program on hours of welfare recipients.

Ex. In 1982 the tax rate increased from 67% to 100%
Employment rates among welfare recipients decreased from 14% to 7%
Is this behavioral? Research found that this was purely a composition effect!

Lesson: Can not restrict the sample to welfare recipients. Must look at the impact on the overall population of those potentially eligible.

2) Endogeneity of net of tax wage

Same issue as in taxes and labor supply.
Theory says net wages matter.
But net wages are endoegenous

AFDC participants net wage = $w(1-t)$
Nonparticipants net wage= w (ignoring other taxes)

Problem is that net wages are endogeneous:

high ε $\rightarrow$ net wage higher (off welfare)
$\rightarrow$ h higher

Plus, any correlation between ε and "taste for welfare"

Lesson: There is selection into who is on welfare! Participation in welfare is endogenous!

3) Comparing AFDC recipients to nonrecipients

Suppose to examine the total impact of AFDC on labor supply you take a sample of recipients (P=1) and nonrecipients (P=0) and you run the following OLS regression:

$$h = Z\beta + \gamma P + \varepsilon$$

Problem
– welfare recipients are a select sample (tastes for work low, costs of participation low). Difference in unobservables.
– even in the absence of the program, they may work less than nonrecipients.
– P and h are correlated

ε low $\rightarrow$ h low $\rightarrow$ B high $\rightarrow$ Pr(P=1) high

Lesson: Must model determinants of P and h jointly to deal with endogeneity.

Moffitt Welfare Stigma, AER, 1983

First paper to model "welfare stigma" and to model simultaneously the choice of participation in welfare and hours worked.

Shows how welfare participation and hours worked are linked choices.

Estimated using structural modeling; state of the art approach at the time.

Moffitt's model:

$$\underset{H,P}{Max}\, U(H, Y + \gamma PB) - \phi P$$

$$Y = wH + N$$

$$B = G - twH$$

γ = variable stigma (=1 then no variable stigma), expect $0<\gamma<1$

ϕ = flat stigma (=0 then no flat stigma), expect $\phi>0$

Reasons for "stigma":

Lack of information about program

Transactions cost

True "stigma"

Empirical reasons for stigma:

In practice there are a large fraction of folks who are eligible but do not participate in welfare. Without some "cost of participation" this can not be an optimizing choice (show on budget constraint)

Operationalizing model:

-- chooses functional form for utility function (linear hours equation)

-- add observables

-- adds unobservables (two error terms, one in hours equation, one for participation)

Idea behind how model is solved:

1) Identify states of the world

Participate in welfare or not, work or not (how much)

2) Solve for maximum in off welfare state, solve for maximum in on welfare state. (closed form solutions)

3) Optimal choice for welfare is difference in utility between maximum utility on and off welfare

4) Create maximum likelihood function with joint probability of hours and participation

Determinants of participation

-- Likelihood of participating in welfare (P*) increases with reductions in ε (pref for work), reductions in υ ("stigma")

-- eligible nonparticipation ε low , υ high

-- noneligible nonparticipation ε high, υ high

Shows selection into welfare!

Data: 1976 PSID (single cross section; identification?), female heads, N=565

Table 1: Simple means, illustrate observed differences between participants and nonparticipants

TABLE 1—MEANS OF THE VARIABLES USED IN THE ANALYSIS[a]

	Total	Participants	Nonparticipants		
			Total	Eligible	Ineligible
Employment Rate[b]	.59	.25	.78	.65	1.00
Percent of Population	100	35	65	41	24
Weekly Hours Worked (H)	22.2	8.2	29.9	25.1	38.1
W[c]	3.27	2.75	3.55	2.69	5.05
N[d]	6.61	5.00	7.48	3.94	13.62
Program Parameters:					
t	.27	.27	.27	.25	.30
G	52.9	60.2	48.9	52.1	43.2
$\bar{G}$	47.6	56.4	42.9	49.0	32.2
σ	7.6	8.4	7.1	7.3	6.9
Years of Schooling	11.5	11.0	11.8	11.2	12.7
Age	35.6	31.0	38.0	37.5	39.0
Family Size	3.3	3.8	3.1	3.2	2.8
Number of Children	2.1	2.5	1.8	2.1	1.4
Age of Youngest Child	7.7	4.7	9.4	8.5	10.9
Race (1 = nonwhite)	0.39	0.57	0.30	0.35	0.20
Local Unemployment Rate	9.0	9.7	8.5	8.7	8.3

Table 2: Model Estimates

TABLE 2—RESULTS OF THE ESTIMATION

	Set 1		Set 2	
	Hours Equation	ϕ	Hours Equation	ϕ
Constant	−5.01	0.65[b]	−1.83	0.86[a]
	(12.59)	(0.09)	(12.94)	(0.54)
Age	0.12		0.07	0.03[b]
	(0.14)		(0.15)	(0.01)
Family Size	3.30[a]		2.61	−0.24[b]
	(2.22)		(2.20)	(0.10)
Number of Children	−4.90[b]		−4.02[a]	0.10
	(2.68)		(2.70)	(0.12)
Education	3.30[b]		2.92[b]	0.03
	(0.76)		(0.78)	(0.03)
Race (1 = nonwhite)	−5.01[a]		−4.97[a]	−0.22
	(3.59)		(3.58)	(0.16)
Unemployment Rate	−2.70[b]		−2.50[b]	−0.09[b]
	(0.73)		(0.74)	(0.03)
σ	–		–	0.02
				(0.01)
β	3.10[b]		3.56[b]	–
	(1.02)		(1.17)	
δ	−0.20[b]		−0.17[b]	–
	(0.06)		(0.05)	
γ	1.42[b]		1.73[b]	
	(0.44)		(0.57)	
Standard Deviation of e	28.50[b]		28.20[b]	
	(2.53)		(2.51)	
Log of Likelihood Function	−2314.9		−2290.4	

<u>Higher hours:</u> fewer kids, more education, white

<u>Higher participation (lower stigma):</u> younger, larger family size, higher unemp, lower educ

Table 3: Simulations

TABLE 3—SIMULATED EFFECTS OF CHANGES IN VARIOUS INDEPENDENT VARIABLES[a]

	Present System	$\Delta t = -.10$	Minimum Guarantee[b]	$\Delta W =$ \$1.00	Fall in Unemployment Rate of 2 Percent	Increase in Education of 3 Years	Increase in Age of 10 Years
Probability of Being on Welfare	.356	.362	.470	.343	.295	.312	.277
By Eligibility:							
Probability of being eligible	.771	.854	.915	.681	.738	.713	.766
Probability of being on welfare if initially eligible	.383	.376	.489	.385	.321	.342	.299
Probability of being on welfare if initially ineligible	.101	.054	.042	.146	.086	.105	.070
Expected Hours of Work in Absence of Program	25.5	25.5	25.5	28.0	29.3	32.3	26.0
Expected Hours of Work in Presence of Program							
If on welfare	9.4	11.0	4.9	9.8	11.3	13.4	9.2
If off welfare	28.6	28.4	30.9	31.3	32.1	35.4	28.5
Weighted average[c]	21.8	22.1	19.6	24.2	26.1	28.7	23.4

Summary of work disincentive effects:

	With AFDC (actual data)	W/O AFDC (predicted by model)	
Hours if on welfare	9.4	19.9	Work disc is 10.5 hrs/wk (50% reduction in hours)
Hours if off welfare	28.6	28.6	
Difference between welfare recip and nonrecip	– 19.2 hrs/wk (naïve calc)	– 8.7 hrs/wk (Model calc)	45% of observed difference is “due to welfare”
Hours: total population	25.5	21.8	Difference= 3.7 hours/wk

Leaky bucket: Transfer $1 to poor and income only increases by $.63. Rest lost in reduced earnings.

95% of women still eligible for welfare in absence of program.

CASH WELFARE AND FAMILY FORMATION

What is the source of the distortion?

- Tagging benefits to single parent families
- Becker model on "theory of the family"
- Getting benefits in one state of the world (single parent with children) and not in the others (married and/or without children) implies that welfare theoretically leads to
    - declines in marriage, increases in divorce, increases in female headship, increases in nonmarital births

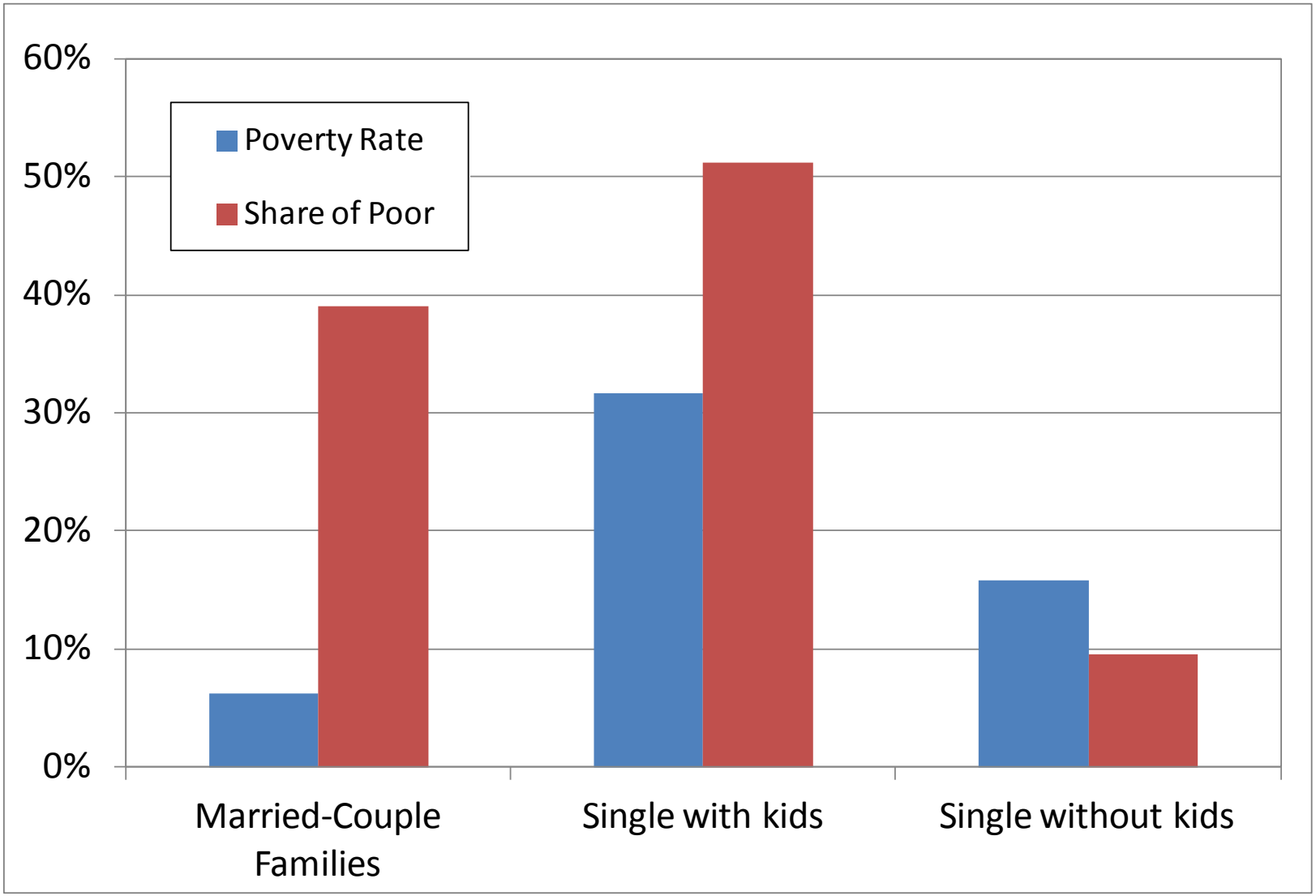
Welfare has received a lot of attention for whether it has contributed to the steady changes in family structure in the US

Decreases in marriage

Increases in fraction of children in single parent family

This is a straightforward prediction of the theory.

Why do we care?
– Poverty rates are high among children and female-headed households



– Child outcomes are worse in single parent families:
Educational outcomes, health, criminal activity, labor market outcomes
– Causal? Very hard to identify causal impacts of family structure on outcomes. (Page & Stevens JHR)

Huge literature on this issue:
-- general finding is that the empirical literature is consistent with the theory (e.g. female headship is higher when welfare benefits are higher) but the elasticicities of response are very small.
-- Welfare can not explain the trends in family structure
-- Typical study uses vast cross state variation in generosity of AFDC programs in <u>generalized DD model</u> with state and year fixed effects:

$$FH^*_{its} = X_{it}\beta + \gamma G_{st} + \delta State_s + \alpha Time_t + \varepsilon_{is}$$

(more on this below)

Becker's Model of Marriage

A woman chooses marriage if the economic benefits associated with marriage exceed the benefits outside marriage. Dissolution when gains disappear.

$U(\cdot)$=maximal utility in married or unmarried states:

$U(M, Z(M), T(M); X)$

where M = marital status (1 if married)
T = tax/transfer function
Z = measure of output
X = individual/location characteristics

Z can be a function of:
- own earnings opportunities
- spouse's earnings opportunities
- marriage market (availability and "quality" of mates)

This framework includes the explanations for trends in marriage rates raised in the literature.

-- Welfare
-- declining labor market opportunities for (unskilled) men
-- increases in labor market opportunities for women
-- relative supply of men low in some demographic groups
-- changes in norms, values

A utility maximizing choice for marriage implies that:

$$M^* = U(1, Z(1), T(1); X) - U(0, Z(0), T(0); X)$$

$$M = \begin{cases} 1 & \text{if } M^* > 0; \\ 0 & \text{otherwise} \end{cases}$$

<u>Comparative Statics:</u>

Marriage increases with:

- ⇑ spouse earnings
- ⇑ availability of mates [marriage market]

Marriage decreases with:

- ⇑ in value of transfers available for non-married (welfare)
- ⇑ in tax cost of marriage

<u>Effect of own earnings is ambiguous (independence effect is negative and stabilizing effect is positive)</u>

Therefore theory says that welfare leads to declines in marriage, increases in divorce, increases in female headship, and increases in nonmarital births.

Difficulties in implementing theory

Lack of knowledge about potential gains to marriage if not married [do not know spouse's earnings]

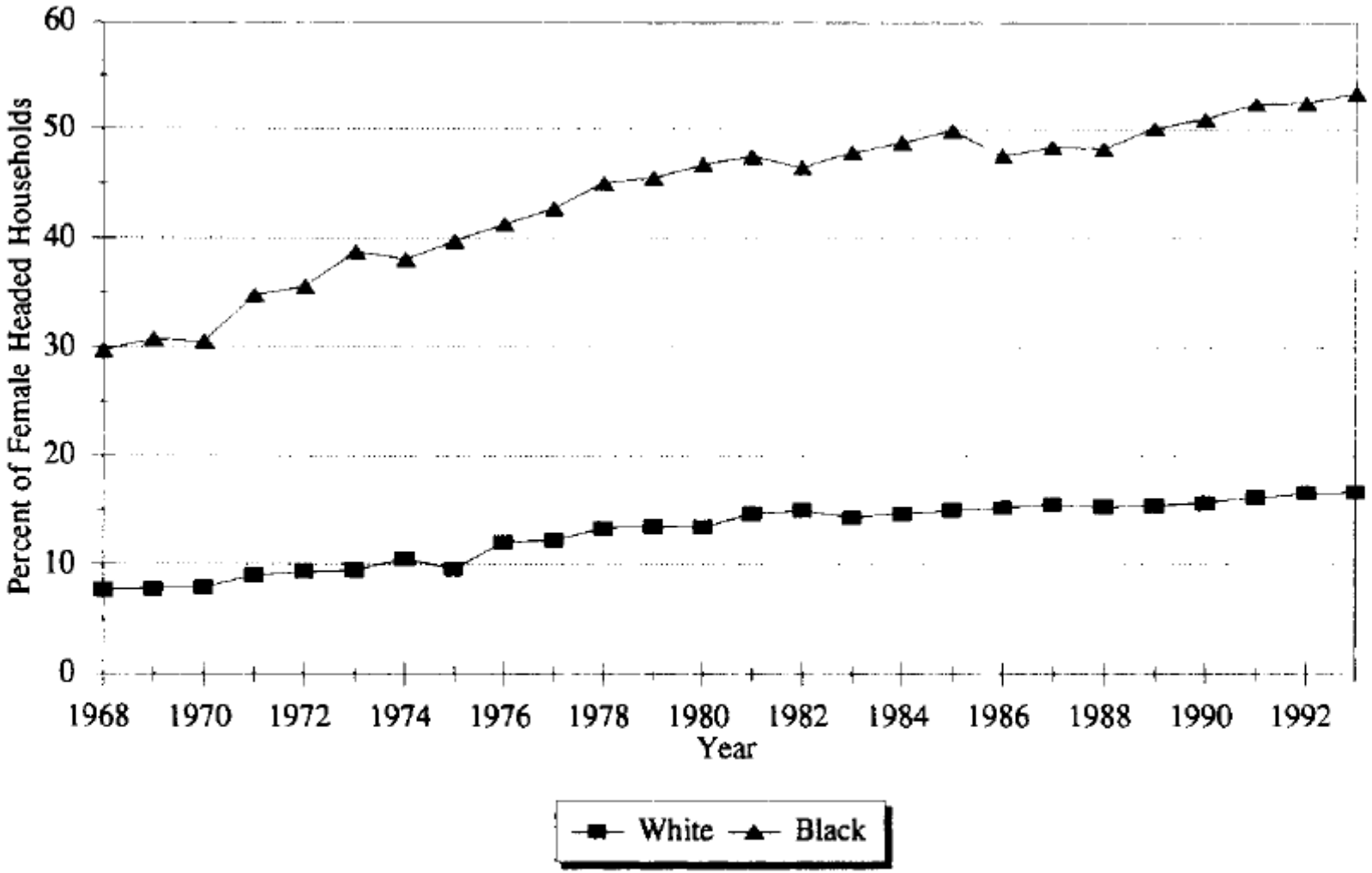
Identification of Welfare in Empirical Literature

Nice example of understanding where identification comes from.

1. Time series variation

You can compare trends in welfare benefits and trends in outcomes such as female headship or nonmarital birth rates. A simple examination of those trends shows that welfare has become less generous while the trends are going up. Does not support the theory. Omitted variables?

[Next pages: illustrating time series patterns. From Hoynes 1997]



Source: U.S. Bureau of the Census, Current Population Reports, Series P-20, Household and Family Charactersitics, various issues.

g. 2. Female headed households as a percent of all families with children, 1968–1993 (by race).

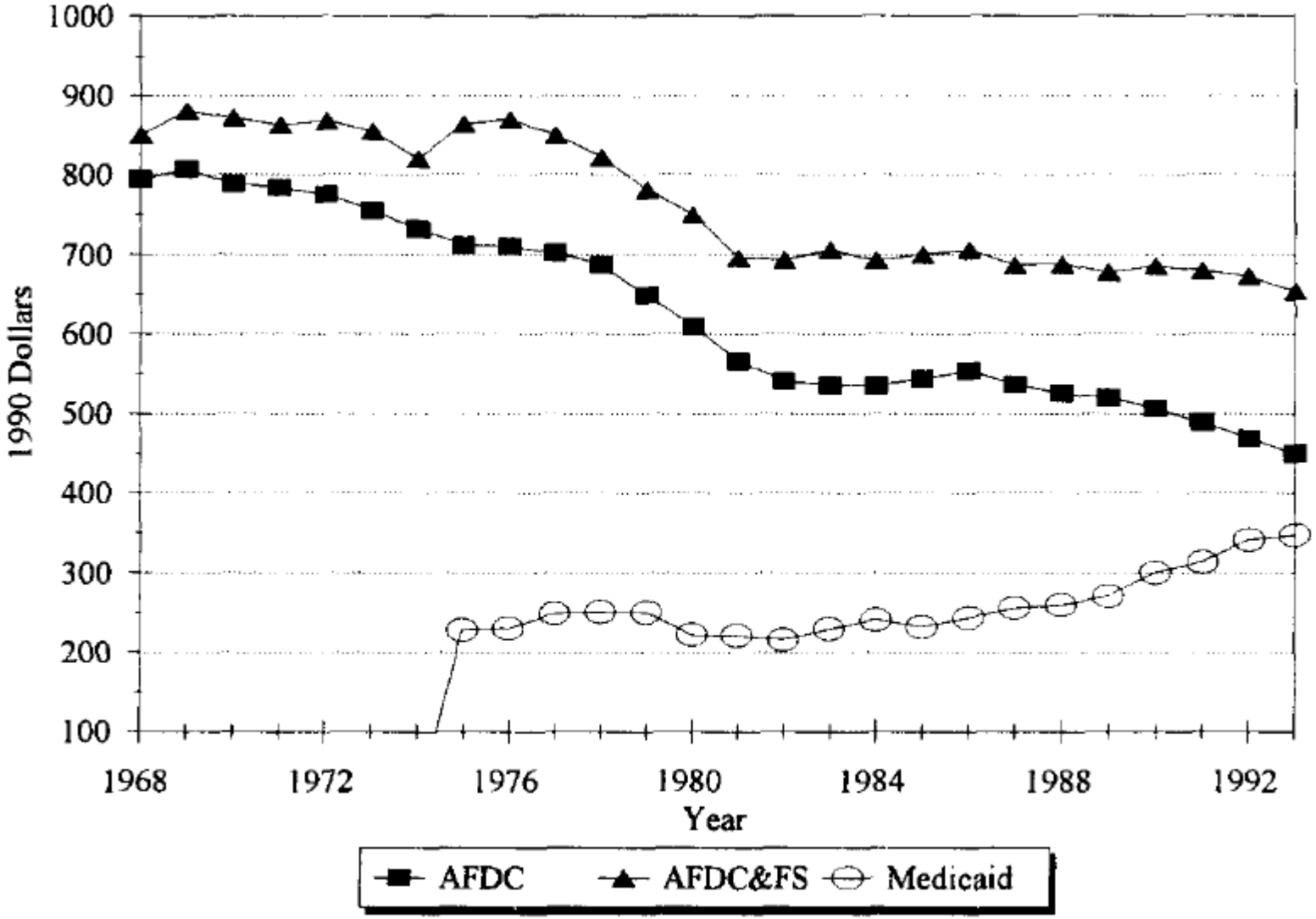


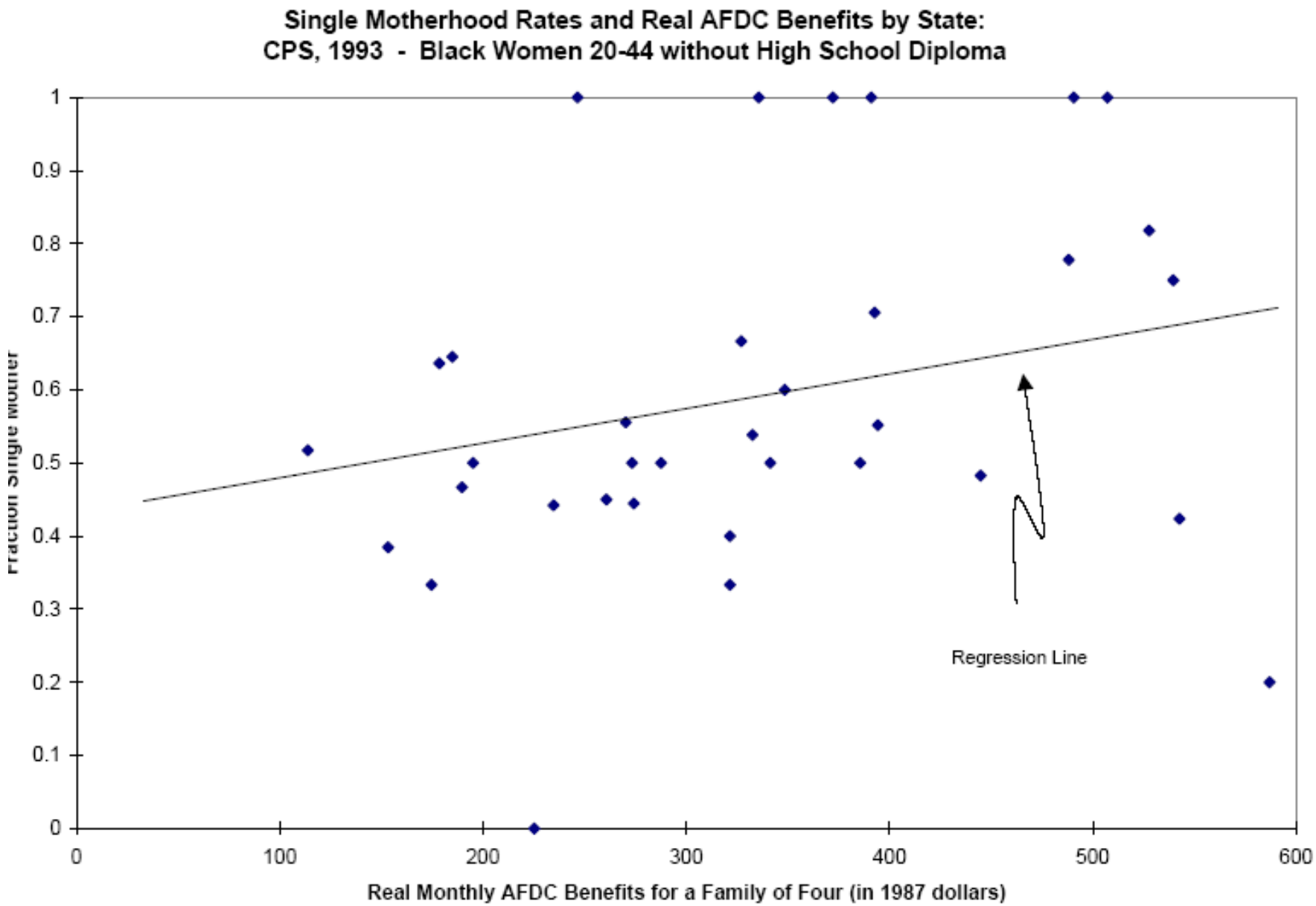
Fig. 1. Maximum welfare benefits for a family of four, 1968–1993 (1990 dollars).

2. Cross-state variation

Instead use data for one year and compare outcomes across states (people) at a point in time:

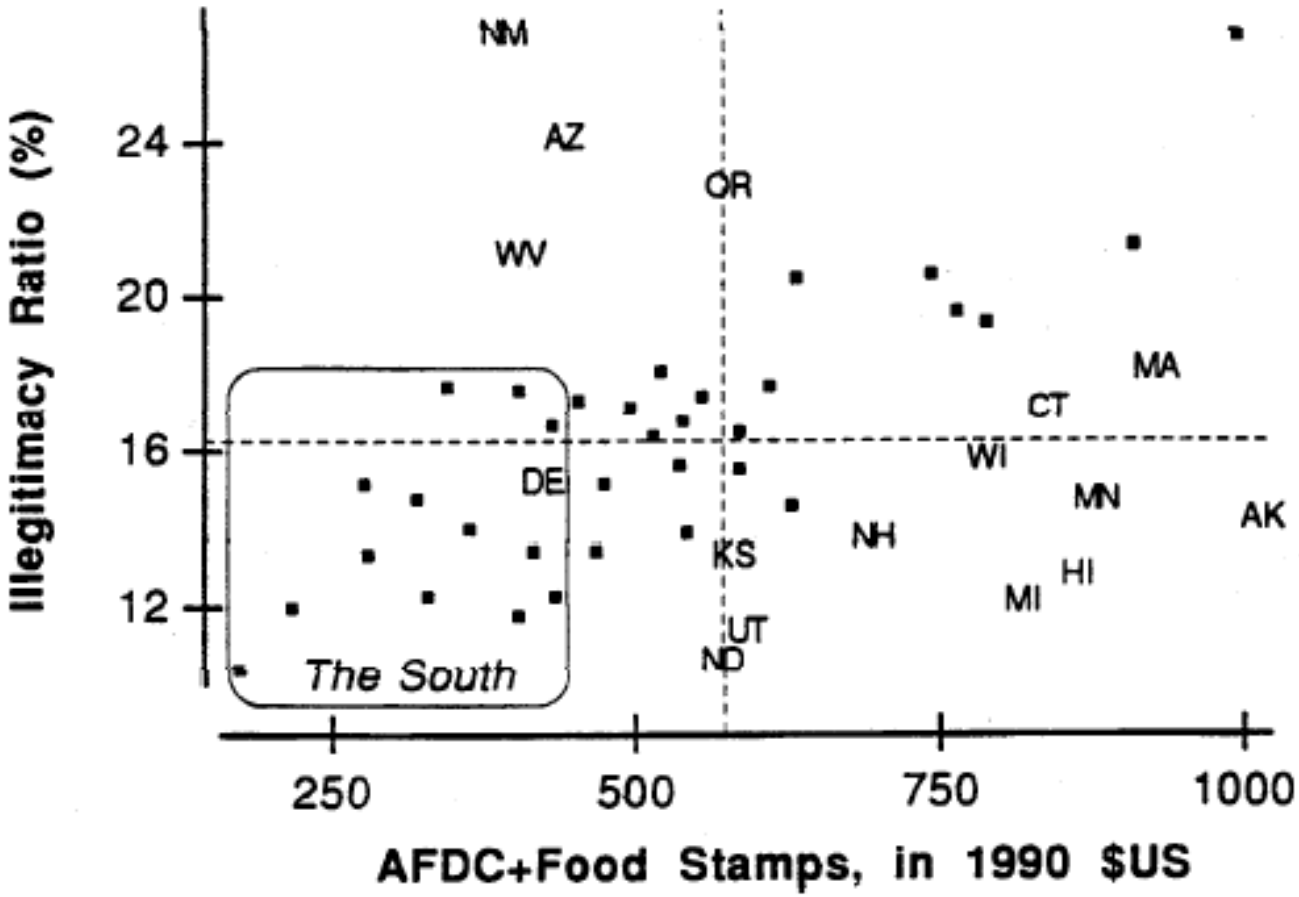
$$y_{is} = X_i\beta + \gamma G_s + \varepsilon_{is}$$

<u>Problem:</u> Difficult to control completely for other state factors which affect demographic outcomes (norms) which may also be correlated with benefits levels. The parameter on the welfare benefit variable may reflect unobserved differences across the states in tastes for family structure.



Illustrating cross sectional variation (Moffitt review piece)

Charles Murray piece



White Women, 1988

<u>Omitted Variable Bias</u>

Simple omitted variable bias story says that if:

$E(G_s,Z_o)<0$ then estimated γ is biased downward

$E(G_s,Z_o)>0$ then estimated γ is biased upward

(Where Zo are the omitted variables in the cross-state regression.)

<u>Story 1:</u> Biased up ($E(G,Z)>0$)

Strong belief in 2-parent family –> little support for welfare (G low) and few female heads (Z_o low)

Progressive state –> higher support for AFDC (G high) and more female heads (Z_o high)

<u>Story 2</u> Biased down ($E(G,Z)<0$)

Strong tradition for welfare (G high) and socially conservative (Z_o low)

Why not put in state fixed effects (dummies)?

- Perfectly collinear with G
- Can not have both in cross-section
- Need pooled cross-section or panel data.

3. Cross-state variation in changes // "State fixed effects models"

If the differences across states are fairly stable over time, then comparing changes in benefits to changes in outcomes will yield better estimates.

Key: Need pooled cross-sections or panel data.

$y_{its} = X_{it}\beta + \gamma G_{st} + \delta State_s + \alpha Time_t + \varepsilon_{ist}$

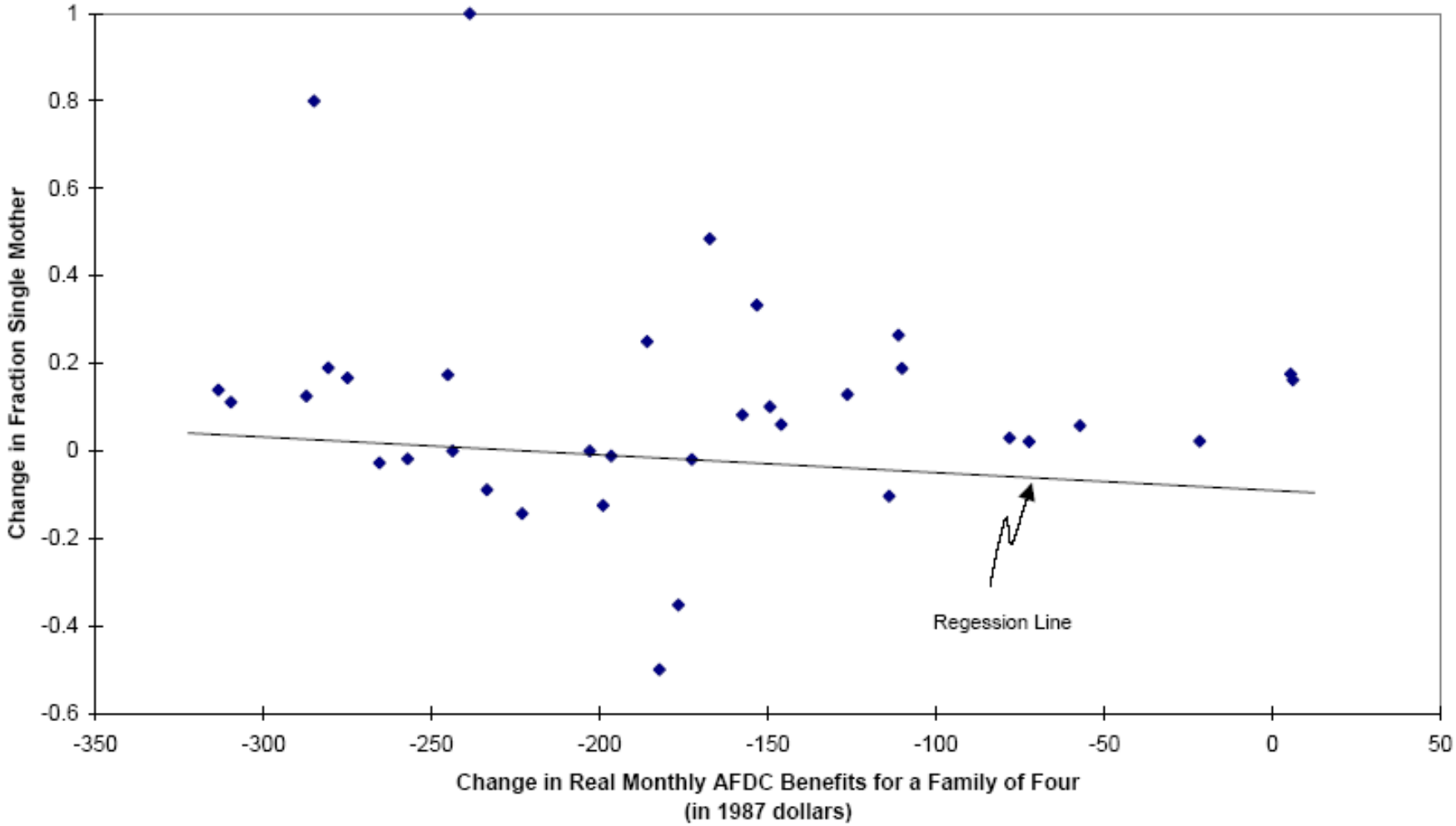
Studies using this approach show that it is very important (Hoynes 1997)

– power of approach is strong if G has very different trends across states.

This is called a "state fixed effects" model.
Identification comes from variation across states in their changes in benefits.
This is "like" a generalized DD model.

FIGURE 7

Change in Single Motherhood Rates and Real AFDC Benefits
by State from 1977 to 1993: CPS
Black Women 20-44 without High School Diploma



Illustrating Variation across states over time (changes on changes).

Table 2
Parameter estimates for female headship model (white women)

	(1)	(2)
AFDC and FO guarantee (100)	0.009	−0.001
	(0.002)	(0.003)
AFDC-UP	−0.008	−0.008
	(0.004)	(0.007)
Year dummies	Yes	Yes
State dummies	No	Yes
Indi. fixed effects	No	No
Elasticity of Pr(FEMHD) wrt		
Welfare benefit	**0.56**	**−0.06**
Mean of FEMHD	0.094	0.094
No. of observations	40 239	40 239

Illustrating results for pooled cross section, time series, from Hoynes 1997. Coefficient on welfare variable goes from positive and significant to insignificant with adding state fixed effects.

Taxes and Family Structure

A few quick thoughts about the related literature on taxes and family structure.

General principles of "desirable" tax system (Rosen 1977):
1. Income tax should be progressive
2. Families with equal incomes should pay the same tax (horizontal equity)
3. An individual's tax burden should not change when he or she marries. (marriage neutrality)

Any tax system will violate at least one.

U.S. is unusual in taxing family income rather than individual income.

Measurement:
"Tax cost of marriage" – changes in taxes owed between two people in married and single states

Some literature. Few excellent papers.

Issues:
-- some use time series (usual problem)
-- some use panel data (transitions out of marriage into divorce) or cross section. Problems include tax cost of marriage depends on earnings (labor supply) which is endogenous AND do not observe potential spouse if not married.

May be some issue to use pure tax reform variation; not done yet.

Worth mentioning: Dickert-Conlin & Chandra, JPE 1999
-- taxes and timing of births
-- behavioral response is on timing not incidence
-- give birth in December or January?

The idea is that given that you are going to have a child, there is a gain to having it in December vs January.

	December t	January t+1
Tax gain, yr t	$-\tau$	0
Tax gain, yr t+1	$-\tau$	$-\tau$
Other costs	C	C
Net gain	$-\tau$	

Features of the tax code leading to gains:

personal exemption tax gain = E * marginal tax rate
EITC: having a first or second child can create gains
Filer status: first child can move you from single to HH filing status

Data: NLSY, sample limited to births in last week of December or first week of January

Variation is in the tax benefit associated with a December birth
-- function of year (e.g. tax code) as well as family characteristics (earnings, number of children, filing status, etc)

Results show that the larger the tax benefit of December, the more likely the birth is in December.

Issues:
Is the week of delivery a choice variable?
Who is choosing it, the doctor or patient?
Are these all planned cesareans to accommodate the doctor's schedule?
Why would this be correlated with the tax cost?

What a Difference a Day Makes: A New Look at Child Tax Benefits and the Timing of Births
Teny Maghakian and Lisa Schulkind

-- re-examination with vital statistics data
-- No earnings data; use observable characteristics (age, education, marital status, race, ethnicity) to impute earnings
-- TAXSIM
-- find same pattern as Dickert-Conlin and Chandra (more births in December when incentives are larger), but smaller
-- works through more c-sections