

Women's Changing Involvement with Crime: A Labor Force Participation Perspective

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Knowledge about behavior in the legal labor market permits conjectures about illegal market activity and suggests hypotheses for investigation into women's involvement in crime. Rational choice theory presumes that any individual will reallocate time towards the path that provides an increasing expected return. Within the framework of this analysis, if the expected illegal wage is greater than the expected legal wage and greater than the reservation wage, then we would expect participation in illegal activities. One can observe that the crime rate is much higher for men than for women, comparable to behavior in the legal market, however, for crimes against property, the rate of increase has been much higher for women.¹

We believe this can be explained by the changing economic opportunities women find in the work place that have differed from those for men. In particular, changing employment opportunities for women have not kept pace with their increasing participation in the labor force. The result, over more than two decades has been higher unemployment rates and depressed wages relative to those for men.

Hypotheses About Illegal Market Activity

The rise in unemployment rates has had an impact in raising the return to crime relative to that of legitimate earning opportunities. Thus it has played two roles in the increase in criminal involvement of women: it has led to an increase in the numbers of women lacking sufficient economic opportunity to provide for their own support and it has affected the relative returns of legal versus illegal earning activities. Compounding the increasing difficulty women have faced in finding employment has been the rise in the supply of labor by youth following naturally the baby boom of the 1950s so that women and youth are competing for many of the same jobs. There is substantial evidence that a lack of economic opportunities for youth has been a contributing factor to their increase in crime (Phillips et al 1972; 1987). Thus, it should not be surprising that we observe an accelerated participation in crimes by women.

A critical question is the behavior of the relative expected illegal wage, the ratio of the expected illegal wage to the expected legal wage. As developed below, the relative expected illegal wage has been rising dramatically since 1960. We would expect this to increase the illegal labor supply of women much more than men, since women have upward sloping supply curves. In fact, the offense rates for women have increased three times as fast as those for men. Much of this increase in the relative expected illegal wage is attributable to the decline in the likelihood of apprehension. Analogous to the effect of a decline in the unemployment rate, greater sensitivity on the part of women than men to the decline in the probability of

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apprehension is expected, which would tend to increase their labor supply. The effect of the probability of apprehension upon the offense rate, operating through the effect of the expected wage on labor supply, offers another rationale for deterrence. The conventional view of deterrence is based on the effect of failure and punishment, presumed to have disutility and to occur with likelihood equal to the probability of apprehension and/or punishment. A more eclectic model would separate the effect of the expected illegal wage from the effect of expected punishment, and determine the relative importance of each in explaining offense rates.

Still another factor making illegal activity more attractive to women is the effective marginal tax rate on income for married women and for women receiving aid for dependent children.² These women, as heads of households with dependent children, have high committed leisure and high committed expenditure. Aid for Dependent Children may provide non-labor income. To the extent the breadwinner effect dominates, they will have low reservation wages. The incentives to obtain illegal income are substantial.

DIFFERENCES AMONG WOMEN BY MARITAL STATUS

The influence of marital status on labor force participation, parameterized in terms of concepts such as committed leisure and committed expenditure, as well as non-labor income, is developed in the Appendix using the Stone-Geary preference function. The fact that the analysis predicts legitimate labor force participation so well for women, based on the characteristics associated with marital status, suggests that it may have the power to predict criminal behavior as well. As noted in Table 1 panel A, there are some obvious predictions about participation in crime that should provide clues about likely involvement over time in terms of marital status. To summarize the table's conclusions, one would expect that participation in illegal activities will parallel participation in legal activities with added impetus provided by higher unemployment rates. This is certainly consistent with the pattern of crime for women. Typical patterns are displayed in Figure 1 for the felony crimes of homicide, robbery, burglary, fraud and embezzlement.

If relative indices of the value of the illicit activities of burglary, robbery and larceny for 1960 and 1979 are compared, it will be found that the relative value of illicit earnings has gone up substantially for all three of these crimes. A measure of relative value can be defined on the basis of the present theoretical analysis. Ignoring the effects of perceived costs of failure and effects of unemployment insurance, the relative returns to crime (r) can be calculated as:

$$(1) \quad r = \frac{(1 - P_A)W_I}{(1 - \mu)W_L}$$

where P_A is the probability of apprehension and W_I the wage for illicit activities. The numerator of the ratio represents the expected value of time devoted to crime while μ is the probability of unemployment and W_L the wage for legitimate activities, so that the denominator represents the expected value of an honest job.

The relative return to crime (r) based on this index can be calculated separately for men and women. To illustrate, we use the take from an average offense as a measure of W_I and the average clearance ratio, based on the data in the Uniform Crime Reports for the appropriate years. The present example used unemployment rates for 18-19 years old non-whites for both sexes. They constitute a particularly disadvantaged segment of society which also has a higher than average involvement with crime: Many are faced with what may become a career decision to find legitimate employment or become committed to a long term involvement with crime.

TABLE 1
Effect of Economic Change on Female Participation in Legitimate Activities and Crime

Status	Effect on Labor Force Participation or Crime Participation				Comments
	Rise in Unemployment of Women	Rise in Unemployment Primary Worker	Birth Rate Decline	Increase in AFDC	
Married (husband present)	(-) L*				¹ Expected Market wage declines. If it falls below the reservation wage worker will drop out of labor force (discouraged worker effect). Worker may resort to crime as expected market wage falls.
	(+) I*				
				(+)	² Expected non-labor income falls, may enter labor force, offer to work longer hours, or turn to crime.
				NOTE 2	
				(±)	³ This will result in lower committed leisure and committed expenditure. Workers will be more willing to work but may feel less need for income.
				(0) NOTE 3	
Divorced or Separated	(-) L	(+)	(0)	(-)	⁴ A rise in AFDC subsidy payments is a rise in non-labor income to married women without husband present or to divorced and separated women with children leading to a rise in the reservation wage.
	(+) I				
					⁵ Single women who rely on others for support will be affected by a rise in unemployment for those who provide support yielding a fall in non-labor income and a fall in the reservation wage.
				(0) NOTE 4 NOTE 5	

*The only economic change (above) that will affect participation in crime (I) differently from participation in legitimate (L) activities will be a rise in the worker's own expectation of employment.

Male and female average wages were estimated by using an index based on average wages by occupation, industry and the relative employment by males and females in the industry.³ While such an index will tend to overstate wages to females and to younger members of the work force, the only assumption made here is that the change from 1960 to 1979 is indicative of changes in the relative earning power of men and women. Table 2A summarizes empirically established changes in the relative gain from crime for both sexes based on average values of probability of arrest.

The average take from crime is calculated to be 30% of market value of losses, to allow for the cost of fencing stolen property. There would, of course, be wide variation in the appropriate values of r for individuals, depending on age, race, educational attainment and other factors affecting relative economic opportunities. The relevant indicators for individuals are more

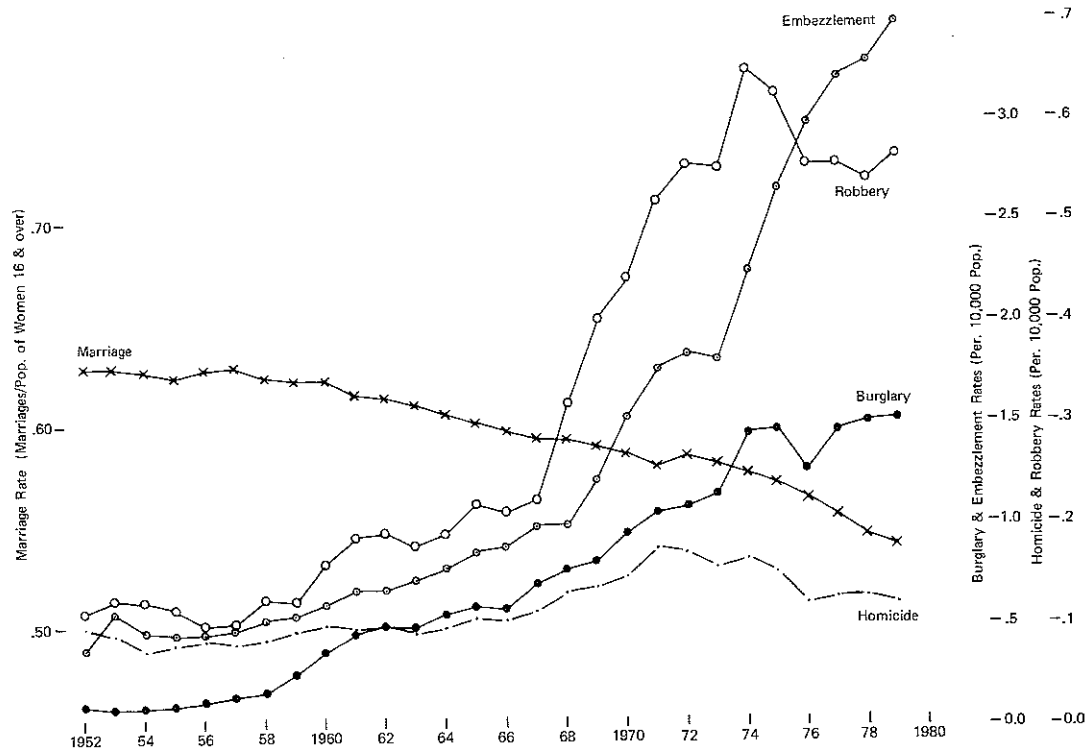


Figure 1. Crime Rates for Women and Marriage Rate—1952–1979

complex because individuals cannot ignore the expected costs of apprehension and punishment when they consider committing a crime, nor will they ignore the expected benefits from unemployment insurance and other welfare support when they seek to avoid turning to crime. The numbers themselves must be regarded only as indicative of change in the major components of expected relative return to men and women from crime, but the changes are striking. Specifically, referring to Table 2—panel B, it is to be noted that the rise in r for women relative to men over the period is 1.12 times. Combined with the relative gain for women in the index of returns to crime, it is also relevant that the percentage of women in this population subset who are seeking work unsuccessfully has risen by 36%, whereas the percentage of men of the same subset has risen only 18% from 1960 to 1979, as is evident from Table 2—panel D. This argument leaves out of account the discouraged worker effect that is likely to have a greater impact on women than men, given the relative increase in unemployment rates. Thus, it should be no surprise that, for crimes that provide a potential for economic gain, offenses by women have risen approximately three times as fast as those by men.

It is interesting to note which elements in r contributed most markedly to the change in r for women in the two decades beginning with 1960. These are presented in Table 2C which shows that 30.0% of the rise in r for burglary results from a decline in the probability of apprehension, 56.5% was attributed to a rise in the real value of the take per offense, 20.0% to a rise in the unemployment rate; it is also relevant that the rise in the real wage caused an offsetting effect of -6.5% .

A point that needs clarification is the role of declining apprehension probabilities. Our

TABLE 2

A. CHANGES IN THE INDEX OF RELATIVE RETURN TO A CRIME, r , BY MEN AND WOMEN, 1960 TO 1979						
Offense	Men		Change Factor	Women		Change Factor
	1960	1979		1960	1979	
Burglary	2.41	4.06	1.68	2.60	4.90	1.88
Larceny	1.09	1.52	1.39	1.17	1.84	1.57
Robbery	2.77	2.97	1.07	2.99	3.58	1.20

B. RATIO OF RELATIVE RETURN TO CRIME (WOMEN/MEN)			
	1960	1979	Change Factor (1979/1960)
r_{women}/r_{men}	1.08	1.21	1.12

C. CONTRIBUTION OF COMPONENTS OF THE CHANGE IN THE RELATIVE RETURN TO BURGLARY FOR WOMEN, 1960–1979		
Change in (Element)	Contribution	% of Total
Probability of Apprehension (CR)	.69	30.0
Value of Take (W_j)	1.30	56.5
Unemployment Rate (u)	.46	20.0
Real Wage (W_L)	-.15	-6.5
Totals	2.30	100.0

D. UNEMPLOYMENT RATES FOR 18–19 YEAR OLD NON-WHITES 1960, 1979			
	1960	1979	Changes
Males	.251	.296	.045
Females	.245	.334	.089

calculations in this respect are not gender specific, since it is not possible to know the proportions of reported offenses committed by women and men, and the probability of apprehension is based on actual arrests over reported offenses. Thus, while a major contribution to the rise in crime has been the decline in police effectiveness, no part of the rise in crime rates by women *relative* to men are attributable to that factor, nor can effects based on the take of crime be distinguished. What this implies is that the male-female differences are all attributed to labor market phenomena. In particular, changing employment opportunities have not kept pace with women's increased participation in the labor force, leading to both higher unemployment rates and depressed wages (relative to men) over the recent two decades.

As noted earlier, the rise in unemployment has had an additional impact in raising the return to crime relative to legitimate work. It has led to an increase in the number of women with insufficient opportunities for finding legal employment and it has affected the relative returns of lawful versus unlawful enterprise. This, compounded by the increasing competition with youth for entry level jobs, has led to both women and youth becoming increasingly involved with crime.

It is instructive to refer back to the data on marital status and participation in the labor force to draw a further implication of applying the model to the data and inferring criminality. The model suggests that, in general, married women should be less involved in crime than divorced or single women because of higher committed leisure and nonwage income. We have also suggested that participation in crime should parallel participation in legitimate activities tempered by the relative profitability of criminal and legitimate employment. It is interesting to look at the data from a different perspective to see how labor force status by marriage state has been changing over time. By examining participation by marital status in terms of the total female population, we can get an instant picture of where the major change has taken place from 1960 to the present. There has been relatively little variation in labor force participation (as a fraction of all females) for those who are single or divorced. The major share of the change in women seeking work is among married women. Thus, while our model would predict that, on the average, single women should be more engaged in criminal activity than married women, the rise in crimes by women has been largely motivated by the increased search of married women for employment and earnings.

Empirical Evidence

There is empirical support for the hypothesis that the choice between crime and legitimate income for women can be explained by our model of behavior. We would expect that hours spent in crime relative to legitimate activities is proportional to the relative returns, defined previously as relation 1. We would expect

$$(2) \quad \frac{kOF}{m\rho} = \frac{(1 - p_A)W_I}{(1 - \mu)W_L} \equiv r,$$

where k is a constant that represents the average time per offense, m is the average hours per worker and ρ is the labor force participation rate for women. Information on the average take per offense (W_I) is not available prior to 1960. Equation (2) can be approximated by a function of the form

$$(3) \quad \frac{OF}{\rho} = K(1 - CR)^\alpha(1 - UNR)^\beta$$

where CR is a measure of the probability of apprehension (in this case the clearance ratio), UNR is the unemployment rate for women and K is a constant that incorporates mW_I/kW_L . Annual data is available from 1952 through 1979. The aggregate of arrests of women for burglary, larceny and robbery is used to measure OF . Estimating Equation 3 in natural logarithms using an instrumental variables technique that presumes offense levels and law enforcement effectiveness are jointly determined, we obtain the result:

$$\ln(OF/\rho) = 7.72 + 36.47 \ln(1 - CR) - 21.43 \ln(1 - UNR)$$

(7.51) (8.77) (-5.34)

where the t -statistics are in parenthesis and the Durbin-Watson Statistic is 1.94. This confirms rather emphatically that the decline in police effectiveness (CR) has provided substantial impetus to crimes by women and that their lack of employment opportunities in face of the rise in the expected take from crime $(1 - p_A)W_I$ has promoted a switch from a search for legitimate opportunities to crime. While continuous data on the take from crime are not available, recall that, for burglary, 56.5% percent of the rise in r between 1960 and 1979 was explained by a rise

in the take and 30.0% by a decline in the likelihood of apprehension. While the decline in the probability of success in locating a job had a relatively modest effect on the change in r , it is clear that the effect of a rise in returns from crime is an important aspect of the choice. The omitted trend in W_I/W_L probably accounts for the high elasticities (coefficients) on $\ln(1 - CR)$ and $\ln(1 - \mu)$.

SUMMARY

A labor force participation perspective provides valuable insights into the increasing criminal activity of women. It suggests that declining probabilities of apprehension may be encouraging criminal activity because of the effect of raising the expected illegal wage. This is an alternative to the explanation that declining probabilities of apprehension are diminishing the deterrent effect of punishment. For women, this effect has been reinforced by relatively declining labor market opportunities at a time when their labor force participation has been rising much faster than for men. The consequent rises in female unemployment has resulted in greater proportions of women unable to find adequate legitimate earnings while at the same time it has adversely affected the return to legal versus illegal earnings. Expected relative wages and expected punishment may both be influencing criminal behavior. The relative importance of these influences needs to be sorted out in empirical studies. The answers have relevance for future policy to enhance legal labor opportunities for women, and to formulate changes in tax laws to provide better incentives, as alternatives to the construction of more prison capacity.

FOOTNOTES

1. *Uniform Crime Reports*.
2. The progressive income tax effectively is biased against second earners compared to singles, see Lloyd and Niemi, p. 14. Also, the tax system favors unpaid work in the home and illegal work compared to work in the legal market, see Chiswick and O'Neill, p. 159.
3. The labor force data was taken from *Employment and Training Report of the President* and the crime data from *Uniform Crime Reports the FBI*. Our wage index indicates a decline in the average relative wage of women to men of -4.85%. This is comparable to the data reported by Hamermesh and Rees (1984), p. 331, that shows a decline of 8.2% for all white women working and somewhat less of a decline for year-round, full-time workers.

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APPENDIX

Labor supply and the reservation wage can be derived by maximizing the Stone-Geary utility function with respect to the time constraint and the budget constraint. Using the simple two good case of leisure x_0 and consumption x_1 for illustration, the Stone-Geary utility function is:

$$(1) \quad U = (x_0 - \gamma_0)^{\alpha_0} (x_1 - \gamma_1)^{\alpha_1}$$

where γ_0 and γ_1 can be interpreted as committed leisure and committed (subsistence) consumption, respectively, and α_0 and α_1 are parameters. The budget constraint limits expenditures on consumption, at the price P_1 , to the sum of non-labor income, y_0 , plus labor income, WL , where W is the market wage and L is time worked:

$$(2) \quad P_1 x_1 = y_0 + WL$$

The time constraint limits the sum of time worked, L , and leisure, x_0 , to the total time endowment, T ,

$$(3) \quad L + x_0 = T$$

Substituting the expression for time worked from Eq. 3 into Eq. 2, we obtain the combined constraint

$$P_1 x_1 = y_0 + W(T - x_0)$$

or

$$(4) \quad P_1 x_1 + Wx_0 = y_0 + WT$$

i.e. the total value of consumption and leisure is limited by full or potential income, i.e. the sum of non-labor income and the value of the time endowment. Maximizing the logarithm, \ln , of utility subject to Eq. (4), the Lagrangian function F is

$$(5) \quad F(x_0, x_1, \lambda) = \alpha_0 \ln(x_0 - \gamma_0) + \alpha_1 \ln(x_1 - \gamma_1) + \lambda[y_0 + WT - P_1 x_1 - Wx_0].$$

The first order conditions for an optimum are

$$(6) \quad \frac{\partial F}{\partial x_0} = \frac{\alpha_0}{x_0 - \gamma_0} - \lambda W = 0$$

and

$$(7) \quad \frac{\partial F}{\partial x_1} = \frac{\alpha_1}{x_1 - \gamma_1} - \lambda P_1 = 0.$$

Solving Eq.'s (6) and (7) for α_0 and α_1 and summing, we make use of the normalizing condition that α_0 plus α_1 equals 1,

$$\alpha_0 = \lambda[Wx_0 - W\gamma_0]$$

$$\alpha_1 = \lambda[P_1 x_1 - P_1 \gamma_1]$$

$$\alpha_0 + \alpha_1 = 1 = \lambda[(Wx_0 - W\gamma_0) + (P_1 x_1 - P_1 \gamma_1)]$$

or

$$(8) \quad \lambda = 1/(y_0 + WT - W\gamma_0 - P_1 \gamma_1)$$

i.e. the Lagrangian multiplier is the reciprocal of the difference between full income and committed expenditures on leisure and consumption, i.e. the reciprocal of discretionary expenditures.

From equations (6), (7) and (8) we can solve for the demands for leisure and consumption, respectively,

$$(9) \quad x_0 = \gamma_0 + \frac{\alpha_0}{W} (y_0 + WT - W\gamma_0 - P_1 \gamma_1).$$

and

$$(10) \quad x_1 = \gamma_1 + \frac{\alpha_1}{P_1} (y_0 + WT - W\gamma_0 - P_1 \gamma_1).$$

The supply of labor is the difference between the total time endowment and the demand for leisure,

$$(11) \quad L = T - x_0 = (T - \gamma_0) - \frac{\alpha_0}{W} [y_0 + W(T - \gamma_0) - P_1 \gamma_1].$$

The slope of the labor supply curve is the derivative with respect to the wage holding non-labor income, y_0 , constant,

$$\left(\frac{\partial L}{\partial W} \right)_{y_0=c} = \frac{\alpha_0 y_0}{W^2} - \frac{\alpha_0 P_1 \gamma_1}{W^2} = \frac{\alpha_0}{W^2} (y_0 - P_1 \gamma_1).$$

Thus labor supply will increase with the wage if non-labor income exceeds committed consumption.

The reservation wage, W_R , is the wage at which labor supply is just zero, i.e.,

$$L = 0 = (T - \gamma_0) - \frac{\alpha_0}{W_R} [y_0 + W(T - \gamma_0) - P_1\gamma_1],$$

or

$$W_R = \left(\frac{\alpha_0}{1 - \alpha_0} \right) \frac{(y_0 - P_1\gamma_1)}{(T - \gamma_0)}.$$