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ON THE RATIONALITY OF
BLACK YOUTH UNEMPLOYMENT

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ABSTRACT

In this paper I provide some evidence on the question of whether the

behavior of unemployed young blacks, whose reservation wages are relatively

high and whose jobless spells are very lengthy, reflect rational maximizing

choices. To do this, I use a simple income-maximizing job search model to

imply employment probabilities and various elasticities which are compared

to those which are actually observed for young blacks.

The results show that, for reasonable discount rates, the employment

probabilities implied by income-maximization are consistent with those

observed for young blacks. The elasticities of reservation wages with

respect to nonwage income that are implied by income-maximizing are also

consistent with those estimated econometrically for this group. This was

true despite the many assumptions embodied in this model whose validity for

a sample of low-income youth is highly questionable.

The evidence thus suggests that young blacks are making economically

rational choices by choosing high reservation wages and lengthy spells

without jobs.

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The exceedingly high rates of unemployment which plague black youth today have generated a great deal of interest and concern among economists and policy-makers. While recent research has provided some important insights into the nature and causes of the problem, many puzzles remain unresolved. For instance, the evidence seems to indicate that the problem of unemployment for black youth is primarily one of lengthy duration (or low probability of gaining employment), rather than one of high frequency (or high probability of losing employment).[1] Furthermore, the reported reservation wages of black youth remain above the minimum wage despite these lengthy durations of unemployment; yet they continue to express desires for work and seek jobs which are comparable to those sought by white youth.[2]

These findings beg the question of whether black youth are behaving in an economically rational manner. Do lengthy durations of joblessness reflect income or utility-maximizing behavior on the part of black youth who accurately perceive their unattractive labor market opportunities and who choose their responses accordingly? Or does their behavior reflect some basic irrationality, caused either by incorrect expectations that fail to adapt (despite lengthy periods of search) or by tastes, attitudes, etc. that yield non-maximizing outcomes?

This paper presents some evidence on these issues. In particular, I analyze some survey data on job search by inner-city black youth using a technique developed recently by Lancaster and Chesher.[3] They use a simple income-maximizing model of job search to derive formulas for the elasticities of reservation wages and employment probabilities with respect to nonwage income and job offer arrival rates. These formulas enable us to compute these elasticities from summary statistics instead of estimating these parameters statistically. However, the technique is valid only if the stringent assumptions of the simple job search model are correct (and if certain survey data can be interpreted in a particular manner).

The validity of these assumptions for a sample of unemployed black youth are tested below. Using formulas derived by Lancaster and Chesher, I compute the elasticities and employment probabilities for unemployed blacks that are implied by the income-maximizing job search model. These are then compared to observed employment probabilities and econometrically estimated elastics to test whether the income-maximizing model correctly predicts their behavior. The computed elasticities are also interesting in their own right as measures of responsiveness to economic incentives. The model, the data, the results and various caveats are all described below.

I. The Model and Data

In their paper, Lancaster and Chesher use an income-maximizing job search model to derive an unemployed individual's optimal reservation wage. After some algebraic manipulations, they then show that the elasticities of this reservation wage with respect to nonwage income and job offer arrivals respectively are:

(1)
$$\frac{d \log w^r}{d \log b} = \frac{b}{w^r} \frac{w^e - w^r}{w^e - b}$$

(2)
$$\frac{d \log w^r}{d \log \lambda} = \frac{w^r - b}{w^r} \frac{w^e - w^r}{w^e - b}$$

where w^r is the individual's optimal reservation wage; w^e is the expected wage, conditional on this reservation wage (defined as $w^e \equiv \int_{w^r}^{\infty} w \, f(w)dw \Big/ \int_{wr}^{\infty} f(w)dw$ where $f(w)$ is the distribution of offered wages an individual faces); b is a constant stream of nonwage income which the individual receives while being unemployed; and λ is the rate of job offer arrivals. The elasticities of employment probabilities with respect to these same variables were calculated as:

(3)
$$\frac{d \log P_E}{d \log b} = - \frac{f(w^r)}{1 - F(w^r)} \cdot b \cdot \frac{w^e - w^r}{w^e - b}$$

(4)
$$\frac{d \log P_E}{d \log \lambda} = 1 - \frac{f(w^r)}{1-F(w^r)} \cdot (w^r - b) \cdot \frac{w^e - w^r}{w^e - b}$$

where the fraction $f(w^r)/(1 - F(w^r))$ is the hazard function for employment. All of these calculations depend crucially on the following formula which was also derived from equations for the reservation wage and expected wage:

(5)
$$\frac{P_E}{\rho} = \frac{w^r - b}{w^e - w^r}$$

where ρ is the individual's discount rate.

Lancaster and Chesher then compute these elasticities using summary data on a sample of unemployed British workers. In addition to providing data on unemployment insurance payments and reported reservation wages, the survey which they use also includes questions on how much the individual expects to

earn on a new job.[4] By interpreting this last variable as the individual's conditional expected wage, Lancaster and Chesher have all the variables necessary for the calculation of the first two elasticities above;[5] and, by hypothesizing a functional form for the distribution of offered wages (they use the Pareto discription), they calculate the last two elasticities as well.[6] All elasticities are calculated using sample means of the independent variables, and all are shown to be comparable to elasticities calculated by others using more coventional econometric techniques.

The same model can be applied to unemployed black youth in this country by using the National Bureau of Economic Research (NBER) Survey of Iowa-City Black Youth. This survey was conducted in 1979 and 1980 for 2400 males, aged 16 through 24, who live in predominantly black and low-income city blocks of Boston, Chicago, and Philadelphia.[7]

The survey contains a few questions which are used to gauge respondents' expected wages and several more which gauge reservation wages; in both cases, the responses obtained are generally consistent with one another. The ones used in the calculations below are responses to the questions, "How much per hour do you think you would earn (on the best job you could get right now)?" and "If you were offered that job tomorrow, would you take it if it paid

_____?" with responses to the latter provided at $.50 intervals.[8] Respondents were also asked whether they thought their chances of obtaining these jobs were "very high," "somewhat high," "somewhat low," or "very low." The vast majority of responses fell in the middle two categories, which are consistent with the Lancaster-Chesher interpretation of responses as conditional expectations of offer wage distributions.

Nonwage income sources and amounts for these youth in the previous four ·
weeks were also gauged in the survey. Since most of the unemployed youth here
have had either very short employment durations or no recent work experience,
the fraction who report receiving Unemployment Insurance is very low.[9]
Instead, most report gifts or loans from friends and relatives, other transfer
payments, and illegal activities as their main sources of income. Though the
last category undoubtedly contains a good deal of reporting error, these
responses probably provide the most realistic accounts of nonwage income
sources for these youth that could have been obtained.[10]

Finally, the NBER survey contains a retrospective time-line for the
previous year that records all periods of employment during that period.
Employment and unemployment durations as well as transition probabilities
between employment states have been calculated using these data.[11] These
estimates of employment probabilities for the unemployed are used below for
comparison purposes with measures implied by the Lancaster-Chesher model.

Before presenting the results below, a few caveats are in order. As they
themselves acknowledge, the model of Lancaster and Chesher is a simple one
which assumes income (as opposed to utility) maximization, constant
reservation wages, and rational expectations with regards to potential wage
offers in the market. These are strong assumptions for any sample, and are
even less likely to hold for a sample of low-wage youth whose experience in
and knowledge of the labor market are limited. Furthermore, as young people
who are mostly unmarried and living at home, their tastes for leisure or other
non-market uses of time may make the assumptions of strict income-maximization
untenable. Perhaps most importantly, these youth generally do not have access
to a constant stream of nonwage income that can be considered exogenously
determined (such as Unemployment Insurance); their income sources (especially

illegal ones) are much more likely to reflect endogenous choices which are
influenced by status, risk and other non-pecuniary considerations outside of
the model. Thus we would expect the Lancaster-Chesher model to be less well-
suited to these youth than to a sample which is more broadly representative of
the population.

Despite these drawbacks, the job search model provides a useful benchmark
for judging the consistency of behavior by low-income youth with simple
maximizing principles. Once this benchmark is established, we can consider
the effects of various biases induced by complicating factors and also by
potential measurement errors in the variables used. Thus, the results
reported below should provide some important insights despite the strong
assumptions of the model on which they are based.

II. Results and Their Implications

Table 1 below presents means and standard deviations on the variables
which are used in the calculations for those in the NBER survey.[12] The sample
includes all those without work who are not students.[13]

The results show reservation wages which are above the minimum wage
(which was $2.90 in 1979 and 3.10 in 1980) despite the low monthly probability
of gaining employment. In fact, the latter figure implies that expected
durations of completed spells without employment are approximately a year
long.[14]

The expected wage is well above the reservation wage at the mean;
frequencies show this to be true for most individuals as well. The evidence
is thus consistent with the Lancaster-Chesher interpretation of this variable
as a mean of the wage offer distribution, conditional on offers being above
the reservation wage. In fact, the expected wage measure is also well above

Table 1

Relevant Characteristics of
Black Youth in NBER Survey
Means and Standard Deviations

Expected Wage	$ 4.86
	(1.82)
Reservation Wage	3.64
	(1.58)
Nonwage Income in Previous Month	116.21
	(239.42)
Monthly Probability of Gaining Employment	.082

Note: Sample includes all individuals without work who are not enrolled in school.

the mean of previously received wages for this group; this suggests some
possibility that black youth are overly optimistic about their prospects in
the labor market, though the evidence is certainly not conclusive.[15]

As for the nonwage income figure, the large standard deviation reflects a
great deal of variation in individuals' outside income sources. A major
source of this variation involves illegal activities, which are reported by
approximately 19% of the sample.[16] Since evidence on self-reported crime
rates generally shows them to be underreported, there is some reason to
believe that this income figure is downward-biased.[17] This, in turn, implies
that substantial sources of income may be available to the young unemployed--
especially relative to income needs for the vast majority who continue to live
at home.

Table 2 then shows the employment probabilities and elasticities that are
implied by these data when using the formulas derived from the simple job
search model. Perhaps most important for a test of the model's validity for
this sample is the first line, which reports the employment probability
(divided by discount rate) implied by the model. In comparing this figure
with the observed monthly probability reported in the previous table, we find
that the probability implied by income-maximizing behavior equals the observed
one if the annual discount rate of individuals in the sample is approximately
41%.

Of course, we have no way of knowing what the true discount rate really
is. While economists generally assume it to be a number much lower than this,
it is not inconceivable that the true discount rate among youth from low-
income backgrounds is as high as (or even higher than) the 41% mark. It is
therefore quite possible that, given their nonwage income sources and wage

Table 2

Implied Employment Probabilities
and Elasticities Using Simple
Job Search Model

Employment Probability/Discount Rate   2.388

Elasticity of Reservation Wages With
  Respect to:
  Nonwage Income   .059
  Offer Arrivals   .236

Elasticity of Employment Probabilites
  With Respect to:
  Nonwage Income   -.236
  Offer Arrivals   .058

Note: Calculation of elasticities for employment probabilities assumes Pareto distribution of offered wages.

opportunities in the labor market, the high reservation wages and lengthy durations of joblessness which we observe for black youth are income-maximizing choices.

It is also interesting to note the direction of the error in the implied probability if the true discount rate is different from 41%. For a lower discount rate implies that a lower employment probability than the one observed is consistent with income-maximization, while a higher discount rate implies the opposite. In other words, if their discount rates are less than 41%, unemployed black youth are being too cautious and are choosing reservation wages that would maximize income only if their chances of becoming employed were lower than they are now. On the other hand, black youth are too optimistic and choose reservation wages too high if their discount rates are above 41%.

Of course, some caveats mentioned above must now be considered again since they are likely to cause biases in estimates of employment probabilities that are consistent with rational behavior. For instance, unemployed youth living at home are likely to value their leisure time and other non-work activities. Therefore, nonwage income is likely to understate the true benefits of being unemployed, and the implied employment probability that is consistent with utility-maximization will be even lower than that consistent with income-maximization. If nonwage income from illegal sources is substantially underreported here, the employment probability consistent with maximization would be lower still. These factors thus imply that reservation wages could be even higher than those observed without violating the principles of rational maximization. However, these biases do not appear to greatly change the results described here.[18]

Furtermore, several other factors appear to explain why rational maximizing may really call for reseration wages that are as low or lower than those observed. In particular, the uncertainties and risks associated with sources of income such as illegal activities should cause them to be far less attractive per dollar received than sources such as Unemployment Insurance, which provide a safe and steady stream of benefits with little effort. This, in turn, suggests that the nonwage income figures used in the calculations may actually overstate the benefits of being unemployed. The employment probability implied by risk-adjusted maximization may then be higher than the one which appears in Table 2, and the argument that reservation wages should be even higher than they are is severely weakened. Furthermore, Equation (5) suggests that any overestimation of potential wage offers will also lower the employment probabilities that appear to be consistent with maximization. If, in fact, subjective expectations by black youth of the wage offers which they face are too high, a higher employment probability will be consistent with true income maximization and lower reservation wages would be in order. In this last case, however, the behavior of black youth would be "rational" for a given set of expectations, even where the expectations themselves are not.

To sum up, the evidence indicates that reservation wages chosen by unemployed young blacks may not be inconsistent with rational behavior in a simple, income-maximizing search model. While various factors may cause biases in estimates of employment probabilities consistent with maximization, some are upward and others downward. Their net effect is unclear, but they are unlikely to substantially change the basic result of consistency with maximizing behavior.

Moving on to the elasticities which are implied by income-maximization, we find that reservation wages among unemployed black youth will be less responsive to nonwage income and more responsive to offers under income-maximizing search than will those of the group studied by Lancaster and Chesher.[19]

The low elasticity with respect to nonwage income is somewhat troubling here, given the importance attached to this income in the previous discussion of high reservation wages. However, these calculations are surprisingly consistent with some econometrically estimated elasticities for this group that ranged in value from .02 to .07.[20] This consistency of the job search model's predictions with econometric evidence provides more support for the notion that income-maximizing principles may accurately portray the behavior of unemployed young blacks.

It is also noteworthy that the factors discussed above which may bias calculations based on the simple search model (e.g., underreporting of nonwage income, endogeneity , etc.) will also bias econometric estimates of these elasticities, and that the net effect of these biases is likely to be downward.[21] It is therefore quite possible that reservation wage elasticities for black youth with respect to nonwage income are more substantial than those calculated or estimated here. But the discrepancies in this case are caused by measurement problems rather than the maximizing assumptions which underlie the search model.

As for the elasticities of employment probabilities, these are substantially different from the reservation wage elasticities presented in Table 2. The reasons for these discrepancies are readily apparent. In order to calculate these employment elasticities, some distribution function had to be assumed for wage offers in order to obtain an estimate for the hazard function. Following Lancaster and Chesher, I use the Pareto distribution for

the sake of convenience and simplicity. The use of the Pareto distribution

here enables us to replace the hazard function with $\dfrac{1}{\sigma_* w^r}$, where σ is the

standard deviation of wage offers; the value of this statistic can, in turn,

be inferred from the data on expected and reservation wages which are

available here.[21] However, this replacing of the hazard function has the

effect of specifying the following:

(6) $\qquad \dfrac{d \log P_E}{d \log w^r} = \dfrac{1}{\sigma}$

From the expected and reservation wage data for young blacks, σ is calculated

to be approximately .25 and the elasticity of employment probability with

respect to reservation wages approximately 4. This implied employment

elasticity is clearly larger than other estimates of these elasticities for

young blacks.[23] This, in turn, causes the employment elasticities with

respect to nonwage income and offer arrivals to appear larger and smaller,

respectively, than would otherwise be the case. These problems appear to be

even more true for Lancaster and Chesher, for whom $\dfrac{1}{\sigma}$ approximately equals

10. But the difficulties in this case seem to be more a result of the

assumption of Pareto distributions for wage offers than of the job search

model on which these calculations are based. Once again, support for the

proposition that young blacks are behaving rationally is not undercut by the

evidence presented.

III. Conclusion

In this paper I provide some evidence on the question of whether the behavior of unemployd young blacks, whose reservation wages are relatively high and whose jobless spells are very lengthy, reflect rational maximizing choices. To do this, I use a simple income-maximizing job search model to imply employment probabilities and various elasticities which are compared to those which are actually observed for young blacks.

The results show that, for reasonable discount rates, the employment probabilities implied by income-maximization are consistent with those observed for young blacks. The elasticities of reservation wages with respect to nonwage income that are implied by income-maximizing are also consistent with those estimated econometrically for this group. This was true despite the many assumptions embodied in this model whose validity for a sample of low-income youth is highly questionable.

The evidence thus suggests that young blacks are making economically reational choices by choosing high reservation wages and lengthy spells without jobs. Given the availability of nonwage income from illegal activities and other sources, and given the low potential wage offers which they face, it appears to be in the interests of many young blacks to demand high wages before accepting work. This is consistent with other research evidence that shows young blacks responding to incentives and behaving rationally in their labor market pursuits.[24]

It is, however important to interpret these results carefully. What is rational or optimal from the private point of view is not necessarily so from a social point of view; this is especially true if the nonwage income on which unemployed people rely represents a cost to society. Futhermore, the private rationality of high reservation wages depends on wage offer distributions

remaining unattractive relative to nonwage income. However, government policies exist (e.g., education and training programs, Affirmative Action, etc) which might change the attractiveness of the labor market which unemployed people face and therefore might affect their behavior.[25]

Finally, it is important to remember that offer probabilities as well as wage offers affect employment probabilities. Even if the reservation wages of young blacks declined to the minimum wage (or lower), low offer probabilities may continue to reflect the severe demand side constraints which many unemployed young blacks presumably face. A policy approach on black youth unemployment must therefore consider many sources of low employment probabilities if it is to be successful.

Footnotes

[1]See Clark and Summers (1982), Ballen and Freeman (1984).

[2]See Holzer (1984).

[3]See Lancaster and Chesher (1983).

[4]The exact wording of the question they use is, "How much take home pay would you expect to be able to earn in a new job?"

[5]Lancaster and Chesher evidence in favor of their interpretation of this variable as a <u>conditional</u> rather than unconditional mean of the offer wage distribution-i.e., that $w^e = E(w/w > w^r)$ instead of $w^e = E(w)$. The evidence consists of joint frequency distributions of w^e and w^r which show the former to be greater than or equal to the latter for virtually every individual in the sample.

[6]The Pareto distribution is chosen for computational convenience and because it specifies a declining frequency of wages, which should be accurate for most of the portion of the wage distribution above the reservation wage. The effects of using a normal distribution instead (which would allow for rising or declining frequency) are discussed as well.

[7]The city blocks chosen were those in which at least 70% of the population was black and 30% of families had income below the poverty line in the 1970 Census.

[8]There were concerns that the specific wording of the expected wage question (i.e., the references to "best job" and "right now") made it inappropriate for the job search context. However, responses to this question were very comparable to those for the other question that asked about the job which the individual is seeking. The decision to use the former variable here

was based on its availability for a larger sample and also on the availability of information on the perceived chance of obtaining this job, which is described in the text below.

[9]Only 5% of those without jobs in the sample report receiving Unemployment Insurance at the time of the survey. This is consistent with the fact that over 40% of this group report no regular employment in the previous year, while the rest report completed employment durations of approximately 13 weeks. For the latter figure see Ballen and Freeman op. cit., p. 11. Presumably, a large fraction of the reported employment spells are part-time or summer jobs of former students.

[10]A good discussion of the potential reporting errors in these data and how they might affect estimated relationships with labor market outcomes can be found in Viscus: (1984).

[11]Many of these figures are reported in Ballen and Freeman, op. cit.

[12]In calculating these elasticities, nonwage income is converted to an hourly equivalent by assuming 40 hours per week and 4 weeks per month work.

[13]Of those without work in the nonstudent sample, about 80% are in the official labor force. The decision to include the others as well is consistent with the work of Clark and Summers op. cit., who find the distinction between unemployed and out of the labor force to be arbitrary. Calculations performed for those in the labor force suggest that the qualitative results do not change when the sample is limited to this group.

[14]This is true since the expected duration of a spell of unemployment $E(D) = \frac{1}{P_E}$ where P_E is defined for a finite time unit.

[15]The mean wage previously received by this group was $3.98. Alternative interpretations of the gap between currently expected and previously received wages include adjustments for inflation, higher minimum wages, and human

capital formation over time. This last factor could be important for recent high school graduates whose previous earnings are from summer or part-time jobs.

[16]For those reporting illegally received income, the mean monthly income attributable to this source is about $235. Thus the monthly nonwage income of the sample excluding that from illegal sources is about $71.

[17]See Viscusi, op. cit.

[18]For instance, if the total amount of money obtained by illegal activities was double the amount reported, the implied $^PE/_\rho$ would decline to 2.155 and the discount rate which would equate the probabilities would rise to 45.7%.

[19]Their reservation wage elasticities with respect to nonwage income and offer arrivals were .135 and .107, respectively.

[20]See Holzer (1983), Chapter 6. The elasticities are calculated from equations of the form $\ln(w^r) = \alpha + \beta\ln(b) + \gamma X$, where the X included various measures of actual or expected wages.

[21]Any reporting errors in nonwage income, the independent variable, are likely to result in downward biases in the estimated coefficients for that variable. Futhermore, the presumed positive correlation of unobserved personal quality with reservation wages and its negative correlation with income from sources such as illegal activities should cause another downward bias for these estimates. The effects of income endogenity on estimated elasticities are unclear.

[22]The Pareto distribution implies that, since σ is comparable to the coefficient of variation for the wage offer distribution, $w^e = w^r/(1-\sigma)$. See Lancaster and Chesher, p. 1669.

[23]Elasticities of duration of unemployment with respect to reservation wages of young blacks, estimated using the National Longitudial Survey, range from .6 to 1.4 in Holzer (1984). These estimates are based on equations of the form $\ln(D) = \alpha + \beta \ln(w^r) + \gamma X$, where the X represent variables that are likely to affect offer probabilities and wage offers which individuals face. While fairly substantial, these elasticities remain well below what is implied by assuming the Pareto distribution.

[24]For instance, Viscusi op. cit. shows that the decision of young blacks to participate in illegal activities is largely influenced by their preceptions of risks and returns in legal and illegal pursuits. Ferguson and Filer (1984) also find absenteeism on the job related to incentives created by job characteristics (e.g., wage, status, and skill specificity) as predicted by rational, maximizing behavior.

[25]Positive effects of Affirmative Action programs on employment of blacks has been found by Leonard (1984). The effects of education and training programs on earnings for black males and other groups is reviewed in Barocci (1982).

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