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PROGRAMME OF RESEARCH AND ACTIONS ON THE DEVELOPMENT OF THE LABOUR MARKET

COSTS OF UNEMPLOYMENT

Main report

ANNEX ON SOCIAL COSTS OF UNEMPLOYMENT

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ANNEX ON SOCIAL COSTS OF UNEMPLOYMENT

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Diagram 2 is reproduced from R. Harrison, "The Demoralising Experience of Prolonged Unemployment", Employment Gazette April 1976, with kind permission of the Controller of Her Majesty's Stationery Office.

THE SOCIAL COSTS OF UNEMPLOYMENT

"We believe unemployment to be among the causes of ill health, mortality, crime or civil disorder." (House of Lords Select Committee Report on Unemployment (1982)).

1. Introduction

The social costs of unemployment are, in our opinion, much greater than the economic costs. However, it is very difficult (impossible?) to quantify these social costs in terms of Gross National Product. The social costs of unemployment include increased mental and physical illness, mortality, suicide, drug abuse, crime, child abuse and social unrest. The social consequences of the continued high and increasing levels of unemployment are likely to remain for many years, even if unemployment were to come down to more "acceptable levels". This paper reviews some of the literature on the social costs of unemployment and provides some preliminary results on some aspects of these social costs. Underlying this work is the view that employment provides an individual not only with an income, but also a set of social relationships which provide a structure and meaning to life[1]. Unemployment, therefore, leads not only to a loss of income but also to a breakdown of social relationships which lead to increased stress and anxiety.

Even a Conservative Prime Minister, Margaret Thatcher of Britain, said that she wanted more jobs, "not only because jobs provide work but because with work comes a sense of being needed and belonging". (Speech to Lord Mayor's Banquet in the City of London, reported in the Guardian, 12th November, 1985).

The remainder of this paper is structured as follows: Section 2 discusses some aspects of unemployment and methods of analysis; Section 3 discusses the problem of unemployment and physical and mental health; Section 4 discusses unemployment and mortality, para-suicide and suicide; Section 5 discusses unemployment and crime, child abuse and social unrest; finally Section 6 concludes the paper.

2. Nature of Unemployment and Methods of Analysis

2.1 Nature of Unemployment

It is a trite statement to say that individual responses to unemployment are varied: at the one extreme unemployment is a merciful release from a tyrannical job and, at the other, it is a loss of identity and belonging. For the former person, unemployment may lead to an improvement in health, morale, a flowering of personality etc. For the latter person, unemployment may lead to stress, anxiety, depression, morbidity, mortality etc. It is important to realise that, in either case, there are "externalities" - other people are affected by the experience of unemployment of an individual. The first to be (and perhaps most) affected are members of the family: the

spouse, the parents, the children, the siblings. Further along the line, friends and relations may change their relationship and behaviour towards the unemployed individual

Before we discuss the different avenues through which unemployment may have social consequences, it is worth stressing that unemployment is not some abstract homogeneous experience. The impact of unemployment on an individual would depend on what caused the individual to become unemployed and what is the actual or perceived reason for the person to remain unemployed. The individual may become unemployed because (a) (s)he left school/higher education and did not find work, (b) s(he) was fired or made redundant, or (c) (s)he voluntarily quit employment. If the individual voluntarily quit work (s)he may feel better off while the individual who was fired (sacked) or made redundant (involuntarily unemployed) may feel a sense of shock, outrage, anger etc. Even if an individual voluntarily quit (s)he may remain unemployed involuntarily: the individual may be unable to find any (reasonable) work even though actively searching for a job. Some individuals (usually women) may quit voluntarily but really due to force of circumstance because of (say) geographical relocation of the spouse (normally the husband) and may then remain unemployed. In that case, the individual's feelings may be no different from the other individual who was fired (sacked). This leads on to the second aspect of unemployment which is important: the duration of unemployment. If an individual is unemployed for only a week or two, his(her) response to the situation may be one of casual unconcern - especially if (s)he expects to find a job within a short period of time. However, an individual who has experienced a long spell of unemployment (say over a year) is likely to be depressed and dejected. As mentioned above, the expectation of finding work is likely to be critical in affecting an unemployed individual: age would, therefore, be an important variable. Another important aspect is whether the individual is facing his(her) first spell of unemployment or whether it is a repeated spell. For an individual facing the first spell of unemployment, (s)he may suffer from shock and anxiety, while the individual facing a repeated spell may be resigned to his(her) lot. The final aspect of unemployment which is important is whether the overall length of unemployment in that town, county or region is high or low and whether unemployment in that time period is high or low relative to the past. If the overall level of unemployment is high in that geographical region, the unemployed individual may not feel stigmatised and may cope better than an unemployed individual in a region of low unemployment where (s)he may have a feeling of inadequacy. Similarly, an individual may not suffer as much in a period of high unemployment relative to the past, as there are millions 'in the same boat'. But, at the same time, high unemployment means a lower probability of finding work which may have a depressing effect.

One aspect which has received less attention is the impact that high unemployment has on the employed. Clearly, the fear or threat of being thrown out of work must be greater and place the employed individuals under stress. In certain declining industries (and/or regions) many employed individuals may get

concerned about their colleagues being made redundant and wondering if it will be their turn next. In this situation, employers may be able to increase the pace of work and hence increase stress.

Before concluding this sub-section, it should be noted that becoming unemployed (whether voluntarily or involuntarily) may actually be beneficial. The unemployed individual would escape from various hazards at work like pollution, industrial accidents, etc., as well as from work related stress factors.

2.2 Methods of Analysis

The method of analysis employed depends on what questions are being asked and what data are available or can be collected within reason. One of the earliest studies used the method of interviewing unemployed individuals in a few towns or regions[2]. Structured or unstructered interviews with the unemployed can investigate various aspects of the problem, conditions at work before becoming unemployed, relationships within the family, relationships with ex-workmates (colleagues), with friends, etc. This provides a wealth of information which can be used to formulate hypotheses. Ideally, one needs a control group with which to be able to compare these results. These case studies have provided some deep insights into the corrosive nature of unemployment.

A second method is based on surveys of individuals (employed and unemployed), for example, the Census, General Household Survey, etc. These cross-sectional studies based on individual data use statistical or econometric techniques to assess the impact of unemployment on morbidity, mortality, crime etc.

A third method uses grouped cross-section data: this grouping may be on the basis oof a town, county, region (geographical) or on some social characteristic like class. The data can then be analysed by statistical/econometric methods.

A fourth method uses a sample of individuals and collects retrospective information which can be analysed by standard methods. However, it is important to have a control group for comparing the behaviour of the (say) unemployed with the employed. One major problem with this method is that recall of information is less than perfect and likely to be affected by subjective factors. In some cases the retrospective information is based on medical/clinical and other records.

A fifth method, and perhaps the most appropriate, uses longitudinal data. After choosing a sample of the population (either of the unemployed alone, or of both the employed and unemployed), the individuals are observed at regular intervals for several months or years. These observations may be on a self-reporting basis or objectively monitored. (It is, however, important to have a control group in the sample). In our opinion, this is a method which can cut through the perennial problem in this area: is it morbidity, criminality, drug abuse etc. which causes unemployment or is it unemployment which

causes morbidity, criminality, drug abuse etc. This longitudinal data set, which is very expensive to collect, can be analysed by appropriate statistical and econometric methods. One of the main problems with longitudinal data, however, is that there is an attrition of the sample over time which makes statistical inference difficult.

A sixth method is to use aggregate time series data, for example, aggregate unemployment in a country over time and aggregate mortality, crime, etc. over time. This method has the advantage that we can carry out studies over long periods of time such that it includes unemployment levels which are very high as well as those that are low. It also allows cross-country comparisons, effects of policies on (say) mortality (e.g. anti-smoking policies) as well as the dynamics of the social consequences of unemployment (in terms of time lags etc.). It is also possible to attempt to discriminate cause and effect by studying whether unemployment leads or lags the postulated social consequences. In our opinion, one of the major advantages of this (macro) aggregate time series approach is that it allows us to study the impact of cyclical economic phenomena on morbidity, mortality, crime etc. The data are usually readily available, and there are several standard econometric methods to analyse time series data.

There are two major problems in analysing (or evaluating) the relationship between unemployment and ill health (or mortality). Firstly, does ill health, criminal background/history, drug abuse increase the probability of being unemployed (i.e. does it cause unemployment) or does unemployment cause ill health, drug abuse, criminality etc. This is, in fact, a very difficult issue to determine. However, there have been some attempts to test for the direction of causality. It is, in fact, possible for a <u>two-way</u> relationship to exist: ill health etc. may cause unemployment <u>and</u> unemployment may cause ill health etc. If this two-way relationship exists, then a sophisticated dynamic simultaneous equation system may have to be set up and estimated. For example, for an individual,

$$H_t = f(P(U_t), U_{t-1}, \ldots, U_{t-n}; Z_{1t}, \ldots, Z_{1t-m})$$

$$P(U_t) = g(H_t, \ldots H_{t-n}, Z_{2t}, \ldots, Z_{2t-m})$$

where H_t is some index of health at time t, $P(U_t)$ is the probability of being unemployed at t, U_{t-i} is whether the individual was unemployed in period t-i and Z_1 and Z_2 are vectors of exogenous variables at time t-i. (Some of the variables may be in <u>both</u> Z_1 and Z_2).

Secondly, there may be "intervening variables" between unemployment and ill health. For example, unemployment affects income and hence diet which may affect health. Thus these <u>processes</u> or <u>mechanisms</u> that link unemployment to ill health may themselves be identified as the casusal variables. As mentioned earlier, unemployment may lead to increased smoking and drinking (or use of other legal or illegal drugs) which lead to illness.

Given the two 'structural' equations explaining health and the probability of unemployment, we could write 'reduced form' equations for these variables in terms of exogenous and pre-determined variables. Thus the estimating equations (in general functional form) would be:

$$H_t = H(H_{t-1}, \ldots, H_{t-n}; U_{t-1}, \ldots, U_{t-n}; Z_{1t} \ldots, Z_{1t-m}; Z_{2t}, \ldots, , Z_{2t-m})$$

$$P(U_t) = U(H_{t-1}, \ldots, H_{t-n}; U_{t-1}, \ldots, U_{t-n} z_{1t}, \ldots, Z_{1t-m}; Z_{2t}, \ldots, Z_{2t-m})$$

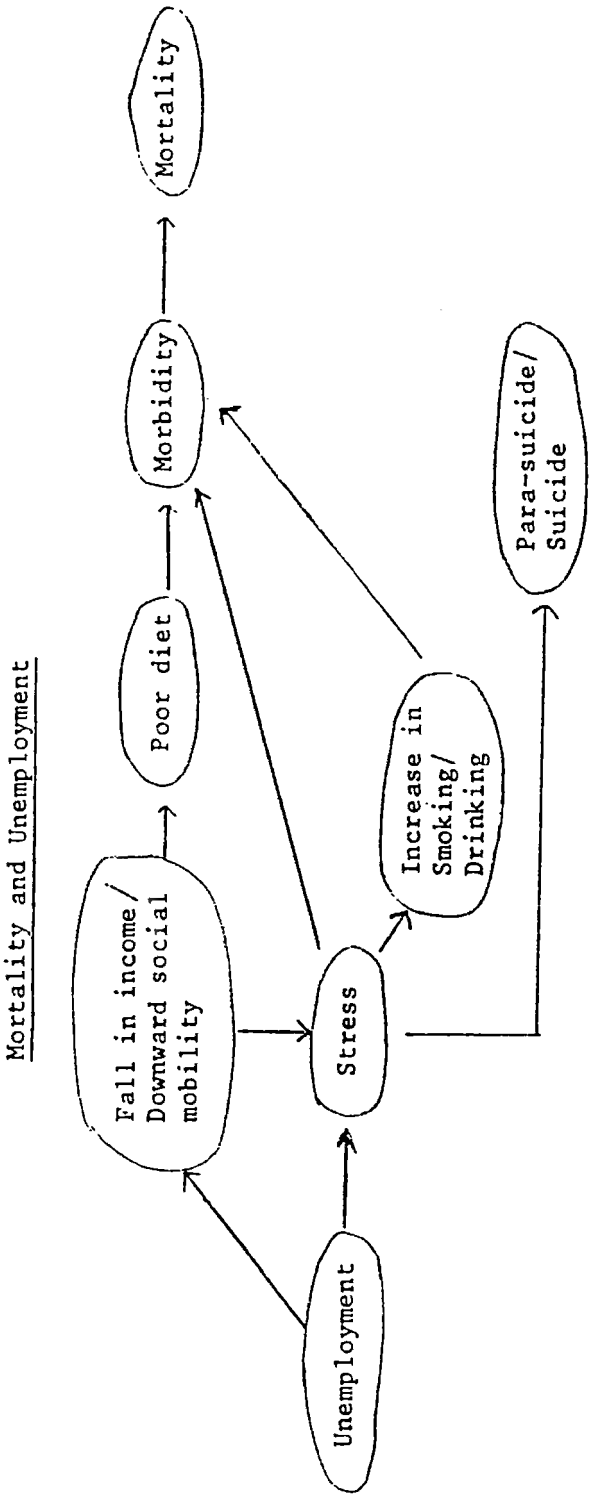
To study this problem we would need longitudinal data for a sample of individuals (both employed and unemployed) with information about a set of characteristics like age, education, gender, social class, etc.

3. Mental and Physical Health

Although there has been much work which suggests that unemployment leads to an increase in physical and mental illness, the actual mechanism by which this results is still poorly understood. There is a better understanding of the mechanisms that lead from unemployment to mental illness rather than from unemployment to physical illness. In some sense, it is misleading to separate out mental and physical illness: people who are under mental stress are also likely to show physical illness symptoms (psychosomatic illness). In addition, people under stress seem to lower their resistance to physical illness, e.g. influenza.

The underlying rationale for unemployment leading to increased mental and physical illness is that employment not only provides an income but also a set of social relationships which provide structure and meaning to life. Besides the income loss, an unemployed individual suffers from anxiety and stress which may lead to cardiovascular diseases, ulcers, asthma etc. In addition, when an individual suffers from stress, there may be an increased consumption of tobacco, alcoholic drinks, and other legal or illegal drugs. The decreased income, especially for the long term unemployed, leads to poverty and poor diet and nutrition. These different avenues from unemployment to ill health are presented in a schematic form in Diagram 1.

Diagram 1


Mortality and Unemployment
Mortality
Morbidity
Poor diet
Fall in income / Downward social mobility
Stress
Increase in Smoking / Drinking
Para-suicide / Suicide
Unemployment

As there are excellent reviews of the literature, see Brenner and Mooney (1983), Jahoda and Rush (1980), John, Schwefel and Zollner (1983), Kelvin and Jarret (1985), Smith (1985), Stern (1983) and Warr (1983), we shall be very brief.

As mentioned earlier there has been more work on studying the effects of unemployment on mental rather than physical health. In an excellent survey, Jahoda and Rush (1980) state:

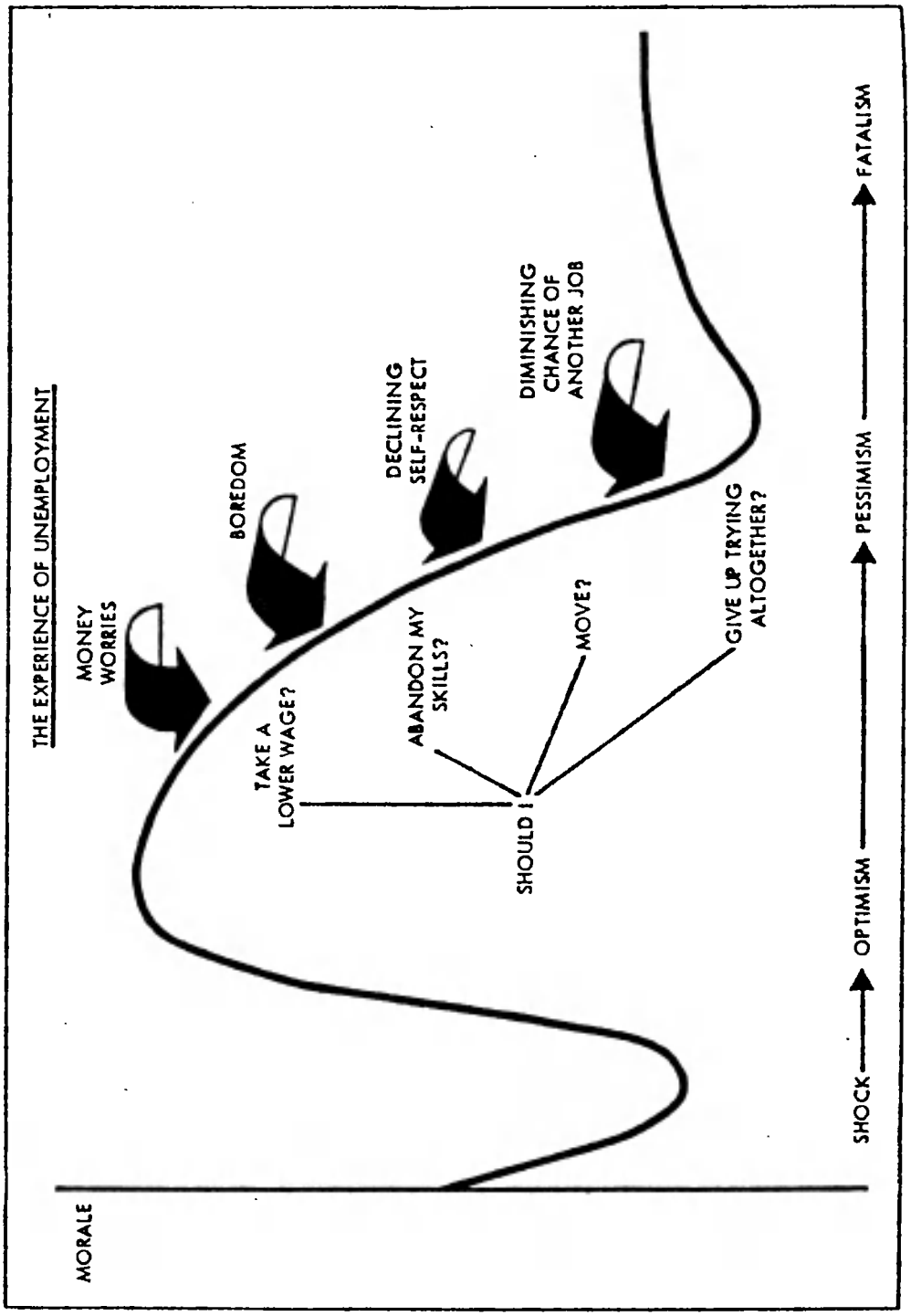
> "On the individual level the latent consequences of unemployment can be regarded as the absence of the latent consequences of employment. Five such consequences have been identified in the literature. Employment of whatever kind at whatever level makes the following categories of psychological experiences inevitable: it imposes a time structure on the waking day; it compels contacts and shared experiences with others outside the nuclear family; it demonstrates that there are goals and purposes which are beyond the scope of an individual, but require a collectivity; it imposes status and social identity through the division of labour in modern employment and, last but not least, it enforces activity."

Most researchers comment on the importance of the duration of unemployment for its effects on the psychological state of the individual. Harrison (1976) in a review of the literature states:

> "Prolonged unemployment is for most people a profoundly corrosive experience, undermining personality and atrophying work capacities". (p.347).

Again, in summarising the findings of earlier work, he argues that those with a past history of employment go through a sequence of stages: shock → optimism → pessimism → fatalism. This is represented graphically in Diagram 2.

Diagram 2



Source: Harrison (1976)

Warr (1983) outlines nine avenues from unemployment to psychological ill health. These are: (i) financial anxiety; (ii) restricted behaviour and environment of the unemployed; (iii) reduced "traction": the structure of work helps to speed up the actions, but when unemployed, the same actions take much longer; (iv) a smaller scope for decision making, partly due to financial difficulties and partly due to being in an environment where fewer decisions are necessary; (v) lack of satisfaction from learning and developing skills; (vi) an increase in threatening and humiliating experiences: for example, being rejected for jobs, regular "hassles" at the Social Security offices; (vii) insecurity about the future; (viii) restricted social contacts, or at least with a smaller set of people; and, finally, (ix) loss of social status.

Much of the empirical work in this field was carried out in the 1930s using in-depth interviews, and similar work has been done since. In an interesting longitudinal study, Banks and Jackson (1982) gave a General Health Questionnaire (GHQ) to school-leavers in Leeds, England. The GHQ score was higher for the unemployed and there was a significant increase of the score at the next interview. Time series evidence given in Brenner (1973) suggests a positive association between mental illness and unemployment. These time series results are often criticised on the grounds that statistical association (correlation) does not imply causation. However, Brenner's evidence provides further support to evidence from case studies, cross-section studies and longitudinal studies[3] . In our view, the evidence for a causal relationship between unemployment and mental health is fairly strong. Or, to state it more cautiously, there is very strong evidence for an association between unemployment and mental illness. In a later section, we discuss the increased probability of para-suicide and suicide due to unemployment.

Let us now turn to the relation between unemployment and physical health. As mentioned earlier, unemployment decreases income and, hence, leads to a change in diet and perhaps to insufficient or nutritionally inadequate food. This may lead the individual to become more susceptible to infections. Increased stress via unemployment may lead to asthma, cardiovascular diseases etc. A third avenue that leads from unemployment to illness is via increased consumption of tobacco, alcohol, and legal and illegal drugs. Evidence about ill health may be gathered either on a self-reporting basis (prospective or retrospective) or on a clinical basis (i.e. with medical personnel monitoring certain aspects of health, e.g. blood pressure). Analyses of cross-sectional (individual level) or longitudinal data have focussed upon the duration of unemployment and change of status (from employment to unemployment or unemployment to employment). Key studies in this area are by Kasl and Cobb (1970),Kasl, Gore and Cobb (1975), Ramsden and Smee (1981), Brenner and Mooney (1983), Cook, Cummins, Bartley and Shaper (1982), Stern (1983), Narendranathan, Nickell and Metcalf (1985), Brinkmann (1984) and John (1985).

An interesting prospective longitudinal study by Kasl and Cobb (1970), Kasl, Gore and Cobb (1975) used a small sample in Michigan just before and after (for two years) closure of plants. A control group of continuously employed people was also used. Nurses were sent out to record blood pressure and urine samples. The results suggested a significant effect of the anticipation of job loss but not of continued unemployment. This is an important study and deserves to be replicated in present circumstances with high overall levels of unemployment. A more recent study for Britain, the British Regional Heart Study, by Cook, Cummins, Bartley and Shaper (1982) using medical monitoring compared the health of the unemployed men with the employed men. Although they found that the unemployed had more physical illness than employed men, they could not resolve the issue of whether unemployment led to illness or illness to unemployment. This study is still collecting information on a longitudinal basis and should provide interesting results in the future. Brinkmann (1984) is a study of Munich, found that long term unemployment had a detrimental effect on health, particularly mental health. Brenner and Mooney (1983), in reviewing the literature, find that unemployment has "powerful effects" on health.

A particularly interesting study, from the point of view of econometric methodology, is a paper by Narendranathan, Nickell and Metcalf (1985). This is an important study because it is one of the few attempts at studying whether unemployment leads to illness or illness to unemployment. The study uses retrospective longitudinal data from Great Britain (1965-75), the National Training Survey, and collected information on spells of sickness and unemployment lasting at least three months. The authors set up a logit model for the probability that an individual will have one or more spells of sickness (unemployment) during the period 1965-75, given a vector of characteristics and the spells of sickness and unemployment before 1965 and spells of unemployment (sickness) over the period 1965-75. These results suggest that there is state dependence: the probability of spells of sickness (unemployment) over the period 1965-75 are positively affected by spells of sickness (unemployment) before 1965. However, spells of unemployment before 1965 do not affect the probability of sickness (1965-75). Interestingly, spells of unemployment over the period 1965-75 do increase the probability of a spell of sickness over the period 1965-75. In other words, this analysis does not really clear up the direction of causation. Another technical issue is that the two equations are estimated independently, although there should be some implicit restrictions across equations because the three states (employment, unemployment,sickness) are mutually exclusive in terms of the definitions - if you fall ill while unemployed you are defined as sick and therefore not unemployed. In further analyses, they divide the period 1965-75 into two year periods and study whether lagged uneployment affects the probability of current sickness. Their results are negative although they find that there is 'state dependence' in unemployment and in sickness (i.e.they are positively affected by lagged dependent variables).

There are two important qualifications to this study. Firstly, the data cover a period when the average unemployment rate was approximately 3%. This means that, although the sample is large, the effective sample is very small - this is especially true when they look at two year periods. Of a sample of 17,708 males who were in the labour force over the period 1965-75, 7.9% had experienced one spell of unemployment over three months and only 1.2% had experienced two or more spells while only 0.7% had suffered a sickness spell of three months in a year and 2.1% in two years or more. Thus, especially in the more detailed analyses, the numbers involved in being sick or unemployed in a two year period must have been almost negligible. The second qualification is that the data are based on recall treating sickness and unemployment as mutually exclusive events (as they are in the definition of unemployment for statistical purposes). In other words, there is really no substitute for a prospective longitudinal study with monitoring by medical personnel. The econometric methods employed by Narendranathan et al. need to be used on better data. Overall, this study, which uses powerful econometric methods, also provides no firm conclusions. However, we do know that the probability of sickness (unemployment) is higher if you were sick (unemployed) before. We also know that sickness and unemployment affects the people at the bottom of the social ladder.

To summarise, although it is difficult to state that there is decisive evidence in support of the view that unemployment causes mental and physical illness, there are several studies which suggest an association. Much work needs to be done on collecting better longitudinal (prospective) data sets with monitoring by medical personnel (rather than by self-reporting) and by the use of sophisticated econometric methods.

4. Mortality and Suicide

(a) Mortality

This is one of the most controversial issues in the field of social consequences of unemployment. This is a politically sensitive area, as Smith (1985) remarks:

> "In politics, corpses matter: a few deaths may change policy in a way that an ocean of misery will not" (p. 1492).

The best known work in this area is by Brenner (see Brenner and Mooney (1983) for a list of references) who, using aggregate time series data, has argued that increases in unemployment lead to an increase in the mortality rate. In an oft quoted paper Brenner (1979) argues:

> "(1) Recession causes severe economic loss and downward social mobility, which places many of those affected in a long-term state of vulnerability to subsequent recessions and periods of rapid economic growth.
>
> (2) Severe economic loss and downward mobility can initiate long-term processes of chronic illness, which may endure for several years, prior to mortality.
>
> (3) Therefore, in summary, severe economic loss and downward mobility initiate patterns of interaction over several years between chronic disease processes and vulnerability to economic stress." (p.569).

In a study for England and Wales using annual time-series data from 1936 to 1976 he estimates a regression model to explain mortality rates by (a) long term trend in economic growth (negative effect), (b) the unemployment rate (positive effect), (c) rapid economic growth (negative effect), and (d) government expenditure on public welfare (negative effect). He uses a second degree polynomial lag distribution (Almon lag) on unemployment rates (with lags from 0 to 10 periods). He finds that unemployment is a statistically significant variable. Brenner also finds corroborative evidence using cross-sectional data on a county basis for 1971. It is important to note that Brenner argues that a high level of unemployment increases the mortality rate not only for the unemployed but also for the employed people.

In some preliminary work we attempted to analyse annual time-series data (post-war) for France, Germany, Italy and the U.K. Using Ordinary Least Squares on a very short time series did not provide any support for the Brenner hypothesis. However, since the data we used were very limited we were unable to use long time lags. We then analysed a time series of annual data, 1967-1983, for the U.K. to explain mortality from circulatory diseases (I.C.D. Nos 390-458, for 1967-78 and I.C.D. Nos 390-459 for 1978-83). Since mortality rates are bounded by zero and one (i.e., we have a limited dependent variable) ordinary least squares estimation is inappropriate. As a first step we used ordinary least squares to estimate a logit equation

$$\text{Ln}(\text{CDR}/1-\text{CDR}) = Xb + e$$

where CDR is the crude death rate, X is a vector of independent variables, b is a vector of parameters and e is the error term. These results provide some support for the Brenner hypothesis, see Table 1.

Table 1

Mortality from Circulatory Diseases in the U.K.,1967-83

Dependent Variable is Ln(CDR/1-CDR)

Equation	1	2	3	4
Constant	-5.36 (28.8)	-5.56 (61.0)	-5.33 (29.4)	-5.42 (46.7)
Unemployment (-1)	0.007 (1.5)	0.009 (2.12)	0.007 (1.47)	0.008 (1.82)
GDP		$4.91(10^{-6})$ (5.32)		
GDP(-1)	$2.38(10^{-6})$ 1.08		$2.2(10^{-6})$ (1.03)	$3.3(10^{-6})$ (2.64)
Time	0.009 (1.26)		0.005 (0.6)	
$(Time)^2$	-0.001 (-4.50)	0.001 (4.7)	-0.001 (3.27)	-0.001 (4.12)
Dummy			0.02 (1.32)	0.02 (1.79)
R^2	0.75	0.74	0.77	0.78
DW	2.32	2.45	2.32	2.37

Notes 1. Parentheses contain absolute values.
2. Dummy = 0 1967-78 } to take account of change in definition of circulatory diseases
= 1 1979-83

Unlike Brenner who used trend GDP and residuals from trend, we estimated the equation with time and time squared to take account of long term factors. The lagged unemployment rate is significant at 5% level in equation 2 but not as strong in the other equations. Clearly further work is required.

Brenner's time series analysis was heavily criticised by Gravelle, Hutchinson and Stern (1981) mainly based on: (a) the definition of variables, (b) the robustness of the model when estimated for different time periods, and (c) multicollinearity. The overall argument is that time series data are inappropriate to analyse unemployment and mortality.

Brenner also used county level cross-sectional data to support this hypothesis. In an attempt to pursue this further, we used data on standardised mortality rates for males 15-64 years by social class and region published by the Office of Population Census Surveys (UK) for 1970-72.[4] We postulate

$$SMR_{CR} = a_0 + a_1 Z_{CR} + a_2 U_{CR} + ec_R$$

where SMR_{CR} is the standardised mortality rate for Class C in Region R (Males aged 15-64)

Z_{CR} is a vector of variables (like income, regional health facilities, consumption of tobacco, fats, environmental conditions etc.) for Class C in Region R

U_{CR} is the male unemployment rate for Class C in Region R

ec_R is a random error, assumed to be white noise.

As a first step we have proxied Z_{CR} by class dummies (0,1). We assume that class would be a good proxy for income, access to medical and health facilities, geographical location (in terms of housing) in the region, working conditions and consumption of mortality increasing commodities like tobacco and (animal) fats. There is some evidence to suggest that this may be a reasonable proxy but further work is clearly needed.

Unfortunately, we do not have published unemployment rates by social class so we were reduced to using the overall regional unemployment rates. To allow for class differences in regional unemployment rates, we introduced a multiplicative class dummy (class dummy x unemployment rate).

Our estimating equation was

$$SMR_{CR} = b_0 + b_1 U_R + b_{21} DC1 + b_{22} DC2 + b_{23} DC3 + b_{24} DC4 + b_{25} DC5$$
$$+ b_{31}(DC1.U_1) + b_{32}(DC2.U_R) + b_{33}(DC3.U_R)$$
$$+ b_{34}(DC4.U_R) + b_{35}(DC5.U_R) + ec_R$$

where $DC(i) = 1$ for Social Class I
$= 0$ otherwise
$i = 1,2,3,4,5$

(note that Social Class 3M is class 4 in our notation etc.)

In this paper we have decided to use data only for males as there are problems involved in how to categorise the social class of women as well as difficulties with measurements of female unemployment rates. The data on the Standardised Mortality Rates (SMRs) for the 15-64 group are averages for the period 1970-72 from the OPCS while the Unemployment rates are for May 1971 from the Employment Gazette. Social classes are

I	Professional etc. occupations	(Class Dummy 1)
II	Intermediate occupations	(Class Dummy 2)
III	Skilled occupations: Non-manual	(Class Dummy 3)
III	Skilled occupations: Manual	(Class Dummy 4)
IV	Partly skilled occupations	(Class Dummy 5)
V	Unskilled occupations	

As a first step we ran a simple regression of the form

$$SMR_{cR} = b_o + b_1 U_R + e_{cR}$$

for each class separately. The results are presented in Table 2.

These results are indicative of a positive association between standardised mortality rates and unemployment rates. There is a statistically significant relationship for all classes except the first - which accords with one's priors that the professional classes are more-or-less untouched by unemployment. The regression for the class V is best in terms of statistical significant of the unemployment coefficient and and in terms of explanatory power (R^2). The next stage was to estimate the regression pooling the data for all classes and all regions and introducing class dummies. These results are presented in Table 3.

Table 2

Dependent Variable is SMR (All causes)

Class	Constant	Male Unemployment Rate	R^2
I	65.00 (5.93)	2.69 (1.21)	0.06
II	60.40 (6.90)	4.88 (2.75)	0.45
III N	79.87 (4.55)	4.55 (3.34)	0.56
III M	64.50 (4.47)	8.98 (3.07)	0.51
IV	80.07 (4.7)	7.20 (2.08)	0.29
V	77.97 (4.67)	12.28 (3.62)	0.60
All Classes	68.6 (6.1)	6.92 (3.03)	0.51

Notes: 1. n = 9 (regions) for each regression
2. Parentheses contain t-statistics.

Table 3

Dependent Variable is SMR (all causes)

	Equation 1	Equation 2	Equation 3
Constant	77.97 (5.98)	104.37 (16.68)	71.30 (13.80)
Employment Rate	12.28 (4.65)	6.77 (6.04)	13.59 (11.45)
DC1	-12.97 (-0.70)	-58.89 (-12.93)	
DC2	-17.57 (-0.95)	-53.00 (-11.63)	
DC3	1.90 (0.10)	-35.11 (-7.70)	
DC4	-13.47 (-0.73)	-29.22 (-6.41)	
DC5	2.10 (0.11)	-22.22 (-4.88)	
DC1.UR	-9.59 (-2.57)		-12.14 (-14.05)
DC2.UR	-7.40 (-1.98)		-10.86 (-12.56)
DC3.UR	-7.72 (-2.07)		-7.35 (-8.51)
DC4.UR	-3.28 (-0.88)		-5.94 (-6.87)
DC5.UR	-5.07 (-1.35)		-4.67 (-5.40)
R^2	0.84	0.83	0.85
SSR	3638.44	4390.46	3842.41

Notes 1. n = 54
2. Parentheses contain t-statistics

These regressions show that when we normalise (control) for class, the standardised mortality rate is positively associated with unemployment. In all three equations the coefficient on the unemployment is positive and highly (statistically) significant. Equation 1 allows for class to have an effect on

SMRs both as an intercept shift (additive) as well as a slope shift; equation 2 allows for class to have an intercept shift, while equation 3 allows for only a slope shift. It is clear if we allow for intercept and slope dummies that multicollinearity increases the standard errors (decreases the t-statistics). Equations 2 and 3 show clearly that, as we go down the social class ladder, the mortality rate increases (all the dummies are negative and decrease in absolute value). This accords with all the other evidence, see OPCS (1978), but in our case this is even when we normalise for the unemployment effect on the mortality rate. When we tested the restricted equations 2 and 3 against equation 1 we could not reject the restrictions. Equation 3 with only slope dummies is slightly better than equation 2. Thus these results provide fairly strong grounds to support the view that unemployment increases the mortality rate.

We repeated this exercise using data on SMRs for ischaemic heart diseases (ICD 410-414) which are often linked to stress. The results are very similar to that for 'all causes'. Table 4 summarises these results.

As before, when we normalise for class, we find positive and significant effect of the male unemployment rate on male SMRs due to ischaemic heart disease. Again the 'best' equation is the one with slope class dummies (DC.UR). However, we find only Classes I and II are statistically significant. The overall fit (explanatory power) is fairly high for such a simple regression equation. Clearly in this case social class is not such a good proxy for other relevant causes of mortality due to ischaemic heart disease.

The results we have obtained suggest that there is a positive association for males (15-64 years) between unemployment and mortality, even when we normalise (control) for social class. We also find that there is a positive gradient, the standardised mortality rates increase as we go down the social ladder (from Class I to V) even when we normalise (control) for unemployment. In addition we find that the marginal response of SMRs to a change in unemployment rates is much greater as we go down the social ladder (all the slope dummies are negative and decrease in absolute value). Similar results were obtained for mortality due to ischaemic heart disease, although only Classes I and II are statistically different from Class V. In other words, our findings support the findings of Moser, Fox and Jones (1984) although using different techniques and aggregated data.

Table 4

Dependent Variable is SMR (Ischaemic Heart Disease)

	Equation 1	Equation 2	Equation 3
Constant	45.24 (2.51)	69.64 (8.38)	63.45 (8.77)
Unemployment Rate	13.94 (3.82)	8.85 (5.95)	10.35 (6.23)
DC1	25.40 (1.00)	-21.67 (-3.58)	
DC2	11.70 (0.46)	-18.33 (-3.03)	
DC3	44.53 (1.75)	6.78 (1.12)	
DC4	11.32 (0.44)	-2.56 (-0.42)	
DC5	16.35 (0.64)	-1.33 (-0.22)	
DC1.UR	-9.83 (-1.90)		-4.83 (-3.99)
DC2.UR	-6.27 (-1.22)		-3.97 (-3.28)
DC3.UR	-7.88 (-1.53)		0.89 (0.73)
DC4.UR	-2.90 (-0.56)		-0.67 (-0.55)
DC5.UR	-3.69 (-0.72)		-0.47 (-0.39)
$\bar{R}^2$	0.54	0.55	0.56
SSR	6941.95	7740.12	7538.76

Notes: 1. n = 54

2. Parentheses contain t-statistics

The limitations of our study are, firstly, the high level of aggregation, viz. the region. We have to disaggregate to lower levels of aggregation (e.g. travel to work areas) in future work. A second limitation, is the problem of disentangling the direction of causation. Some people argue that healthy people migrate from the high to the low unemployment regions hence an association between unemployment and mortality. Our view is that it is from unemployment to morbidity and then mortality. However, it could be argued that ill health leads to unemployment (the 'selection problem') and ill health leads to mortality and, hence,, mortality and unemployment are spuriously correlated. (Ill health being caused by some third factor.) However, in our study we have an unemployment rate for a geographical region and an average standardised mortality rate for the same region. It is difficult to believe that differences in unemployment rates in different regions can be explained by differential morbidity rates (due to some other reason). In other words, we do not find the explanation from morbidity to unemployment a reasonable explanation on this level of aggregation, even if it were true for an individual. It is possible to argue that there is some 'third factor' which leads to high unemployment and to high mortality rates. However, we feel that it is unlikely to provide an explanation where our results hold for each social class (i.e. controlling for class).

We repeated the above work using unemployment rates for 1969 and 1970 instead of 1971 and the results were broadly similar. Log-linear functions also gave similar results. Further work that we propose to do includes disaggregation, use of some measures of duration of unemployment, and some indexes of per capita income (or average wage rates), etc.

One of the main difficulties with aggregative data (whether time series or cross-section) is that it is difficult to disentangle cause and effect. One of the best ways of analysing the unemployment-mortality association is to use longitudinal data. In a series of important papers a group at the City University (U.K.) have been analysing a longitudinal example from the 1971 census, Moser, Fox and Jones (1984), Moser, Fox, Jones and Goldblatt (1986), Fox, Goldblatt and Jones (1985). Moser et al use standardised mortality rates (SMR) and find that the unemployed have significantly higher SMRs. To avoid the "selection problem", Moser et al postulate that if the unemployment was due to ill health (rather than the other way round) there would be greater mortality rates at the beginning of the sample period and then fall progressively. In fact they find that SMR (all causes) increase, although there is not a statistically significant difference. They also find that the mortality rates of the wives of the unemployed were significantly higher. (In all their work they controlled for social class). Thus overall, they find "direct or indirect effect of unemployment on mortality rates among those most directly affected by the experience", (Moser, Fox, Jones and Goldblatt (1986, p. 367)).

Although this work is very important, the authors note that the numbers in their sample are small and that the unemployment relates to one week of unemployment in 1971. Ideally, we need to know the subsequent labour market status over time as well. Another shortcoming of their work is that they have not used multivariate models (e.g. logit or probit).

Overall, we find that there is much evidence to suggest that unemployment has deterious effects on health and may lead to death. However, it is difficult to "prove" that unemployment kills. Much work needs to be done by medical scientists in studying the mechanisms by which unemployment leads to these undesirable effects.

(b) Suicide and Para-suicide

Although there is much evidence to support a link between unemployment and suicide (or para-suicide), the problems of causation are even more difficult to disentangle than for the unemployment-mortality association. (Note: para-suicide is defined as "non-fatal deliberate self-harm".) In addition to the selection problem that mentally ill people are unemployed and mentally ill people commit suicide/para-suicide, we have a serious "measurement" problem. Suicides are often covered up by the family to look like accidental or natural deaths and para-suicides may never get reported. Suicide which is associated with long term illness (mental or physical) is more common amongst older people and in men, while para-suicide is more common amongst women and in younger people.

In a classic work, Durkheim (1952/1897) distinguished three categories of suicide: egoistic suicide which is due to the lack of integration of the individual into society; altruistic suicide which results from an individuals taking his/her life because of some higher goals (e.g. religious/political sacrifice); and anomic suicide which results from the lack of regulation of the individual by society. Durkheim asserts,

> "It is a well-known fact that economic crises have an aggravating effect on the suicidal tendency". (p. 241).

The literature on unemployment and suicide has been excellently reviewed in Platt (1984), so this section is fairly brief. It is important to note that there are significant differences between the causes of suicide and of para-suicide: para-suicides are not failed suicides and suicides are usually intentional fatal self-harm. Platt points out that it is accepted that there are "important epidemiological differences between attempted suicide and completed suicide", (p. 94).

As discussed earlier (see Section 2.2) there are alternative methods of assessing the link between unemployment and suicide/para-suicide. One problem with empirical studies is that the actual number who commit suicide is fairly small, so that when we look at samples of the population, very few cases of suicide are included in the sample and hence inference is difficult. Most of the studies on suicide find that the suicide

rate is much higher amongst the unemployed compared to the employed. However, this is merely an association and may be due to the "selection problem". However, most studies (cross-sectional,individual longitudinal, and aggregate time series) come out with the same results: suicide rates are positively associated with unemployment (or job instability). However, the processes by which unemployment lead to suicidal behaviour is not well understood.

The evidence for an association between unemployment and para-suicide is even stronger. It has also been found that there is a positive association between duration of unemployment and para-suicide. However, in a majority of cases the immediate trigger mechanism is not unemployment but interpersonal conflict.

Overall, we could argue that there are several factors that lead to individuals committing suicide/para-suicide. Unemployment may be considered as a trigger mechanism (say a sudden job loss/redundancy). Prolonged unemployment may lead to depression, psychiatric disorders, and finally to suicide or para-suicide. Finally, unemployment may provide the "accommodating conditions" for an individual who has decided (for some other reasons) to commit actions that are self-harming. Employment, on the other hand, may provide restraining influences via friends, social pressure, a form and structure to every day life. To conclude this section, we need further longitudinal studies with interdisciplinary research to understand the processes by which unemployment may lead to suicide.

5. Unemployment and Crime[5]

As in similar issues discussed above, there is much evidence that links unemployment to crime but there are difficulties in inferring a causal relationshp. The (British) House of Lords (1982) Select Committee on Unemployment argued that

> "Nevertheless, anecdotal evidence supported, by some research, appears to confirm a causal link [between Unemployment and Crime]; and unemployment provides both motive and opportunity for crime". (p.59)

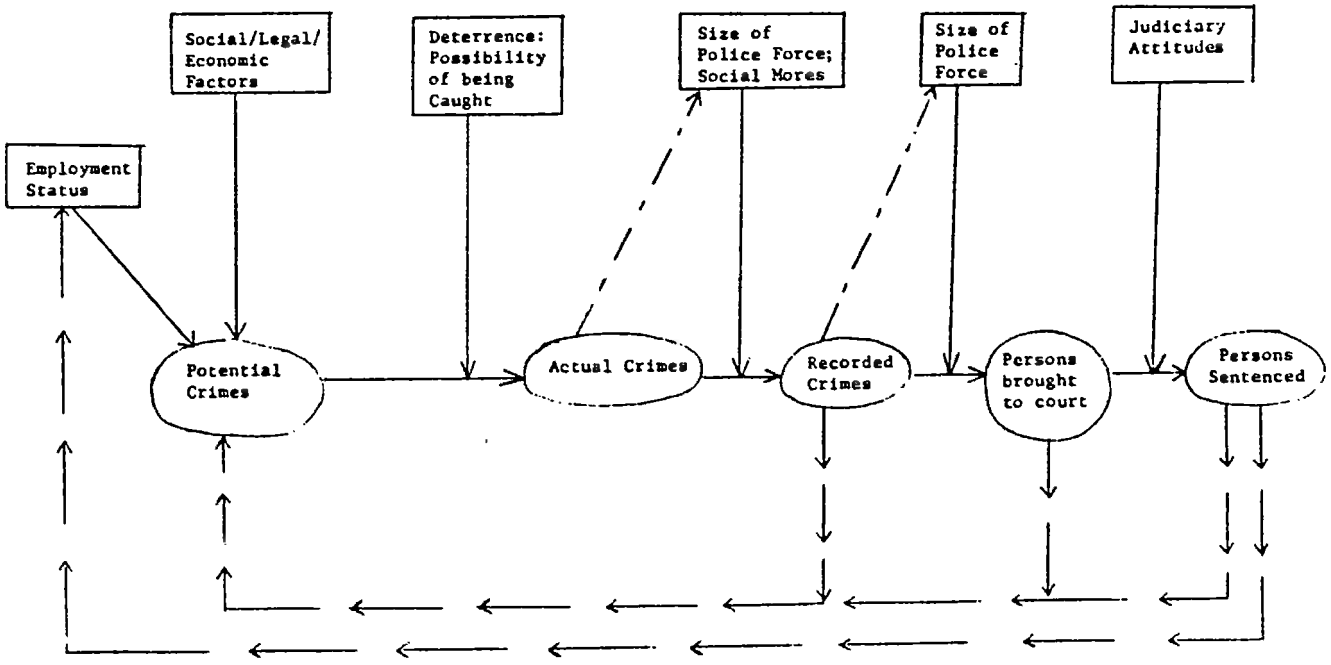
In addition to the usual difficulties of empirical research (see Section 4 above), one of the main problems in this subject is that the concept and measurement of crime is neither independent of time nor of social and political attitudes of society in general, and the police and judiciary in particular. For example, when abortion (under certain circumstances) was decriminalised in Britain, the numbers involved in this crime fell sudenly. As society's attitudes to "soft" drugs change over time, fewer people are arrested and prosecuted (or found guilty) of possessing (say) marijuana. In recent years the British Government has made strenuous efforts to prosecute

people (mainly the unemployed) for social security fraud, hence increasing measured crime under this heading.

The measurement of crimes is then affected by how many resources are devoted to the pursuit of 'criminals'. An increase in the police force, instructions to the existing police force to go out searching for particular crimes, or an increase in the efficiency of the police force, would lead to an increase in the number of "recorded" crimes. Similarly, a change in judicial attitudes (say via Governmental persuasion or hectoring) could lead to an increase in the number of people found guilty (given the numbers being prosecuted).

Diagram 3 provides a schematic presentation of the process of crime and possible influences at different stages.

Diagram 3



The oval shapes represent different aspects of crime and the rectangular boxes represent different influences on the different stages of crime. It is useful to conceptualise crime in the these stages which is a temporal sequence and the lag between each stage may itself vary with the influence contained

in the rectangular boxes. The schematic presentation begins with "potential crime": depending on various historical, social, institutional, legal, economic circumstances people may consider committing certain crimes. For example a youth standing near a Tobacconist's store may be considering the prospect of running in and grabbing a carton of cigarettes. However, this potential crime may not become an actual crime if he is "deterred" by the possibility of being caught and sentenced. If he sees a policeman round the corner he will (presumably) not commit a crime.[6] If he knows that his friends have been caught easily in the past and sentenced it might deter him. It is possible that all these may simply lead to a postponement of the crime until he has spent more time in planning the operation. The "deterrence" may work independently of the magnitude of the punishment: social opposition may be a punishment in itself.

Let us assume that the crimes have been committed: these are the "actual crimes".[7] The next step is whether this crime is reported (in our example does the Tobacconist report the crime to the police if only (say) one carton of cigarettes is stolen?) and if so whether the police record the crime. Immigrant groups in Britain often claim (with some justification) that when they report criminal damage to their property or assaults by white youths that the police do not record the offences. Women's groups often state that when a woman reports a case of rape, the police sometimes treat it as a false report. Many crimes go unreported and undetected: if there was a larger (or more efficient) police force more crimes might be recorded. Social mores affect the number of recorded crimes: possessing marijuana (although technically illegal) is not normally investigated by the police and hence not a recorded crime. Again there can be a varying time-lag between the "actual crime" being committed and the "recorded crime". If there was a growth in "actual crimes" it may affect "social mores" (e.g. a growth of marijuana smoking may lead to society no longer treating it as a crime) or lead to pressures on the police force to expand or to alter policing activities. Similarly, the number of "recorded crimes" may lead to political pressure to change policing or the size of the police force. (These are example of "simultaneity" in relationships,. see Carr-Hill and Stern (1979) for a discussion of the econometric problems.) Once the crime is recorded police have to "detect" the criminals and bring them to court. Depending on the type of the crime (e.g. some crimes are easier to solve than others), the size and efficiency of the police force will affect the number of persons brought to court. Again there is a varying time lag between the recording of the crime and the persons being brought before the court. The time lag depends not only on the efficency of the police but also the speed with which courts deal with cases and the back-log of cases waiting to be heard. This lag may vary with changes in societal values, judicial practices, etc. Finally, of those people brought to court a proportion are found guilty and sentenced. Some time elapses between being brought to court and a decision being reached on innocence or guilt, and finally before a sentence is passed. Again, the attitudes of the judiciary and of the jury (which would be affected by social mores) would influence the number of persons found guilty and sentenced. Every-so-often

there are newspaper campaigns against hooliganism, muggings, etc. which sometimes lead Government spokespersons to preach about the evils of such crimes and lead to campaigns for "short-sharp shocks".

To recapitulate, the move from "potential crimes" to "persons sentenced" involves several distinct stages, each of them involving a time lag. The move from one stage to the next is affected by various factors. Decisions or choices at the end of the sequence may influence earlier stages of this process: in other words, there is a feedback as represented by the arrows at the bottom of Diagram 3. Finally, what happens at some of these stages affects some of the "independent variables" like size of the police force: the problem of "simultaneity".

Since "potential" and "actual" crimes are inherently unmeasurable, empirical studies have concentrated on explaining "recorded crimes" or "persons sentenced" or "persons found guilty". It is worth stressing that criminal statistics must be handled with care since they are the resultant of various factors outlined above. A second point worth stressing is that there are time-lags (which may be variable) in the process so that (for example) the number of persons sentenced in period t is determined by factors in period t and t-1, t-2,...,t-n.

This discussion should be kept in mind when we turn to some of the explanations discussed below. Following Carr-Hill and Stern (1979) we summarise these as (a) Economic theories and (b) Socio-Criminology theories.

(a) Economic Theories

These begin with an atomistic individual maximising a utility function subject to some constraints. The individual is supposed to evaluate the (expected) costs and benefits of crime before engaging in such activity as an alternative to legal income earning activity. In one such model an individual allocates his time optimally between legal (paid work) and illegal activity (crime). Given this framework, unemployment is voluntary and some people use this "leisure" time to engage in crime. This dichotomous choice seems to be a poor view of how people behave. There is evidence to suggest that even the employed commit crimes. Another version of this approach is to evaluate the costs and benefits of crime, ignoring the time allocation decision. A third version, is to argue that an unemployed person (assume he is involuntarily unemployed) has a low opportunity cost of time and hence is likely to engage in crime. Thus in some of these versions we would expect a link between unemployment and crime. In the first above-mentioned version, however, unemployment would be an endogenous variable and cannot be used to explain crime. In the third version, we could use unemployment to explain crime.

Some people would argue that there are certain individuals with "criminal characteristics". If these characteristics were observable (e.g. past records of crime or some other proxy

variables) then employers would in their screening process not employ them. However, as aggregate demand rises employers are forced to be less choosy and hence fewer of the criminal types are unemployed to engage in crime. This view may be far-fetched but it does give a possible link between unemployment and crime.

(b) Socio-Criminology Theories

Unlike economic theories of crime, these theories set individual behaviour in a social context (in economic language there are externalities in human behaviour: an individual's actions are dependent on his peer group, a group he aspires to, etc.). For Durkheim (1968) a sudden change in economic circumstances leads to deviant behaviour. An index of sudden change may be the move from employment to unemployment. This is often measured by the unemployment stock although a more appropriate measure may be the inflow into the unemployment stock. Some sociologists would argue that an unemployed person feels rejected by society and since he is unable to achieve goals that society expects of him, he engages in criminal activity. A feeling of frustration builds up and the unemployed vent their anger on society by criminal activity. Amongst the unemployed a sub-culture develops where certain activities are considered signs of "macho" behaviour. To "belong", there is group pressure to conform to the standards of this sub-culture. Hence, the gang activities of hooliganism, Paki-bashing, etc. There is no individual maximising behaviour: the individual's actions are dependent on the group. One version of this group of theories is sometimes referred to as "idle-hands" lead to crime.

Even in this approach we would expect the actual crimes committed to be affected by the probability of being caught and the severity of the sentence if caught. Even within groups considering crime there may be a discussion about the possibility of being caught.

There is much evidence based on cross-section (grouped) and aggregate time series that finds a positive association between unemployment and crime. However, the methodological problems mentioned earlier plague this issue in the same way. The evidence is reviewed in Hakim (1982), Tarling (1982) and Braithwaite (1979). It is again very difficult to assert with complete confidence that unemployment causes crime. We know, for instance, even the employed commit crimes and that many people had criminal records before joining the labour market (i.e. before leaving school). There are presumably several causes of criminal behaviour, with unemployment being one. In an interesting grouped cross-sectional study Carr-Hill and Stern (1979) set up a simultaneous equations econometric model and find that the link between unemployment and crime is not proven. However, most time-series studies suggest a positive link, see Brenner (1976), Junankar (1984).

In an interesting study Plant, Peck and Samuel (1985), followed school leavers from 1979 to 1983 and found a much higher incidence of drug use amongst the unemployed compared to those in employment or higher education. This is especially

interesting since in 1979 there was no significant difference in drug use between the two groups.

There is some evidence to suggest that unemployment also leads to an increase in tensions within the family which lead to child abuse, separation and divorce. Hakim (1982) argues that the husband's unemployment to be a contributory factor to marital breakdown and divorce. It is argued by some that the husband's unemployment often plays the role of a catalyst in the marital breakdown. It has also been argued, see House of Lords (1982), that unemployment leads to social distress and civil riots in cities. There is also some evidence to suggest that high unemployment leads to a worsening of race-relations, with unemployment amongst ethnic minorities rising faster than average. Some people suggest that the growth of support for racist parties increases amongst unemployed white people (e.g. the National Front in Britain and France).

6. Conclusions

In this paper we have reviewed some of the social costs of unemployment. Although we discussed some of the methodological problems, we find that there is very strong evidence to suggest that unemployment has several deleterious consequences. Anecdotal and statistical evidence from various sources cumulates to suggest that unemployment leads to increased morbidity, mortality, suicide and para-suicide, civil unrest, family stress and tensions, and possibly increased racist activity. For most of these issues it is extremely difficult to prove a causal relationship. However, the cumulative evidence is very impressive. Clearly much more research is required, especially using individual longitudinal (panel) data, to strengthen these conclusions.

Almost all the research suggests that unemployment, in a society that values people by their market power, is a deeply distressing state for many people. We also know that unemployment is a state which afflicts mainly the under-privileged: the poor, the unskilled, less well educated and ethnic minorities. Long-term unemployment is now such a serious problem in the European Community that we are just beginning to see some of the consequences. It is hard to believe that a society can withstand the strain of permanently high levels of unemployment as we have today. We believe that Governments must declare a war on unemployment: unemployment does not seem to disappear with falling rates of inflation. The economic and social costs of unemployment are too high to ignore.

[1] By employment we mean paid work; we therefore exclude (for example) the work done by housewives, do-it-yourself enthusiasts in the home, etc.

[2] See Bakke (1940), Jahoda, Lazarfeld & Zeisel (1933), Pilgrim Trust (1938), and more recently Marsden and Duff (1975).

[3] See for example,Brinkmann for evidence from Germany in John, Schwefel & Zollner (1983).

[4] This discussion is based on Junankar (1986)

[5] Clearly the laws of the land at that time determine what is 'criminal'.

[6] To avoid cumbersome language we refer to youths as "he" although females also commit crimes. Usually, the type of crimes committed by females are fewer and of a different kind.

[7] These are obviously affected by the laws that exist at that time. A "perfect crime" is not even discovered and hence never recorded.

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