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DIFFERENTIAL PATTERNS OF

UNEMPLOYMENT IN SWEDEN

by

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in Sweden

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Abstract

Differential Patterns of Unemployment

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The open unemployment rate in Sweden has averaged about two percent during the 1970's. It is generally believed that an active labor market policy is responsible for this achievement. However, youth unemployment relative to adult has increased sharply in Sweden more so than in the United States. In this paper we claim that the change in labor market policy from an emphasis on geographical and occupational mobility to an emphasis on job security which took place around 1970 increased the fixed cost of workers to firms, to the detriment of the young, the inexperienced and the very old. The empirical analysis, which utilizes time series and micro data, indicates that even in the earliest period of policy shift significant changes occured in the structure, distribution and determinants of unemployment.

I. Introduction

During the 1970s, Sweden experienced an official unemployment rate of around two percent compared to a seven percent U.S. rate.1 Measures to reduce unemployment in Sweden encompass a wide array of "active labor market policies" which are innovative, adaptable and extensive in coverage.2 Sweden's experience with these programs provides U.S. policy makers the chance to evaluate their impact before considering them for U.S. labor markets.

Beginning in the 1970s, the policy of the Swedish government shifted away from programs designed to promote occupational and geographic mobility towards measures that preserved existing jobs. Job security and avoidance of layoffs became the focus of labor market policy, legislative enactment and industrial policy. This paper tests the hypothesis that because of these changes, the structure, distribution and determinants of unemployment in Sweden were altered. We claim that programs which emphasize job security raise the fixed cost of workers to firms, to the detriment of the young, the inexperienced,and the very old.

This paper reviews briefly Swedish labor market programs and discusses the implications of policy changes for the labor market and for different population groups. An examination of aggregate data reveals important alterations in the behavior of the Swedish labor market. We then test for changes in the structure and determinants of unemployment using a micro data set. The study focuses on life cycle unemployment differentials during the

earliest period of policy changes, from 1967 to 1974. Despite the low aggregate unemployment rate, youth unemployment relative to adult has increased more in Sweden than in the United States.3 The empirical analysis indicates that unemployment incidence is responsible for both high youth unemployment relative to adult unemployment and for increasing youth unemployment over time. A turnover model is introduced to explain the life cycle distribution of unemployment at a point in time. Finally we test whether there have been changes over time in the determinants of unemployment or in the characteristics of the Swedish labor force which explain increasing youth unemployment. Concluding remarks are presented.

II.   Review of Swedish Labor Market Policy

During the late 1940s and early 1950s the concept of an active labor market policy was developed in Sweden by economists at the Confederation of Trade Unions. The "Rehn-Meidner" model, which still governs Swedish labor market policy, proposes a restrictive general demand policy to combate inflation, and a policy of wage solidarity for the unions. Wage solidarity means that workers performing similar tasks should receive equal wages across different firms, industries and regions, regardless of the firms' varying ability to pay. Because these policies could lead to unemployment, they are complemented by selective labor market policy to help those regions and demographic groups subject to high unemployment risk.

In 1948, expenditures on labor market policy represented roughly one percent of total government expenditures; by 1977=78 this figure had reached nine percent.4 The number of Swedes participating in these programs grew from an annual average of 5900 in 1959 to 153,600 in 1978.5 The earliest programs of active labor market policy included relief work and rehabilitation for hard to place labor. The 1960s saw the development of manpower training programs and subsidies for geographic and occupational mobility. In the second half of the 1960s, popular and political resistance toward mobility rose sharply, especially in the north of Sweden.6 The government responded by developing alternative policies, emphasizing regional equality and job security.

Labor market policy entered a new phase in which greater emphasis was placed on preserving existing jobs rather than on programs directed toward unemployed individuals. Stockpiling support and orders to industry increased. Subsidies were provided to firms which increased their inventories during recession conditional upon an unchanged employment level (1972 and 1975=77), to local governments which purchased Swedish industrial products earlier than intended (1971=72 and 1976=78) and to firms which provided in=plant training programs rather than lay off workers.7 Between 1974 and 1978 the percent of individuals who received in=plant training to avoid layoff grew from .02 percent to 19 percent of all persons receiving labor market training. The existing work force also has been protected by temporary subsidies (1977) provided to firms which postponed layoffs. Such subsidies were given for older workers in the

clothing and textile industries and for employees of companies vital to a local labor market. Although these measures are counter recessionary policies, the proportion of expenditures spent on such programs has increased over time. Johannesson estimates that expenditures directed to firms increased from 17 percent of total expenditures designed to affect labor demand in 1972/73 to 37 percent in 1976/77.8

Legislative changes during the 1970s reinforced the existing relationship between worker and firm. In 1971 parliament increased the employment security of older persons. This legislation stipulated that individuals who had been employed for at least 24 months during the latest three years receive a notice period of two months if the worker was 45 years old, four months if the worker was 50 years old and six months if the worker was 55 years old and older. Business practice before this law varied between different sectors of the labor market according to collective bargaining agreements which gave longer periods of notice to white collar workers than to blue collar workers. For the latter there was a mutual recommendation by the Employers Confederation (SAF) and the Confederation of Trade Unions (LO) of fourteen days of notice. By contrast some state government employees could be dismissed only after a court trial convicting them of a crime of office (ambetsbrott).

The 1971 law was extended by the 1974 Security of Employment Act, whose basic tenet is that employment is to last "until further notice."9 The hiring of workers for a fixed period or for

a particular task must be justified by the special nature of the job, for example, work on a specific project or seasonal employment in agriculture. Reasonable grounds for dismissal include cut-backs and organizational changes as well as gross misconduct by the employee. Illness and reduced work capacity are not sufficient grounds for dismissal unless the employee is incapable of work of any significance. In practice, illness and reduced work capacity are almost never suffficient grounds. The firm has to wait until the person becomes pensioned for disability. The 1974 act clearly increases the costs of layoffs to firms and does not merely legitimize existing business practices. It is the employer's responsibility to find an alternative task if the firm and the worker appear mismatched; to try transfers and natural attrition before layoffs arising from production cutbacks; and to find less exacting work for older employees. Before an employer can dismiss, layoff or hire new workers, the appropriate local union organization must be notified. The union as well as the notified worker can then demand consultations with the employer to discuss alternative solutions. Notice of layoff can be disputed by the worker before a court of law.

Two particular aspects of the 1974 act favor current employees and older workers. First, an employee laid off for lack of work is entitled to first option on new jobs with the former employer for a year period after the job terminates. Second, all workers receive a one month paid notice but if job tenure is at least six months, the notice period rises sharply

with age. The period of notice is two months if the employee is
over 25 years and increases by one month for every additional
five years of age, until a maximum of six months is reached for
workers over 45 years. Recognizing that a policy aimed at job
maintenance will have deleterious effects on new labor force
participants, the National Labor Market Board (AMS) has offered
wage subsidies to private and public sector employers who provide
temporary jobs for unemployed youths, or hire women in
traditionally male occupations, (1974 and on) and training
subsidies to firms which employ and train women and young people
(1972-74).

Another important development which reinforces job security
is the industrial policy of the Ministry of Industry. During the
1970's, state assistance was provided to industries, especially
the steel, shipbuilding , textile and forest industries.
Measures included company takeovers, loans and subsidies, state
guarantees for loans and special government orders. From mid
1976 to the end of 1978, total expenditures to these industries
are estimated at 19,500 million Skr, while credit guarantees
provided another 20,000 million Skr.10 In comparison,
expenditures on labor market programs reached 23,000 million Skr
during this period.

III. Implications

The unemployment rate for any demographic group depends upon three factors: (1) the probability of separating from a job and entering unemployment; (2) the probability of finding a job, which is inversely related to duration; and (3) the frequency of inter labor force mobility. Each of these components is affected by policy changes that emphasize job security.

First, a reduction in layoffs will directly reduce the probability of a job separation, and therefore will decrease the probability of unemployment for all demographic groups. Extension of the layoff notice period permits workers to search while still employed, thereby reducing the probability of unemployment given a separation. Because the notice period lengthens with age, this conditional probability will decline over the life cycle. The net impact of these two changes should be to increase the probability of unemployment for the young relative to the old.

Second, policy emphasis on job security and the avoidance of layoffs at the firm level may cause firms to look upon their workers as long term investments, that is, once hired, hired for life. Therefore companies would prefer to hire individuals that traditionally are viewed as productive and stable.11 Given the high fixed costs now associated with each worker, firms will prefer full time employees and longer hours per week, including overtime. Trial hiring will be reduced and firms are expected to raise their hiring standards. The probability of finding a job will be reduced both because firms screen prospective workers

more carefully, and because reduced mobility results in fewer job vacancies, thereby reducing matching possibilities. Unemployment duration will lengthen for all groups. However the young, inexperienced and unproven, and the very old, with limited time horizons, should be most adversely affected. Two other differential aging effects on duration may occur. The 1974 Security of Employment Act legislates temporary layoffs by giving hiring priority to previous employees. Since rehire is tenure dependent, unemployment duration may increase more for older workers who prefer to wait for job reopenings rather than actively search. Offsetting this tendency is the extended notice period by age, which allows some of the search period to occur while still employed. Lengthening unemployment duration may also affect separation probabilities. Faced with a longer expected unemployed search, potential and actual job changers will search longer on the job, hence quit rates and quit unemployment should decline. Thus, the incidence of unemployment associated with job turnover declines because layoff and quit rates are lower.

It is interesting to note that in this same period when policy changes imply fewer unemployed who experience longer periods of unemployment, important alterations were made in the unemployment benefit system. In 1968 insured employed over 60 years of age were allowed to receive unemployment benefits until retirement rather than a maximum of 30 weeks which prevailed earlier. More significant changes occured in 1974: the age limit for receiving benefits until retirement was lowered to 55 years; the duration of benefits was increased from 30 to 60

weeks for those younger than 55 years; and a new benefit system
(KAS), primarily for labor force entrants, was added. As search
costs decline, unemployment duration will increase for all
groups, but more so for older workers, who benefited most from
the changes.

Third, a policy aimed at preserving existing jobs should be
particularly detrimental to new labor force participants. New
entrants will experience increasing unemployment duration because
firms will hesitate to assume the high fixed costs of hiring
individuals whose productivity and ability are unknown. The
share of unemployment borne by recent labor force participants
will increase if the probability of unemployment decreases
relatively more for the experienced and/or the duration of
unemployment increases more for the inexperienced.

The 1974 Security of Employment Act allows temporary
employment, that is, for a fixed period or for a particular task.
We speculate that policy emphasis on employment security has
created employer incentives to hire part period workers because
these hirings can be defined more readily as temporary. In
addition, leaves of absence for child care and education have
grown rapidly since the early 1970s creating a need for temporary
workers. This implies an increasing probability of job
separation for younger workers who are most likely to accept
these types of employment. The growing importance of a part
period market, in conjunction with institutional changes that
protect existing jobs, may create an increasing segment of the

labor force characterized by short job tenure, few opportunities for firm and occupational specific skills, and high levels of inter labor force mobility. In short, the Swedish labor market may become "Japanized", that is, segmented into very long tenured and temporary worker groups.

IV.   Changes in the Swedish Labor Market Over Time

Unemployment rates for the period 1963-1981 broken down by age and sex appear in appendix A, table 1. The patterns observed are familiar, although the levels appear low by U.S. comparisons. In 1981, the aggregate unemployment rate for men was only 2.4 percent. Nevertheless youth unemployment was high: young men 16-19 years old reported a rate of 8.2 percent, and young women (16-19) had a rate of 10.5 percent. Over the period 1963-1981, unemployment rates of youths 16-19 relative to men 35-44 ranged from a low of 3.62 to a high of 7.78 for males and from 4.46 to 11.83 for females. Female rates have been on average 35 percent higher than male rates, ranging from a reverse sex differential of .96 to a high of 2.25.

Some demographic groups exhibit trends in their unemployment rates. Briefly, it appears that rates of youths 16-19 and 20-24 years old have risen. Adult rates, especially those for the age groups 35 and older, reveal no, or a slight downward, trend.

To estimate the size and direction of the time trend, relative and absolute group unemployment rates were regressed on time using a generalized least squares model that corrected for

first order autoccrrelation in the residuals. The iterative
process was limited to a two-stage procedure. The unemployment
rate of males 35-44 years old was used to control for cyclical
variation over time. The coefficients on the trend term for
relative unemployment rates appear in panel A of table 1, column
1. The results show that unemployment rates of youths 16-19 and
20-24 relative to males 35-44 rose; the increase was largest for
teenagers. In contrast, relative rates for groups 25 years and
older either fell or remained roughly the same. Panel B, column
1, indicates that the absclute unemployment rate of youths 16-19
and 20-24 rose during the period. Again, clder labor force
participants frequently exhibited decreases in absolute rates.
One exception was women aged 55-64.

The increase in youth rates and decrease in female rates for
groups 25 and older occurred during a period of decreasing youth
cohort size and sharply increasing female labor force
participation. If relative wages are not adjustable (for
example, because of wage solidarity) then an increase (decrease)
in a group's relative supply should cause an increase (decrease)
in its unemployment rate. Thus inclusion of each group's
relative labor force share in the regressions should increase the
time trend coefficient for youths and decrease it for women,
other things constant. Column 2 of table 1 shows the estimated
coefficient on the time trend when the group's relative labor
force share is included in the regressions. When the dependent
variable is the relative unemployment rate, absolutely smaller
coefficients for females over 25 years are observed. When the

dependent variable is the absolute unemployment rate, the coefficient on time become larger or more significant for teenagers, but little change is observed for the other groups. The major findings appear unaffected: (1) youth unemployment rates, both absolute and relative, have increased over time; (2) rates for groups 25 years and older have increased slightly or actually declined over time.

We examine next various underlying components of unemployment. Layoff, quit and new hire rates are available for workers in mining and manufacturing. As expected, monthly layoff rates dropped sharply over the business trough, from an average of 0.36 in 1971 to 0.12 in 1976, and quit rates fell during non-recession years from 2.92 in 1970 to 1.88 in 1980 (table 2, col. 1-2). New hires also declined sharply in these same years, consistent with the hypothesis that firms were reluctant to take on new workers given higher fixed costs (col. 3).

Björklund decomposed the unemployment rate for different demographic groups into frequency of spells and completed spells of unemployment duration using gross flow data from the monthly Labor Force Surveys (AKU).12 He finds that duration increased and the frequency of spells decreased for all age and sex groups between 1965 and 1980. Comparing recession years 1966 and 1976 or peak years 1968 and 1974, we note that duration increased relatively more for the young and the old as predicted (col. 4). However in the late 1970s, duration for the young stabilized.

Table 1

TRENDS IN GROUP UNEMPLOYMENT RATES
RELATIVE TO MALES 35-44, 1963-1981

Panel A

Group	(1)	(2)			(1)	(2)
Men 16-19	.152*	.085*	Women	16-19	.132	.135*
20-24	.044	.051*		20-24	.025	.045
25-34	.005	-.000		25-34	-.069	-.054*
35-44	–	–		35-44	-.094	-.014
45-54	-.040*	.008*		45-54	-.041*	.011
55-64	-.052	.023*		55-64	.019	.012
65-74	-.057*	-.013		65-74	-.098	-.033

TRENDS IN GROUP UNEMPLOYMENT RATES, 1963-1981

Panel B

Group	(1)	(2)			(1)	(2)
Men 16-19	.192*	.274*	Women	16-19	.232*	.366*
20-24	.082*	.075*		20-24	.090*	.063*
25-34	.015	.018		25-34	-.010	-.054
35-44	–	–		35-44	-.023*	-.024*
45-54	-.015*	-.013*		45-54	-.017*	-.015*
55-64	-.011	.067*		55-64	.046*	.053*
65-74	-.266*	-.247		65-74	-.060	-.123

* Coefficient significantly different from zero at a .05 level of significance, one tail test.

Col. (1) coefficient of the time trend term from the regression $(Ug/U_{m35-44}) =$

$$\beta_0 + \beta_1 U_{m35-44} + \beta_2 t$$

Col (2) coefficient of the time trend term from the regression $(Ug/U_{m35-44}) =$

$$\beta_0 + \beta_1 U_{m35-44} + \beta_2 t + \beta_3 (Lg/L)$$

where

Ug = group unemployment rate

t = time trend, equals 1 in 1963

Lg/L = proportion of the labor force belonging to group g.

Table 2

TRENDS OVER TIME IN THE SWEDISH LABOR MARKET

Year	Mining and Manufacturing[a]			Completed[b] Duration per Spell			Percent of the[c] Unemployed 16-24 years old	Percent of Un-[d] employment Due to Job Undertaken Completed	Recession Year 1=recession year
	Layoff Rate	Quit Rate	New Hire Rate	16-24	25-54	55-64			
	(1)	(2)	(3)	(4)			(5)	(6)	(7)
1966	–	–	–	3.7	5.9	10.8	34.2	–	0
1967	–	–	–	7.1	9.1	7.5	35.1	–	1
1968	–	–	–	5.9	11.2	14.8	33.6	–	1
1969	.24	2.94	3.78	4.8	7.0	30.5	32.9	–	0
1970	.24	2.92	3.47	5.5	6.5	13.4	24.2	–	0
1971	.36	2.09	2.29	8.5	12.3	21.1	34.9	–	1
1972	.30	1.86	2.46	11.3	16.8	35.6	35.6	–	1
1973	.22	1.94	2.67	10.6	16.5	24.6	35.4	–	0
1974	.16	2.20	2.97	8.1	9.7	26.1	37.2	–	0
1975	.15	1.95	2.19	8.7	10.9	13.7	38.6	.26	0
1976	.12	1.80	1.87	10.2	11.8	30.0	39.1	.27	1
1977	.15	1.51	1.30	9.7	15.3	20.0	40.5	.31	1
1978	.16	1.29	1.44	8.9	13.7	23.5	40.3	.31	1
1979	.17	1.72	2.16	9.9	12.2	32.5	39.5	.34	0
1980	.11	1.88	2.12	9.8	12.2	35.0	42.0	.35	0

[a]Monthly rates per 100 workers, Swedish mining and manufacturing. Unpublished data from National Statistical Board of Sweden (SCB) were provided by Bertil Holmlund.

[b]A. Bjorklund, Studies in the Dynamics of Unemployment, 2:30.

[c]Labor Force Surveys (AKU), annual averages, unemployed youths 16-24 years of age as percent of all unemployed 16-74 years of age.

[d]Labor Force Surveys (AKU), annual averages.

A policy aimed at maintaining existing jobs should affect negatively new labor force participants. Trends over time are consistent with that expectation. In 1966, thirty-four percent of the unemployed were 16-24 years old; by 1980 this figure had risen to 42 percent (col. 5). The young account for an increasing share of total unemployment, although they represent a decreasing share of the population.13

Some evidence is available as to the growing importance of the part period market in Sweden. Temporary jobs, which are exempt from the employment security laws, represent an increasing proportion of AMS vacancy listings. The AMS reports that between 25 and 50 percent of all vacancies are jobs with limited duration.14 From 1975 and on, the reason for unemployment is available in Sweden. Unemployment due to "job undertaken completed" increased absolutely between 1975 and 1980, and contributed to almost 35 percent of total unemployment in 1980 (col. 6). Bjorklund has shown that the increase is due to the frequency component, indicating that those demographic groups holding temporary jobs experience higher separation, and thus, higher unemployment probabilities.15

V. The Structure of Unemployment: 1967 - 1973

The Level of Living Investigation (LLI), conducted by the Swedish Institute for Social Research, was used to examine the structure of unemployment in 1967 and 1973, the earliest period in which labor market policy began to change.16 The first survey

in 1968 contained 6616 individuals ranging in age from 14 to 75.
Almost 90 percent of the sample was reinterviewed in 1974 and
roughly 800 new respondents were added to reflect changes in the
Swedish population. Information on labor force status, personal
characteristics and job related data is available for each survey
week. In addition, retrospective information is provided on the
individual's activities for the calendar year preceeding the
interview. Thus, it is possible to calculate the number of weeks
each individual spent employed, unemployed and out of the labor
force in a fifty-two week period.

An individual's unemployment rate during a period is defined
as the ratio of weeks unemployed to weeks in the labor force:

$$(1) \qquad u_i = \frac{W_{ui}}{W_{li}}$$

A simple average of the individual unemployment rates measures
the group rate if each person spends the same number of weeks in
the labor force. Because labor force participation does vary, a
weighted average is necessary, the weight being the number of
weeks spent in the labor force, W_{li}, by the ith individual. The
group rate is defined as:

$$(2) \quad \bar{u} = \cfrac{\displaystyle\sum_i W_{1i} \; \frac{W_{ui}}{W_{1i}}}{\displaystyle\sum_i W_{1i}} = \frac{\displaystyle\sum_i W_{ui}}{\displaystyle\sum_i W_{1i}} = \frac{N}{L} \cdot \bar{W}_u \cdot \frac{1}{\bar{W}_1} \; .$$

N is the number of persons unemployed some time during the period, and L is the number in the labor force some time during the period. N/L is the incidence of unemployment or the probability of ever experiencing unemployment during the period. $\bar{W}_u$ equals the average fraction of the period spent in unemployment by the unemployed; $\bar{W}_1$ is the average fraction of the time period spent in the labor force by participants. The reciprocal of $\bar{W}_1$ serves as an index of non-participation. Information about the structure of unemployment is essential to assess which component is primarily responsbile for observed group differentials.

Table 3 provides decompositions of unemployment for 1967 and for 1973 by age, sex and education groups. In this study, the sample is restricted to respondents who are 16 to 64 years old at the beginning of each period being examined. Full time students, self employed workers and farmers always are excluded. We examine first the structure of unemployment at a point in time. Overall, unemployment rates exhibit a U shaped pattern with respect to age.17 The decline in rates over the life cycle occurs primarily because incidence decreases; duration actually rises sharply for older workers. Statistics from the monthly Labor Force Surveys show higher unemployment rates for women than for men. In the LLI, however, higher female rates are observed only

in 1973.18 In general, women spend more time in unemployment and
less time in market activities than men. Schooling reduces
unemployment for both men and women.   Rates fall by over 60
percent in 1967 for respondents with a secondary or university
education.19 This decrease is primarily explained by lower
incidence in 1967, and by shorter duration in 1973.

The period 1967=68 marks a recession in Sweden, while 1973
reflects the upswing of the business cycle.   Bjorklund
demonstrates that increases in Swedish unemployment rates during
business downturns are due primarily to increasing duration of
unemployment; there is very little pattern between the inflow
component of unemployment and the business cycle.20 Therefore,
the expected effect of the business cycle in 1973 is to reduce
the unemployment rate and duration. Table 3 reveals important
modifications in the structure of unemployment between 1967 and
1973, particularly over the life cycle. Despite the business
cycle upswing, aggregate unemployment rates for men increased
slightly during this period, reflecting longer duration, but a
reduced risk of becoming unemployed. This is consistent with the
implications of labor market policy and provides additional
evidence that the structure of unemployment was altered. Greater
shifts occured within age groups. Unemployment rates for young
men increased by 79 percent, due to a 42 percent increase in
incidence, a 26 percent lengthening in duration and an eleven
percent increase in non=participation. In contrast, rates for
male workers 25 years and older fell or remained constant,
because of substantial declines in incidence that offset the

Table 3

DECOMPOSITION OF THE UNEMPLOYMENT RATE
MEN, LLI 1967 AND 1973

	U	$\frac{N}{L}$	$\bar{W}_u$	$\frac{1}{\bar{W}_1}$
		1967		
All	.020	$\overline{.072}$	.265	1.04
n	(1900)			
By Age				
16-24	.026	.113	.200	1.13
n	(363)			
25-44	.016	.061	.249	1.02
n	(816)			
45-64	.022	.062	.342	1.02
n	(721)			
By Educ.				
Primary	.022	.082	.264	1.03
n	(1453)			
Secondary[a]	.010	.036	.274	1.06
n	(447)			
		1973		
All	.022	$\overline{.068}$	.307	1.06
n	(1809)			
By Age				
16-24	.056	.172	.259	1.26
n	(308)			
25-44	.016	.052	.291	1.02
n	(877)			
45-64	.017	.038	.442	1.03
n	(624)			
By Educ.				
Primary	.024	.067	.346	1.04
n	(1117)			
Secondary[a]	.019	.069	.246	1.09
n	(692)			

[a]Secondary and university.
Because of small sample sizes, precision is much lower than in the regular monthly Labor Force Surveys (AKU).

Table 3 - continued

WOMEN, LLI 1967 AND 1973

	$\bar{U}$	$\dfrac{N}{L}$	$\bar{W}_u$	$\dfrac{1}{\bar{W}_1}$
		1967		
All	.015	.037	.339	1.17
n	(1375)			
By Age				
16-24	.015	.048	.266	1.19
n	(332)			
25-44	.016	.035	.383	1.19
n	(547)			
45-64	.013	.032	.361	1.13
n	(496)			
By Educ.				
Primary	.017	.042	.349	1.18
n	(953)			
Secondary[a]	.009	.026	.304	1.15
n	(422)			
		1973		
All	.030	.074	.362	1.14
n	(1576)			
By Age				
16-24	.052	.161	.264	1.22
n	(310)			
24-44	.020	.051	.351	1.13
n	(753)			
45-64	.033	.055	.553	1.09
n	(513)			
By Educ.				
Primary	.033	.080	.481	1.11
n	(923)			
Secondary[a]	.020	.064	.264	1.17
n	(653)			

increases in duration. Aggregate female rates in the LLI rose between 1967 and 1973, driven by sharply higher unemployment probabilities. Much of the increase was attributable to rising youth rates, but women 25 years and older also experienced greater unemployment difficulties.21 The higher rate for women 16 - 44 years of age was due to a higher unemployment probability since their duration remained stable. Women aged 45 - 64 faced longer duration as well as greater risk. The increase in incidence for youths and women is consistent with the hypothesis that temporary jobs were of growing importance in the Swedish labor market.

Results from the LLI demonstrate that the structure of unemployment in Sweden was substantially altered in the late 1960s and early 1970s. Prime age and older men, who are more likely to have jobs and to receive advance notice of layoffs, experienced lower unemployment probabilites. Within these two groups, however, the welfare burden of unemployment became more inequitable, since fewer men experienced longer periods of unemployment. Groups with less labor market experience, youths and women, suffered higher unemployment rates and accounted for a larger and disporportionate share of total unemployment in 1973 compared to 1967. Much of the deterioration in the youth position arose from an increase in the unemployment probability and not from lengthening duration. Although unemployment rates have risen in most industrialized countries, the experience of Sweden appears unique. Swedish youth rates grew relative to adult rates between 1967 and 1973: (1) because youth rates

increased absolutely, and (2) because adult unemployment decreased or remained stable, due to labor market policies. Although adult unemployment is expected to decrease during the 1973 business upswing, we note that adult rates fell even lower during the 1975-76 recession.22

VI.   Components of Unemployment Incidence

In Sweden, unemployment incidence occurs primarily in the context of labor force turnover, broadly defined to include both intra and inter labor force mobility.23 That is, unemployment arises as workers separate from jobs or as job seekers enter the labor force. Thus we can define incidence,

$$(3) \qquad P(U) = \frac{N_e}{L_e} \cdot \frac{N}{N_e} \cdot \frac{L_e}{L} = P(U_e) \frac{1-l_0}{1-u_0}$$

where Ne/Le equals unemployment incidence in the "experienced" labor force i.e., not recent entrants; N and L equal the total number of persons ever unemployed and ever in the labor force respectively; l_0 equals the proportion of the labor force who are recent entrants and u_0 equals the proportion of unemployed who are entrants or reentrants. Unemployment incidence in the experienced labor force can then be decomposed into

(4) $P(Ue) = P(S) \cdot P(U/S)$

where P(S) equals the probability of ever separating from a job in a given time period, and P(U/S) is the probability of entering unemployment given a separation.

We first examine entry and reentry unemployment. The Labor Force Surveys provide data on the reason for unemployment from 1975. Contrary to expectations, the proportion of unemployment attributable to entrants and reentrants decreased for men and women (table 4, panel A). However the proportion of the labor force aged 16 - 19, a rough estimate of 10, also declined during this period, possibly reflecting the severe business cycle downturn in 1975 - 78. Decompositions of unemployment into inflow and duration by reason show no increase in entry and reentry duration as predicted, but of course we do not have comparisons for the late 1960s.24 Although the share of entry and reentry unemployment did not increase between 1975 and 1981, the young account for an increasing proportion of the unemployed over time (see table 2). One interpretation is that the youth problem is one of obtaining a permanent job as opposed to a temporary one upon entry into the labor force and not an entry problem per se.

Using the LLI, we estimated the components of unemployment incidence (equation 3). Persons with less than a year's work experience in the 1968 and 1974 survey weeks were categorized as recent entrants or reentrants in the preceeding calendar year and

those with at least a year's work experience are described as
experienced.

Two findings emerge from Table 4. First, unemployment
incidence has increased for youths and women (16=44) largely
because incidence has increased among those with some work
experience. Second, a comparison of the fraction of the
unemployed (16=24) who are entrants with the fraction of the
labor force (16=24) who are entrants shows that unemployment was
not disproportionately shifted towards new young entrants.

Information on the number of jobs held in the preceeding
year and a half is available in the LLI for the sample of
employed persons in each survey week. The probability of a job
separation, job mobility and inter labor force mobility was
estimated for experienced workers from this information and
adjusted to a yearly probability.25 Job separation rates for both
male and female youths are high: roughly 16 percent of young
workers separated in 1967 while 5 to 6 percent of workers 45
years and older were mobile (table 5, col. 1). The separation
probability fell slightly or remained roughly constant between
1967 and 1973 only for older (45 = 65) workers. Significant
increased in the probability of a separation occured for young
men and for women aged 16 = 24 and 25 = 44. Much of this
increase reflects a sharp rise in inter labor force mobility,
although job mobility also rose (columns 2 and 3). The increase
in inter labor force mobility suggests that reentry unemployment
among those with some labor force experience increased in the

TABLE 4

Panel A

Proportion of Unemployment Due to Entry and Reentry, AKU

Year	Men	Women		Men	Women
1975	.287	.435	1979	.242	.351
1976	.259	.419	1980	.239	.349
1977	.266	.388	1981	.221	.330
1978	.226	.360			

Annual Averages from the Labor Force Surveys

Panel B

Components of the Incidence of Unemployment
By Age and Sex, LLI

	1967			1973		
Men	$P(U_e)$	U_o	l_o	$P(U_e)$	U_o	l_o
16-24	.101	.195	.102	.148	.250	.134
25-44	.059	.060	.026	.044	.178	.016
45-65	.053	.178	.036	.026	.318	.048
Total	.064	.140	.044	.054	.235	.048
n	(1900)			(1781)		
Women						
16-24	.045	.250	.211	.157	.184	.162
25-44	.030	.263	.163	.049	.158	.107
45-64	.028	.250	.137	.025	.630	.124
Total	.033	.255	.165	.060	.280	.123
n	(1375)			(1547)		

$P(U_e)$ = incidence among experienced workers. See text.

U_o = fraction of the unemployed in the year who are recent entrants or reentrants

l_o = fraction of the labor force who are recent entrants or reentrants

Table 5

INTER AND INTRA LABOR FORCE MOBILITY AMONG EXPERIENCED
WORKERS

	Separation	Probability of: Inter Labor Force Mobility	Job Mobility	Unemployment given Job Mobility
		1967		
Men				
16-24	.166	.065	.101	.222
25-44	.103	.018	.085	.172
45-64	.060	.012	.048	.196
All	.098	.024	.074	.190
n	(1658)			
Women				
16-24	.164	.048	.116	.114
25-44	.073	.032	.040	.040
45-64	.050	.025	.025	.133
All	.086	.034	.052	.095
n	(1072)			
		1973		
Men				
16-24	.328	.177	.151	.237
25-44	.115	.024	.091	.175
45-64	.053	.007	.046	.250
All	.127	.042	.085	.207
n	(1676)			
Women				
16-24	.317	.209	.108	.150
25-44	.156	.059	.097	.198
45-64	.051	.015	.036	.167
All	.151	.072	.079	.181
n	(1347)			

early 1970s, possibly in association with the growth of temporary jobs. These figures may also reflect improved job opportunities and higher quite rates in 1973.

The probability of employment given job mobility was estimated using the calendar year 1967 or 1973 unemployment information. It serves as our estimate of P(U/S) in expression (4). These estimates exclude temporary layoffs or seasonal unemployment in which the worker did not separate from the job, as well as entry or reentry unemployment. The advance notice of layoffs introduced in 1971 implies a decrease in the P(U/S) for older workers. It is not observed in the data. For all age and sex groups, the probability of unemployment given job mobility rose in 1973. These results suggest that the probability of finding a job vacancy, which is reflected in the P(U/S), sufficiently declined in this period to offset the effects of an increased notice period.26

Note that unemployment incidence among the experienced labor force declines over the life cycle for both men and women largely because separation probabilities fall. The age-separation patterns are negative and convex. As estimated by the probability of unemployment given job mobility, the probability of unemployment given a separation is not responsible for the life cycle pattern of unemployment incidence.27 Factors important in creating differentials across people in the probability of separating will also be important in creating unemployment differentials.

VII.   Determinants of the probability of Unemployment in the

Cross Section

Before analyzing changes in the determinants of unemployment over time, we study those factors responsible for age differentials in the cross section. Previous studies in labor mobility and unemployment have analyzed the role of job tenure and labor market experience.28 Experience, which reflects growth of both general and specific worker skills, need not reduce the separation probability if the acquired skills are mostly general.29 As workers successfully "match-up" with employers and then begin to accumulate specific capital, separation probabilities decline sharply and then at a decreasing rate with lengthening job tenure. The accumulation of job specific skills creates differences between workers productivity in the current and alternative jobs, which exceed differences between current wages and wages in other jobs, if investment costs are shared. These productivity and wage differences reduce the incentive for separation on the part of both firm and worker.

We examine first the relationship between tenure and incidence over the life cycle. Table 6 provides estimates of the probability of ever being unemployed in 1969 — 74 by age and tenure levels for labor force participants in survey week 1968.30 In general, the probability of unemployment declines as job tenure lengthens. The decrease is initially very steep and then decelerates as workers complete their fourth and fifth years on the job. For men, differences in the unemployment probability by

Table 6

THE PROBABILITY OF EVER BEING UNEMPLOYED 1969-74
BY TENURE 1968

Age	Men				Women			
Tenure	16-24	25-44	45-64	Total	16-24	25-44	45-64	Total
0-1	.325	.292	.418	.329	.250	.200	.105	.203
2-3	.196	.143	.200	.165	.182	.129	.122	.142
4-5	.119	.067	.160	.098	.000	.167	.189	.148
6-7	.200	.060	.100	.093	.125	.000	.107	.061
8-9	.000	.075	.067	.064	.000	.125	.111	.114
10-14	–	.093	.045	.077	–	.059	.026	.042
15-19	–	.000	.051	.031	–	.000	.095	.050
20-24	–	.000	.038	.025	–	.000	.056	.030
25-29	–	.143	.053	.067	–	.000	.000	.000
30+	–	.000	.066	.062	–	–	.077	.077
Total	.240	.125	.122	.147	.194	.121	.102	.130
Number of Observations	(246)	(601)	(400)	(1247)	(265)	(356)	(254)	(775)

age are relatively small at given tenure levels. Short tenure appears to be a critical determinant of high unemployment probabilities among males, regardless of their age. Some aging effects within tenure levels are exhibited by women.

The effects of work experience, job tenure, personal attributes and job related characteristics on the probability of ever being unemployed in 1969 - 74 were examined using a logit model (table 8). Characteristics were measured for labor force participants as of the 1968 survey week. Variable definitions appear in table 7 and sample means are presented in the appendix. For both men and women, experience is significantly and negatively related to the unemployment probability. This reflects the declining and convex age-separation profile observed in table 5. For men, once tenure is introduced into the equation, the experience coefficients are sharply reduced and only borderline significant (col. 2). Tenure effects are twice as large as experience effects and highly significant, demonstrating that unemployment declines with age and experience largely because of lengthening tenure. Rates of unemployment are high among male youths because, as new and recent labor market entrants, they constitute the largest proportion of workers with short tenure and few firm specific skills. These findings are not peculiar to Swedish labor markets. Similar but stronger results are observed for American men in panel C. Parallel regressions for women reveal much stronger experience effects given tenure. The tenure coefficients are significant but less than half the size of that observed for men. The results suggest

that women receive less training than men, and a smaller specific component.31 Lengthening experience may reduce the probablity of unemployment for women because it is correlated with lower levels of inter labor force mobility. Such an interpretation is supported by the decline in non-participation with age observed in table 3.

Additional infcrmaticn on local labor market conditions, personal and job related characteristics appear in the third regression, panels A and B. Education has a negative and significant effect for men. This may occur because there is a positive correlation between general and specific training, because the better educated are more efficient in search, or because they are more likely to obtain permanent as opposed to temporary jobs. No schooling effect is observed for women. Living in a high unemployment region (ULAN) increases the individual's probability of unemployment, holding other factors constant. Health problems increases the individual's probability of unemployment, holding other factors constant. Health problems increase unemployment for men, but not for women, possibly because the latter are more likely to work part time or because women are more likely to avail themselves of sick leaves. There is no significant effect of immigrant status. The public sector variable has a significant effect in the 1969 - 74 period for both men and women. Moreover it is the largest and most significant negative correlate of female unemployment incidence. The projected decrease in the rate of growth of public sector jobs in Sweden suggests higher aggregate unemployment rates in

Table 7

REGRESSION VARIABLES

Variable	Definition
EXP	Years of Work
TEN	Duration in years of job held (or last job held in survey week 1968
EDUC	Years of full time schooling
ULAN	Unemployment rate for labor market of current residence, based on 25 regions.
IMMIG	1 if both parents were of foreign nationality when respondent was born
HEALTH	1 if respondent reported poor health; based on a sum of symptoms index
MARRY	1 if married or living together
PART	1 if 34 hour workweek or less
GOV	1 if public employee
UNION	1 if union member
OLF	1 if incidence of non-participation in prior period; for 1967 and 1973 measured concurrently
INC	1 if incidence of unemployment in prior period
COMP	1 if unemployment benefits were received
SPINC	Spouse's income per year in hundreds of Swedish krona

Table 8
THE DETERMINANTS OF THE PROBABILITY OF EVER BEING UNEMPLOYED
1969-1974

Variable	Panel A Men β(1)	β(2)	β(3)	β(4)	Panel B Women β(1)	β(2)	β(3)	β(4)	Panel C American Men[a] β(1)	β(2)
CONSTANT	-.104	-.084	.067	.022	-.086	-.080	-.020	-.053	.162	.172
EXP68	-.013** (4.58)	-.004 (1.39)	-.008* (2.26)	-.008* (2.05)	-.017* (4.46)	-.013** (3.14)	-.014** (3.13)	-.013** (2.59)	-.006** (2.70)	-.002 (.90)
SQEXP68	.0002** (3.64)	.0001* (1.70)	.0002* (2.18)	.0002* (2.00)	.0003* (2.97)	.0002** (2.18)	.0002** (2.13)	.0002** (1.53)	.001* (1.80)	-.000 (.80)
TEN68		-.028** (7.24)	-.027** (6.67)	-.021** (4.98)		-.011* (1.77)	-.012* (1.87)	-.008 (1.21)		-.013** (4.30)
SQTEN68		.0005** (4.99)	.0005** (4.72)	.0004 (3.42)**		.0003 (1.34)	.0003 (1.43)	.0002 (1.02)		.0003** (2.80)
EDUC68			-.019** (3.50)	-.016** (2.91)			-.007 (1.25)	-.007 (1.20)		
ULAN68			.021** (2.53)	.012 (1.41)			.022** (2.40)	.022** (2.31)		
IMMIG68			.043 (.97)	.033 (.69)			-.056 (.78)	-.065 (.87)		
HEALTH68			.172** (3.19)	.166** (2.96)			-.036 (.79)	-.048 (.99)		
MARRY68			-.015 (.58)	-.024 (.87)			.037 (1.21)	.030 (.95)		
PART67			.039 (.69)	.021 (.34)			-.045 (1.40)	-.042 (1.28)		
GOV68			-.121** (3.09)	-.113** (2.84)			-.166** (5.17)	-.171** (5.16)		
UNION68			.021 (.79)	.019 (.67)			.030 (1.07)	.030 (.99)		
OLF67				.011 (.33)				.011 (.31)		
INC67				.207** (6.03)				.220** (4.54)		
- log Likelihood	507.78	505.78	437.76	418.08	282.54	280.79	256.21	245.95		

[a]Data are from the Michigan Income Dynamics. See L. Leighton and J. Mincer, "Labor Turnover and Youth Unemployment", p.246. The dependent variable is the probability of ever being unemployed in 1975-76. A linear probability model was used.

β=derivative at the mean for logit regressions.
Asymptotic t values are in parentheses.

the future and possibly a deterioration in the unemployment position of women. Part time hours (PART) and union membership (UNION) are not signficantly correlated with unemployment incidence measured cver the long run.

The respondent's past labor force participation behavior (OLF) and past unemployment experience (INC) are used to reduce bias in the regression coefficients which arises from individual differences in the propensity to separate or to enter unemployment. Inclusion of these variables reduced the slope of the tenure coefficient, but tenure dependence does remain for men. The high serial correlation of unemployment probabilities is noteworthy, but previous inter labor force mobility is not correlated with future unemployment.

This section demonstrates that for men, the unemployment probability is reduced by the accumulation of specific skills. Lengthening job tenure contributes significantly to declining rates over the life cycle. In contrast, for women, life cycle differentials are best explained by labor market experience.

VIII   Changes in Labor Market Behavior and Characteristics

We test next whether there have been changes over time in the determinants of the probability of unemployment, in the duration of unemployment or in the characteristics of the Swedish labor force that can account for rising youth unemployment. The probability of unemployment for all labor force participants

(including entrants and reentrants) in survey weeks 1968 and 1974, as well as in calendar years 1967 and 1973, was regressed on similar sets of variables. The 1968 = 1974 and 1967 = 1973 regressions were tested for equality of all parameters, for equivalence of the intercepts, for equivalence of all the regression coefficients (excluding the intercept), and for equality between selected regression coefficients.[32] The regressions under the alternative hypotheses appear in appendix B, table 3. The computed test statistics appear in table 9.

The null hypothesis that the regressions are equal and that the regression coefficients are equal were rejected for 1968 and 1974, and for 1967 and 1973 and for both sexes. The regression intercepts were not significantly different over time. These results provide additional evidence that there was a redistribution of unemployment among different kinds of people in that late 1960s and early 1970s.

We tested for equality of the coefficients of the experience terms. In two out of the four comparisons, experience effects became signficantly larger (absolutely) over time. These results suggest some deterioration in the relative positions of youths, holding other characteristics constant and are consistent with the observed increase in $u0$.

Information on duration per spell is not available in the LLI. Instead, total weeks of unemployment in 1967 and 1973 were regressed on experience and experience squared, education, personal characteristics, part time employment, unemployment

Table 9

CALCULATED TEST STATISTICS

| Hypothesis, Equality of: | Probability of Unemployment | | | | Duration of Unemployment | |
| | 1967–1973 | | 1968–1973[a] | | 1967–1973 | |
	Men	Women	Men	Women	Men	Women
The regressions	36.26***	51.44***	17.02**	21.67***	1.79	2.11**
Intercepts	0.16	1.56	1.22	2.66	1.42	4.57**
All coefficients	36.26***	20.10***	13.58*	21.94***	1.54	2.31**
EXP and SQEXP	3.52	4.36*	5.22*	2.48	0.32	1.64

The regressions under the alternative hypotheses appear in table 8 and 9.

[a] Survey week

* Significant at a .10 level.

** Significant at a .05 level.

*** Significant at a .01 level.

The hypothesis were tested using a $X^2 = (-2 \log_e \lambda)$ test statistic for the logit regressions (the probability of unemployment) and an F test statistic for the OLS regressions (the duration of unemployment).

compensation and annual income from the spouse. The regressions under the alternative hypothesis appear in appendix B, table 4 and calculated F statistics appear in table 9. Although the results are of some interest in themselves, we focus on whether there have been significant changes in the determinants of the duration of unemployment over time.

For men, the null hypotheses that the regressions are equal, that the intercepts are equal, and that the set of regression parameters are equal were accepted. For women, these three null hypotheses were rejected. There is no evidence of a deterioration in the position of male or female youth in terms of the experience coefficients.

Important changes in the characteristics of the Swedish labor force, as measured in the LLI, can be observed in table 10, panel A. Education levels and part time employment, defined as less than 35 hours per week, significantly rose for all age and sex groups.34 At the same time, work experience decreased within the two younger age cohorts and the incidence of non-participation rose primarily among the young, strongly suggesting that job tenure also decreased. Panel B of the table shows direct evidence of changes in job tenure for workers in survey weeks 1968 and 1974. Average length of tenure decreased slightly for young males, and rose for men 25 years and older. Women showed increasing tenure levels, except for the middle aged groups.33 Of particular interest is the significant increases in the variance of tenure for young workers of both sexes, which

strongly suggests segmentation of the work force into those with permanent and those with temporary jobs.

IX Discussion

The 1970s was a decade that emphasized job security in Sweden. Although Swedish labor market policy succeeded in reducing the open, aggregate unemployment rate throughout this period, the question must be asked, whether this success was achieved at the cost of increasing youth unemployment. Furthermore, the increase in youth unemployment between 1967 and 1973 is understated because of the business cycle upswing and the relative cohort decline. Analysis of trends and of micro data indicate that even in the earliest period of policy shift, significant changes occurred in the structure, distribution and determinants of unemployment. We find that unemployment duration has increased for all demographic groups and incidence has decreased for prime age and older males. Increasing incidence among youths and women is not attributable to increasing unemployment among new entrants, or to an increasing proportion of new entrants. Instead, higher incidence reflects a higher probability of unemployment associated with inter labor force mobility among workers. Increasing job and labor force turnover among some groups, shortened averaged job tenure (and/or greater variance), more job vacancies listed as temporary, and a greater proportion of unemployment due to completion of a specific job suggest the development of a temporary job market in Sweden.

Table 10

ABSOLUTE DIFFERENCES IN SELECTED CHARACTERISTICS
BY SEX AND AGE

Panel A

| | Men | | Women | |
	1974–1968	1973–1967	1974–1968	1973–1967
EXP	-1.27*	-1.47*	- .99*	- .31
16-24	-1.16*	-1.13*	- .67*	- .54*
25-44	-1.57*	-1.80*	-1.38*	- .66
45-64	.17	- .01	-1.08	.25
EDUC	1.11*	1.22*	.80*	.82*
16-24	1.46*	1.65*	1.18*	1.14*
25-44	1.15*	1.37*	.78*	.79*
45-64	.72	.65*	.54*	.58*
PART	.025*	.015*	.067*	.048*
16-24	.083*	.024	.042	.004
25-44	.019*	.015	.032	.007
45-64	.014	.014	.074*	.088*
OLF	.027*	.049*	.023	.003
16-24	.157*	.189*	.108	.113*
25-44	.025	.029*	.022	- .025
45-64	.001	.021	- .005	- .026

* Significant at a 5 percent level or less in a two tail test.
Sample means appear in appendix table 1.

JOB TENURE FOR WORKERS AS OF THE SURVEY WEEK

Panel B

| By Age | Men | | Women | |
	1968	1974	1968	1974
16-24	2.37	2.22	1.91	2.39
	(2.36)	(5.28)	(1.77)	(6.20)
25-44	7.01	7.40	5.52	5.41
	(6.89)	(8.31)	(5.78)	(6.04)
45-64	16.35	16.62	9.31	10.98
	(12.83)	(12.82)	(8.90)	(10.39)
Total	9.83	9.90	6.12	6.76
	(10.73)	(11.12)	(7.19)	(8.42)
Number of Observations	1732	1698	1153	1374

Standard deviations in parentheses.

Many of the changes observed are consistent with the hypothesis of higher fixed costs of workers, but we recognize that direct tests of specific labor market programs are necessary and that other factors besides labor market intervention might create similar patterns of unemployment. Increasing female labor force participation, rising educational levels, a declining rate of economic growth, and rising relative wages of youths must be considered in conjunction with shifts in labor market policy in order to fully understand rising youth unemployment in Sweden.

Appendix A

DEFINITIONS OF UNEMPLOYMENT

Labor Force Surveys

The unemployed in Sweden consist of all persons between the ages of 16 and 74 who were not at work in the survey week, and who were looking for work within the past 60 days; or who were on temporary layoff without pay; or who were waiting to start a new job within 60 days; or who would have looked for work except for being temporarily ill. Invalids, institutionalized persons and unpaid family workers who worked less than 15 hours in the survey week are excluded. The results are published monthly by the Central Bureau of Statistics (CBS) in Arbetskraftsundersokningen (The Labor Force Survey, AKU). Adjustment in the Swedish figures for 1961-1976 by the Bureau of Labor Statistics to provide greater comparability with U.S. figures resulted in a one-tenth of one percentage point change in two of the 16 years.[35]

Persons who receive a wage payment while receiving on the job training or attending courses at the request of the employer are classified as employed in both the Swedish and the U.S. labor force survey. Persons receiving government sponsored training without wage payment are considered not in the labor force in Sweden, but are generally classified as unemployed in the U.S. The BLS estimated that designating all persons in

Swedish training and retraining programs as unemployed would raise the Swedish rate by 0.2 percentage points in 1961 by 0.1 percentage points and in 1973 by 0.4 percentage points.36

The Level of Living Investigation

In both survey weeks, respondents were asked "which of the following categories are relevant in a description of your employment circumstances, first last week and second during the calendar year 1967 (1973)?" For each category checked off, the respondent was then asked how many weeks were spent in that activity. Unemployment for this study is based on the category "searched or watied for work, was unemployed or on temporary layoff." A comparison of unemployment data from the labor force surveys (AKU) and the LLI by Bjorklund indicates that in 1967 and 1973, fewer people experienced unemployment in the LLI than in the AKU, but duration was longer in the LLI.37

Appendix A

Table 1

Unemployment rates by age group and sex for 1963-1981

	Age group							
	16-19	20-24	25-34	35-44	45-54	55-64	65-74	16-74
Year	MEN							
1963	2.9	2.1	0.9	0.5	1.0	2.0	2.0	1.3
1964	3.7	2.1	1.3	0.8	1.1	1.1	2.2	1.4
1965	1.9	1.2	0.5	0.5	0.7	0.9	2.0	0.8
1966	2.7	2.0	0.9	0.7	1.1	1.4	2.3	1.3
1967	4.7	3.0	1.9	1.3	1.2	2.2	2.5	2.0
1968	5.0	3.0	2.3	1.3	1.6	2.6	3.1	2.3
1969	3.8	2.6	1.7	1.0	1.0	2.3	4.0	1.8
1970	3.4	2.1	1.0	0.7	0.9	1.5	2.8	1.3
1971	7.1	3.7	2.1	1.4	1.5	2.3	4.2	2.4
1972	7.8	4.2	2.0	1.8	1.6	2.3	3.6	2.5
1973	5.8	4.2	2.0	1.4	1.3	2.1	3.2	2.2
1974	5.2	2.7	1.4	0.8	1.0	1.9	2.8	1.7
1975	4.2	2.1	1.0	0.6	0.6	1.6	3.9	1.3
1976	4.1	2.2	1.0	0.7	0.7	1.4	2.1	1.3
1977	5.4	2.9	1.4	0.9	0.9	1.1	0.5	1.5
1978	7.1	4.3	1.9	1.2	1.1	1.8	0.0	2.1
1979	.	3.6	1.8	0.9	0.9	1.8	0.0	1.9
1980	6.5	3.6	1.5	0.9	0.9	1.6	0.0	1.7
1981	8.2	4.8	2.2	1.3	1.4	2.2	0.0	2.4
Year	WOMEN							
1963	4.7	2.3	2.5	2.1	1.6	0.9	0.4	2.2
1964	5.1	1.8	2.0	1.6	1.1	0.9	0.0	1.8
1965	4.2	2.9	1.3	1.6	1.2	0.7	0.7	1.8
1966	4.8	2.3	2.0	2.2	1.4	0.8	0.3	2.0
1967	5.8	3.5	2.6	1.1	1.7	1.7	0.5	2.3
1968	6.5	3.0	2.1	1.7	1.2	1.1	2.5	2.2
1969	5.4	3.0	1.9	1.3	1.6	1.0	1.0	2.0
1970	5.1	2.4	1.9	1.1	1.0	1.3	2.8	1.8
1971	8.4	3.8	2.6	1.9	1.6	2.4	3.1	2.8
1972	8.7	4.9	3.1	1.8	1.7	2.2	1.6	3.0
1973	8.0	4.7	2.6	1.8	1.7	2.3	2.0	2.8
1974	8.1	3.9	2.1	1.5	1.3	2.1	3.3	2.4
1975	7.1	3.5	1.8	1.2	1.1	1.4	2.1	2.0
1976	7.0	3.4	1.9	1.1	1.0	1.6	1.7	2.0
1977	8.1	3.5	2.0	1.3	1.2	1.6	0.2	2.2
1978	8.7	4.3	2.2	1.4	1.2	2.0	0.0	2.4
1979	7.9	3.8	2.1	1.5	1.1	2.2	0.0	2.3
1980	8.3	3.9	2.2	1.4	1.1	1.6	0.0	2.3
1981	10.5	4.6	2.5	1.6	1.3	1.8	0.0	2.6

Source: "AKU årsmedeltal", Yearly averages of labor force participation, National
Statistical Board of Sweden (SCB)

Table 2

Employment rates by age group and sex for 1963 - 1981

	Age group							
	16-19	20-24	25-34	35-44	45-54	55-64	65-74	16-74
Year	MEN							
1963	60.6	79.5	94.5	96.4	95.5	87.9	42.5	84.1
1964	59.6	79.4	94.2	95.9	95.7	87.5	38.5	83.2
1965	61.0	78.9	95.0	96.4	95.4	87.6	37.0	83.2
1966	57.4	77.5	94.4	96.7	95.1	87.2	34.5	82.3
1967	51.3	75.9	92.8	95.6	94.3	87.2	33.2	80.8
1968	52.3	75.3	92.5	94.4	93.5	86.7	32.2	80.2
1969	52.0	75.8	93.0	95.1	93.5	84.7	29.8	79.8
1970	50.9	75.1	92.5	95.7	93.9	84.1	28.1	79.5
1971	49.9	73.2	92.0	94.1	93.5	82.8	26.4	78.4
1972	49.4	73.4	91.3	93.5	92.9	81.6	25.0	77.7
1973	50.6	75.1	91.9	93.7	93.1	81.0	23.1	77.7
1974	54.1	78.5	92.8	94.9	93.0	80.4	21.5	78.3
1975	56.5	80.9	93.9	96.0	93.5	80.7	19.1	78.9
1976	57.0	81.3	94.5	96.3	94.0	80.2	14.7	78.5
1977	53.6	80.9	93.8	95.8	93.9	78.8	12.9	77.4
1978	51.1	79.3	93.0	95.3	93.6	77.6	13.7	76.6
1979	52.5	80.7	92.9	95.8	94.0	77.8	14.0	77.0
1980	51.8	81.6	93.4	95.8	93.8	77.5	14.2	77.0
1981	45.3	79.5	92.1	95.3	92.6	76.4	13.0	75.4
Year	WOMEN							
1963	56.8	63.3	53.8	55.2	56.6	39.5	10.9	48.3
1964	55.9	64.4	50.8	55.7	57.0	39.8	9.8	47.9
1965	54.6	61.8	52.8	56.5	56.1	38.9	11.5	47.9
1966	52.0	63.0	51.1	58.2	59.2	41.9	10.2	48.6
1967	48.0	60.3	50.3	61.0	58.3	42.7	8.0	48.0
1968	50.5	61.7	54.6	62.3	59.5	42.4	9.1	49.4
1969	47.9	62.5	57.4	63.8	60.7	43.8	9.9	50.5
1970	48.3	63.7	59.5	66.6	64.4	44.0	8.5	51.9
1971	47.5	63.3	61.0	68.6	66.6	43.6	7.8	52.5
1972	46.1	64.7	61.8	69.9	67.9	44.5	7.7	53.1
1973	45.8	64.4	63.3	70.3	69.8	45.2	7.2	53.6
1974	49.1	68.3	66.6	73.1	71.8	46.7	6.1	55.7
1975	52.2	71.1	70.0	76.4	74.3	48.9	5.9	58.0
1976	53.4	72.9	71.5	77.7	75.7	49.4	5.8	58.8
1977	51.5	74.4	73.5	78.9	77.4	50.9	4.8	59.8
1978	50.7	74.2	75.1	80.5	79.2	52.3	4.3	60.7
1979	52.0	76.9	77.3	81.9	80.9	53.3	4.0	62.0
1980	50.9	78.4	79.5	83.5	82.2	54.4	3.7	63.1
1981	44.8	78.8	81.4	85.1	83.4	56.5	4.0	63.9

Source: " AKU Årsmedeltal", Yearly averages of labor force participation, National Statistical Board of Sweden (SCB).

Employment rate = $\dfrac{\text{Employed}}{\text{Population}}$

Table 1

SAMPLE MEANS

Variable	1969-1974		1967		1968[a]		1973		1974[a]	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
EXP	19.88	14.05	21.11	12.23	22.01	14.64	19.64	11.92	20.74	13.65
SQEXP	561.22	304.86	652.13	290.80	685.48	349.41	591.63	268.48	628.55	306.87
TEN	8.90	5.93	–	–	–	–	–	–	–	–
SQTEN	171.58	81.41	–	–	–	–	–	–	–	–
EDUC	8.94	8.89	8.63	8.64	8.74	8.66	9.85	9.46	9.85	9.46
ULAN	2.18	2.15	–	–	2.19	2.15	–	–	1.98	1.93
IMMIG	.05	.05	.08	.08	.06	.05	.12	.12	.12	.13
HEALTH	.02	.09	.10	.13	.03	.09	.03	.09	.03	.09
MARRY	.71	.65	.71	.65	.72	.61	.74	.74	.73	.72
PART	.03	.38	.04	.39	.04	.37	.05	.44	.06	.43
GOV	.22	.46	–	–	.21	.43	–	–	.24	.46
UNION	.80	.61	–	–	.79	.57	–	–	.81	.64
OLF	.11	.19	.09	.25	.11	.21	.14	.25	.13	.23
INC	.06	.04	–	–	.07	.05	–	–	.07	.08
P(U)	.147	.130	.072	.037	.030	.016	.067	.074	.023	.027
Number of Observations	1247	775	1900	1375	1785	1172	1781	1547	1753	1451

[a]Survey Week

THE DETERMINANTS OF THE PROBABILITY OF UNEMPLOYMENT

	Men				Women			
	1968[a]	1974[a]	1967	1973	1968[a]	1974[a]	1967	1973
Variable	β (1)	β (2)	β (3)	β (4)	β (1)	β (2)	β (3)	β (4)
CONSTANT	.090	−.037	.021	.002	.007	−.050	.057	−.040
EXP	−.015**	−.017**	−.003*	−.007**	−.009**	−.023**	−.004**	−.006**
	(8.23)	(5.65)	(1.97)	(4.22)	(4.24)	(6.66)	(2.66)	(2.36)
SQEXP	.0002**	.0003**	.000	.0001**	.0002**	.0004**	.0001**	.000
	(7.29)	(4.86)	(.24)	(2.68)	(3.59)	(5.95)	(2.01)	(.12)
EDUC	−.013**	−.006**	−.021**	−.008**	−.004*	.001	−.004*	−.007**
	(4.77)	(3.02)	(5.55)	(3.51)	(1.84)	(.71)	(1.71)	(2.80)
IMMIG	−.002	.001	.012	.004	.027*	−.024	.017	−.018
	(.090)	(.105)	(.57)	(.22)	(2.14)	(1.37)	(1.06)	(.80)
HEALTH	.055**	.002	.040**	.008	.016	.021	.035**	.037*
	(3.10)	(.009)	(2.40)	(.27)	(1.64)	(1.32)	(2.94)	(1.71)
MARRY	.029*	(.014)	.005	−.056**	.005	.016	−.003	−.057**
	(2.32)	(1.40)	(.31)	(4.04)	(.59)	(1.47)	(.28)	(3.73)
PART	.033*	.025**	.030	.057**	−.033*	.031*	−.038**	.001
	(1.87)	(2.50)	(1.16)	(2.94)	(1.83)	(2.82)	(2.77)	(.07)
OLF	.003	.000	.112**	.031*	−.006	−.017	.004	.048**
	(.295)	(.070)	(7.04)	(1.96)	(.70)	(1.50)	(.28)	(3.08)
− log likelihood	146.67	88.93	417.77	368.68	64.83	99.53	201.44	360.84

[a] survey week.
β=derivative at mean for logit regressions
asymptotic t values in parentheses
* Significant at a .05 level in a one tail test.
** Significant at a .01 level in a one tail test.

Table 3

THE DETERMINANTS OF THE DURATION OF UNEMPLOYMENT

| | Men | | Women | |
| | 1967 | 1973 | 1967 | 1973 |
Variable	β (1)	β (2)	β (1)	β (2)
CONSTANT	29.38	19.13	46.46	21.62
EXP	−5.90* (2.11)	−.258 (.79)	−1.00 (1.37)	−1.32* (2.30)
SQEXP	.011* (1.71)	.004 (.54)	.018 (.91)	.044* (1.74)
EDUC	−1.66* (2.25)	−.760* (1.66)	−3.03* (3.04)	−.705 (1.18)
IMMIG	−4.33 (1.20)	−.298 (.08)	13.36* (2.12)	3.29 (.74)
HEALTH	6.22* (2.23)	13.27** (2.51)	7.10 (1.45)	12.93** (3.03)
MARRY	−.460 (.15)	5.59* (1.88)	−6.37 (.94)	−1.22 (.37)
PART	2.56 (.58)	14.96* (4.69)	−6.51 (1.07)	10.28** (3.10)
SPINC	−.013 (.63)	−.008 (.54)	.038 (1.64)	.004 (.51)
COMP	1.90 (.75)	.625 (.22)	−12.55** (2.41)	4.28 (1.01)
R^2	.133	.278	.405	.293

Absolute t values in parentheses.
*   Significant at a .05 level in a one tail test.
** Significant at a .01 level in a one tail test.

Footnotes

[1]The difference is not explained by differences in measurement methods since both countries use a household survey with similar questions and definitions of unemployment. See U.S. Bureau of Labor Statistics, International Comparisons of Unemployment, Bulletin 1979, August 1978, pp. 137-146. Unemployment variables used in this paper are discussed in appendix A.

[2]Stafford provides a comparison of Swedish and U.S. labor markets and labor market policies. In Sweden about one percent of GNP was devoted to labor market policy in the mid 1960s, by 1976/77 this figure had reached about 3 percent. For the U.S. the respective figures are 0.5 percent in the mid 1960s and 1.33 percent during 1975-77. See Frank Stafford, "Unemployment and Labor Market Policy in Sweden and the United States," in Gunnar Eliasson, Bertil Holmlund and Frank Stafford, eds., Studies in Labor Market Behavior, Conference Report (Stockholm: The Industrial Institute for Economic and Social Research, 1981), pp. 21-66.

[3]Employment to population ratios also indicate a relatively worse youth labor market problem in Sweden. Employment to population ratios for Swedish youths 16-19 decreased from the mid 1960s to the mid 1970s, rose briefly, and appear to be declining since 1976. Unemployment rates and employment to population ratios broken down by age and sex appear in appendix A, tables 1 and 2. In the U.S. youth employment to population ratios reveal an upward trend after the early 1960s. See Richard B. Freeman and James L. Medoff. "The Youth Labor Market Problem in the United States: An Overview," in Richard B. Freeman and David A. Wise, ed., The Youth Labor Market Problem: Its Nature, Causes, and Consequences (Chicago: University of Chicago Press, 1982), pp. 36-42.

[4]For a detailed description of the evolvement of labor market programs see
Anders Björklund, Spells and Duration of Unemployment in Sweden, International
Institute of Management, Working Paper IIM/79-17 (Berlin: Wissenschaftszentrum,
1979); Jan Johannesson, "On the Composition of Swedish Labor Market Policy,"
in G. Eliasson, B. Holmlund and F. Stafford, eds., Studies in Labor Market
Behavior, pp. 67-96; and Anders Björklund, Jan Johannesson and Inga Persson-
Tanimura, Labour Market Policy and Labour Market Developments in Sweden during
the 1960s and 1970s, International Institute of Management, Working Papers
IIM/79-14 (Berlin: Wissenschaftszentrum, 1979). Labor market policy is
comprised of measures financed by the National Labour Market Board (AMS),
inclusive of the expenditures for Labour Market Training of the National
Board of Education.

[5]Figures are from J. Johannesson, "On the Composition of Swedish Labour
Market Policy," in G. Eliasson, B. Holmlund and F. Stafford, eds.,
Studies in Labor Market Behavior, pp. 67-96. Both 1959 and 1978 were
recession years.

[6]Labor mobility in Sweden has often meant migration from the north where
unemployment rates are high to the south. The initials of the Swedish
Labour Market Board, AMS, were interpreted by proponents of regional equality
as "All Must Southwards".

[7]See Eskil Wadensjö, Job Creation and Job Maintenance in the Private Sector,
Nationalekonomeska Instituten, Lunds Universitet, Working Paper 1980:68
(Sweden: University of Lund).

[8] J. Johannesson, "On the Composition of Swedish Labour Market Policy," pp. 67-96.

[9] The 1974 Employment Security Act was preceded by a government report which describes previous regulations and practices. See SOU, Trygghet i Anställningen, Employment Security, The Government Report preceding the Employment Seucirty Act of 1974 (Stockholm: Statens Offentliga Utredningar, 1973:7, 1973), pp. 109-116. The 1974 act is often called the "Åman" laws in reference to the principle investigator of the government report. For a discussion of the 1974 act which covers the private and public sector, union and non-union workers see Ministry of Labour, Labour Market Policy in Transition, Summary of a Report from the Expert Group for Labour Market Research at the Swedish Ministry of Labour (Stockholm: Departmentens Offsetcentral, 1978).

[10] A. Björklund, J. Johannesson and I. Persson-Tanimura, Labour Market Policy, p. 20.

[11] The AMS has been aware of possible negative effects and has initiated compulsory notification of vacancies introduced on a trial basis in 1976 and guidance groups, which provide introductory courses for new labor entrants and reentrants.

[12] Anders Björklund, Studies in the Dynamics of Unemployment, EFI, The Economic Research Insititute of the Stockholm School of Economics (Stockholm: EFI, 1981), Chapter 2, p. 30.

[13] In 1966 youths age 16-24 equaled 19.8 percent of the 16-74 year olds and in 1980 they represented 16.6 percent. The observation for the U.S. that the cohort effect has increased youth unemployment does not hold in Sweden, where decreasing youth cohorts are associated with higher absolute and relative youth unemployment.

[14] National Labour Market Board, Meddelanden från Utredningsenheten (Stockholm: AMS, 1980: 15 and 1981:5).

[15] A. Björklund, Studies in the Dynamics of Unemployment, 2:19.

[16] Unfortunately it is not possible to directly measure the impact of the 1974 Security of Employment Act with the LLI. However, the impact of the pending legislation could have begun as early as 1973 with the release of the government report which favored such a law.

[17] Unemployment declines monotonically for women in 1967, however, a U shaped pattern is observed for women in 1966 and 1973 and in survey weeks 1968 and 1974.

[18] The underestimation of the female rate in 1967 is particularly noticeable for women 16-24 years old. Lower female rates for women greater than 45 years old is observed in the published statistics. See appendix A.

[19] Less than four percent of the men and two percent of the women had more than secondary schooling in 1967.

[20] A Björklund, Studies in the Dynamics of Unemployment, Chapter 2, pp. 12-15.

[21] The large percent increase in female rates partly reflects the under-estimation of unemployment for women 16-24 years old in 1967. However these findings are consistent with published statistics.

[22] A competing and complementary hypothesis is that the solidaristic wage policy became more effective from the middle of the 1960s and thereby increased youth wages relative to adult. Between 1965 and 1976, wages for workers less than eighteen years old relative to those older than eighteen rose from .59 to .68 for men and from .71 to .78 for women. The relative wage hypothesis, however, leads to some predictions not supported empirically. Although young women exhibit a smaller percentage increase in relative wages compared to young men, they experienced a much larger increase in relative unemployment. Unemployment rates of females aged 16-19 relative to those aged 35-44 rose from

2.6 to 6.4 between 1965 and 1976, while relative unemployment for male youths increased from 3.8 to 5.9.

[23]The average annual number of temporarily unemployed was 3000 during 1975-80, which was 3.5 percent of total unemployment. A. Bjorklund, Studies in the Dynamics of Unemployment, Chapter 2, pp. 18-19.

[24]A. Björklund, Studies in the Dynamics of Unemployment, Chapter 2, p. 17, figure 4.

[25]The probability of job mobility is defined as ever separating from a job and not leaving the labor force in the calendar year preceeding the survey; the probability of inter labor force mobility equals the probability of ever separating and reporting non-participation. Estimates of the separation rates are biased downward because non-participants and the unemployed are excluded from the sample. Experienced workers are defined as those with at least a year's work experience.

[26]There is little evidence that advance notice of layoffs reduces either the subsequent loss in earnings or the duration of unemployment. For a discussion, see Harry J. Gilman, The Economic Costs of Worker Dislocation: An Overview. A paper prepared for the Seminar on Economic Dislocation and Public Policy, sponsored by the National Commission for Employment Policy, July 13, 1979.

[27]Similar results have been observed for American men. Linda Leighton and Jacob Mincer, "Labor Turnover and Youth Unemployment," in Richard Freeman and David Wise, eds., The Youth Labor Market Problem, pp. 235-275.

[28]Linda Leighton and Jacob Mincer, "Labor Turnover and Youth Unemployment," and Jacob Mincer and Boyan Jovanovic, "Labor Mobility and Wages" in Sherwin Rosen, ed., Studies in Labor Markets. (Chicago: University of Chicago Press, for NBER, 1981), pp.

[29]Specific skills are defined as those which increase the worker's marginal productivity in the firm providing the training, while completely general skills increase the worker's marginal productivity in all firms. Gary S. Becker, Human Capital, 2nd ed. (New York: National Bureau fo Economic Research, 1975), p. 26.

[30]Information on job tenure is available only in the 1968 survey for all respondents. In 1974 respondents with a job were asked about their unemployment experience during the last five years. Unemployed respondents as of the 1974 survey week were also included to reduce selection bias. Reentry unemployment is included in the measurement of unemployment.

[31]The implication of smaller job investment by women is supported by evidence showing flatter growth of wages on the job. See Siv Gustafsson, "Male-Female Life-Time Earnings Differentials and Labor Force History," in G. Eliasson, B. Holmlund and F. Stafford, eds. Studies in Labor Market Behavior, pp. 235-268.

[32]The regression models used differ from the preferred cross section equations in table 7 because of data limitation. Information on job tenure, public employment, union membership, and previous unemployment incidence is not available at the beginning of calendar years 1967 and 1973. The test statistic is $-2 \log_e \lambda$ which has a x^2 distribution (asymptotically) with r degrees of freedom. The numerator of the likelihood ratio, λ, equals the maximum likelihood function when the parameters are restricted under the null hypothesis, and the denominator equals the maximum likelihood function when the parameters are unrestricted. Our test is constructed so that when the null hypothesis is that the intercepts (slopes) in the two periods are equal, the maintained hypothesis is that the slopes (intercepts) differ.

[33]Increasing female labor force participation and labor force attachment could reduce job vacancies available to youths, especially females, in the traditional female occupations, and thus increase their unemployment. Addition of the variable, female labor force participation by region had no significant effect on the probability of unemployment in the survey weeks for the samples of young female and male labor force participants.

[34]Compulsory separation of income tax returns since 1971 for married or cohabitating persons, combined with high marginal tax rates, have encouraged part time employment among married women and students. The increasing availability of parental and educational leaves, dating from the early 1970s, has created a demand for replacement workers on a part time and part period basis.

[35]U.S. Bureau of Labor Statistics, International Comparisons of Unemployment, p. 139.

[36]U.S. Bureau of Labor Statistics, International Comparisons, p. 138.

[37]A. Björklund, Dynamics of Unemployment, 5:21.

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