Mobility of Labor and Wage Determination

by *Siv Gustafsson* and *Bertil Holmlund*

The Swedish labor market in the late 1970's displays characteristics which are different in many ways from those of the labor market in the 1960's. The structure of unemployment, mobility of labor, employment policy of the firms and labor force participation of women are some aspects that have changed between the two periods.

A more realistic view of the labor market has developed during the past ten years. This increased realism is reflected in the greater attention that is now paid to the gross flows that affect observed changes in stocks, such as the number of unemployed or the number of vacancies. In view of this, the unemployment rate is no longer a self-evident indicator of welfare. Variations in unemployment may be caused by a variety of changes in gross flows with very different welfare implications, such as an increased labor force participation of married women, more lay-offs or decreased propensity to accept job offers due to better unemployment insurance.

Swedish labor market statistics have mainly been constructed to show changes in stocks of, for example, employment, unemployment and labor force participation. On the other hand, these statistics provide little information about how the flow into unemployment is divided among lay-offs, new entrants in the labor force and quits. Information is also scarce about whether, and to what extent, periods of unemployment come to an end either because people get jobs or because they leave the labor force.

It is, however, possible to get a rough picture of the changing patterns of gross flows in the labor market by studying available statistics. A short survey of a few typical features of the change will be presented below. This is followed by an explanation of the development which is viewed as the adjustment of individuals and firms to changed conditions for labor market search and recruitment policy.

Finally, some results will be presented from two current research projects in the field of labor economics at the IUI.

The statistical picture

Table 2 illustrates some important changes that have taken place on the labor market during the past ten years. The duration of unemployment has increased at the same time as the number of spells has decreased. The frequency of transfers between states of employment and unemployment is closely connected with the separate flows that make up job mobility, i.e. quits,

29

lay-offs and new hires. These flows have decreased significantly since the middle of the 1960's. Data are given in Table 2 for the flows of blue collar workers in manufacturing industry. Table 2 also shows that during the past few years the lay-off rate has been exceptionally low even when compared to earlier recessions.

Another important change in the labor market is the large increase in the labor force participation rate of women. The number of women in the labor market increased by 300 000 between 1970 and 1977. This means that the labor force participation rate of women increased from 53 to 61 per cent. We do not know exactly what changes in the gross flows are behind this increase of the number of women in the labor market although there is an indication that the average time spent on the labor market has increased. In 1969, 64 per cent of the women who once entered the labor force spent the full year in the labor market. The corresponding figure for 1974 is 72 per cent.

Tendencies towards long-run employment contracts

The above statistical picture may be interpreted as showing the development of more long-run contracts on the labor market. A fruitful point of departure for interpreting the development described above may be the rapid structural change in Swedish industry which took place during the sixties.

During the period 1957–63, industry investments expanded very rapidly. This modernization of the stock of capital was further accentuated by the extensive destruction of capital equipment due to obsolescense. The number of firm closures was unusually high during the recession of 1967–68, which was characterized not only by a unique productivity increase but also by labor dishoarding to a much larger extent than had been observed during earlier recessions after the Second World War. These rapid structural changes may

Table 2. *Data on unemployment and mobility of manufacturing workers, 1965–1976*

	Duration of unemployment (weeks)	Inflow of unemployment (thousands)	Quits	Lay-offs	New hirings
			Percentage of the total number of industrial workers		
1965	5	400	44	3.3	51
1968	9	488	26	4.0	34
1970	7	428	35	2.9	40
1972	15	374	22	3.5	29
1974	10	425	29	1.9	35
1976	12	280	23	1.4	22

30

have been a governing factor in shaping the development that followed with respect to the individuals, the labor market behavior of firms and the labor market policies of the Swedish government.

Increases in the frequency of lay-offs result in both a higher inflow into unemployment and increasing duration of unemployment. The latter effect is explained by the fact that people whose unemployment is caused by lay-offs tend to experience longer periods of unemployment than other categories of unemployed persons. This observation is probably explained by the fact that deaths of firms hit everybody alike with no exclusion of persons of greater age, small attractiveness on the labor market and a small propensity to migrate. The rapid structural change during the recession of 1967–68 was one of the reasons why the duration of periods of unemployment increased, especially for men. During the boom years of 1969–70 the rate of unemployment as well as the duration of unemployment were higher than during the earlier boom of 1964–65, in spite of the fact that demand pressure on the labor market was higher in the latter period.

The large number of people laid off during that period and the increase in the duration of unemployment changed the labor market outlook for individuals. It is reasonable to expect that the incentives for job search are affected by the expected length of the search period and the dispersion of the wage distribution. Shorter search periods and a wider wage dispersion would normally strengthen incentives for job search. For employed persons, longer periods of unemployment imply both a smaller propensity to search and a smaller propensity to choose unemployment in order to pursue full time job search. The consequences are a smaller inflow into unemployment and fewer quits. The Swedish Confederation of Trade Unions (LO) has strived, in its wage policy, for smaller wage differentials and this, in combination with the high marginal tax rates of the Swedish income tax system, has probably contributed to a decreased propensity to look for new jobs.

Lower rates of quits, furthermore, lead to a smaller number of new vacancies and this, in turn, affects search incentives, quit rates and the duration of unemployment, thus further strengthening the initial effects.

The rapid modernization of the capital stock of the manufacturing industry, which took place during the sixties, might also have introduced new technology with increasing demands for investments in the *quality of labor*. To ensure returns on investments made in job training programs firms have introduced incentives to reduce quit rates by people having received training paid for by firms. One way of achieving this would be the explicit or implicit offer of long-run contracts, for example, in the form of job rationing that excludes already employed persons from competing for jobs. Another way would be to tie the risk for lay-offs to the number of years of employment, by

31

seniority rules.

Rules governing the order in which people are going to be laid-off may also be seen as an instrument for reducing transaction costs associated with decreases in employment. Both employers and unions probably prefer a system where a clear set of rules makes labor dismissals automatic and impersonal. An increase in the costs of training newly hired employees means a lower propensity for lay-offs during periods of slack in demand and higher propensity for labor hoarding.

New features of Swedish employment policy

The developments in the labor market during the second half of the 1960's seem to have had important effects on employment policy during the 1970's. Swedish labor market policy earlier emphasized policy measures fostering mobility and structural change during most of the post World War II period. Priority was given to job security in the entire labor market rather than job security in a particular firm. During the 1970's the tolerance of the push mechanisms seems to have diminished gradually and emphasis is now more on employment maintenance than on employment creation. In 1971, special laws were passed requiring up to six months' advance notice of lay-offs of older employees. From the middle of 1974 the introduction of new legislation concerning labor relations might have caused structural breaks in labor market behavior. These so called "Åman laws" were intended to protect employees with job seniority. The employer's free right to dismiss was replaced by legislation which demanded objective cause for dismissal; "shortage of work" was considered to be one such objective cause. Firms were required to give employed workers up to six months' advance notice before lay-offs. In addition, rules of rotation were introduced providing special protection for workers with long-term employment with an employer.

The Åman laws probably have reduced labor mobility in several ways. In the first place, rising lay-off difficulties will increase the firms' incentives for adopting employment policies which will smooth over a business cycle, thus discouraging lay-offs. Secondly, the recruitment behavior of firms is likely to have been affected since the laws make it very costly to use dismissals as a measure for correcting past recruitment decisions based on erroneous information. Available job seekers will be inspected more carefully in order to assess their productivity. The result is likely to be longer vacancy durations, i.e., falling recruitment probabilities given that search is undertaken.

32

Figure 2 shows the number of manufacturing workers laid off during the period 1968–76. The dotted curve starting from the second half of 1974 shows the development according to econometric estimations assuming the absence of the job security laws. It is seen from the figure that the number of lay-offs would have been much higher during 1975 and 1976 had the Åman laws not existed.

The hypothesis of rising recruitment thresholds owing to lay-off restrictions has been tested by applying the model

$$\left(\frac{H}{VAC}\right)_{it} = \alpha_{1i}\left(\frac{V}{U}\right)_t^{\alpha_{2i}} e^{\alpha_{3i}D},$$

where H_{it} = the number of new recruitments, calculated as the number of filled vacancies at the Employment Service (occupation i and month t),
VAC_{it} = the number of listed vacancies,

Figure 2. *Lay-offs of manufacturing workers by half-year averages of quarterly data, 1968–1976*

No. of lay-offs

———— actual
– – – – estimated
········ predicted if the Åman laws were not in effect
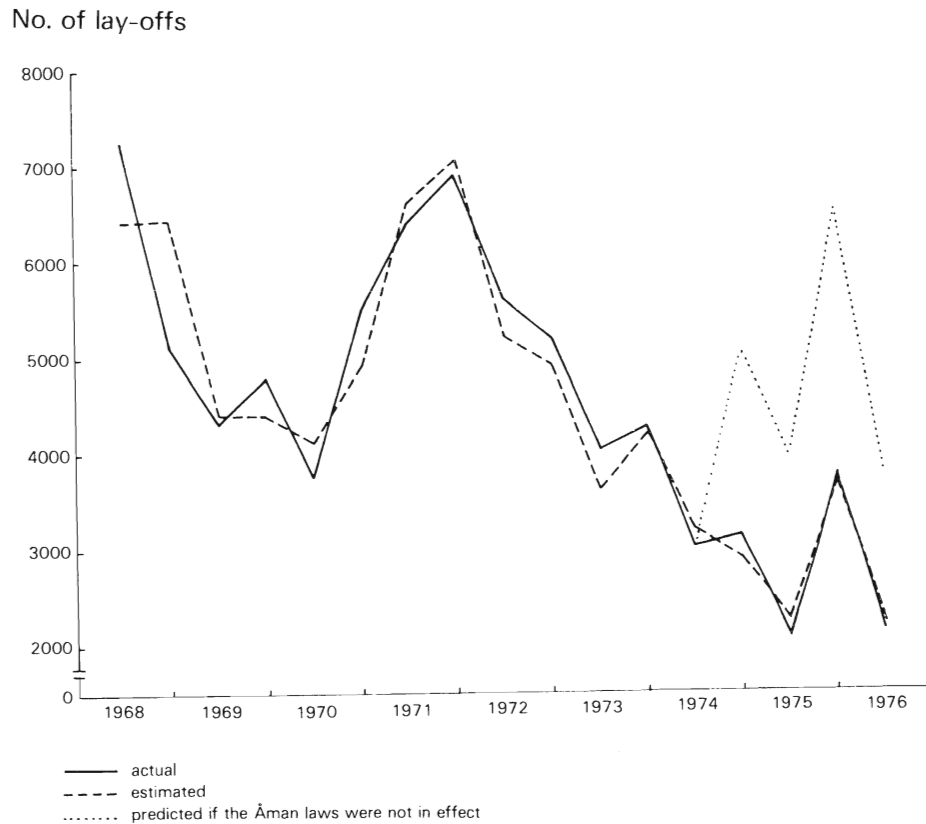
V_t/U_t = the total number of unfilled vacancies divided by the total number of unemployed,

D = a dummy variable, which takes the value 1 from July 1974.

The results are set out in Table 3. The dummy coefficient gives the relative change in the placement frequency due to the new legislation. The coefficients generally have the expected signs and are significant in four regressions, implying rising duration of vacancies. An estimated function is shown in Figure 3. These higher recruitment thresholds are also likely to have some effect on the duration and incidence of unemployment.

Labor force participation and earnings

A tendency towards longer periods of unemployment also affects the decisions of individuals concerning labor force participation. Women have traditionally made up a marginal group of workers in the labor market because of interrupted or segmented labor force participation owing to child care and domestic work. Increases in the expected duration of job search imply higher risk of labor force interruptions and stronger incentives to remain in the labor force. In addition to this, in 1971, Sweden passed a law of

Table 3. *Placement frequences and the labor market situation – monthly data, 1970:1–1977:10.* t-ratios in parentheses

Occupation	Coefficient for		R^2	DW
	V/U	D^2		
Work in technology, public health & sick care, educational services, legal, social science and artistic work	−0.046 (−4.166)	−0.009 (−0.884)	0.81	1.66
Administration	0.009 (0.118)	0.044 (0.653)	0.01	1.96
Accounting and general office work	−0.102 (−8.566)	−0.014 (−1.250)	0.79	1.71
Commercial work	−0.057 (−3.166)	−0.062 (−3.742)	0.70	1.84
Agricultural, forestry and fishery work	−0.235 (−7.229)	−0.033 (−1.121)	0.75	1.80
Mining and quarrying	−0.196 (−2.676)	−0.066 (−0.987)	0.40	2.09
Transport and communication	−0.198 (−7.007)	−0.067 (−2.557)	0.80	2.04
Manufacturing	−0.214 (−7.853)	−0.078 (3.085)	0.86	2.41
Services	−0.079 (−6.114)	−0.083 (−7.001)	0.80	1.52

Figure 3. *Relation between new hiring per vacancy and the labor market situation in manufacturing industry 1970–1977*

New hires vacancies

Figure 3. *Relation between new hiring per vacancy and the labor market situation in manufacturing industry 1970–1977*

New hires vacancies
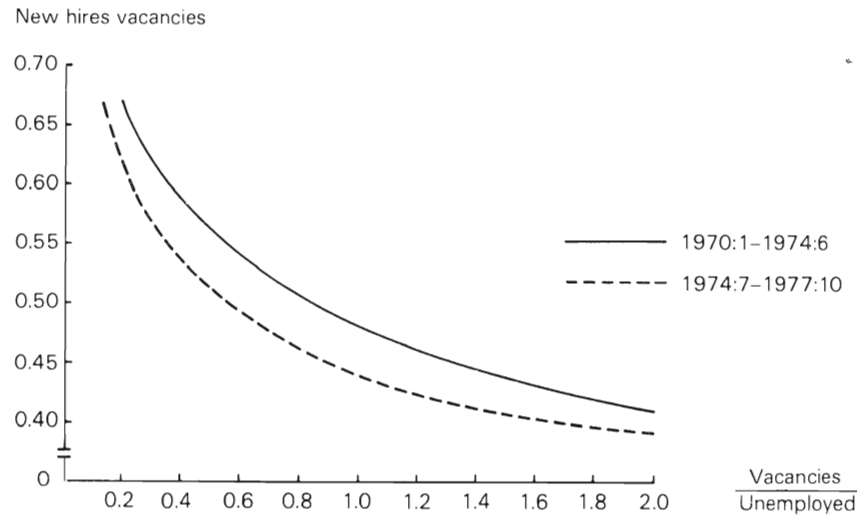
individual taxation of income for husband and wife. In combination with the highly progressive income tax in Sweden, this has meant that the earnings of women are a greater addition to family disposable income than before, and this has encouraged the labor force participation of women.

An increased stability in the female labor force participation will have effects on female earnings if labor force interruptions affect future earnings. Tendencies towards fewer interruptions may then narrow the wage differentials based on sex. If continuous labor force participation is a prerequisite for success on the job, interruptions may be one of the explanatory factors for the average pay differentials between men and women.

Labor force interruptions may affect the productivity of labor in three ways. First, they imply that job skills are not maintained, since labor force interruptions may mean that the individual forgets the job skills once learned. Second, the organization and methods of work change continuously and job skills may have become obsolete when the individual tries to return to the labor market. Third, a person who is not working cannot invest in further job skills by on-the-job-training. A person who has experienced long labor force interruptions probably has a smaller earnings potential owing to smaller production potential during his or her life time than a person who has not experienced such labor force interruptions. Effects of labor force interruptions are probably smaller for short interruptions than for long ones.

Labor force interruptions may be expected to affect earnings capacity

35

regardless of sex and regardless of the reasons for the interruption (except if the reason is studied). Labor force interruptions are fairly unusual for men whereas women often choose to stay at home for child and home care instead of continuing to work in the labor force.

The hypothesis that labor force interruptions affect future earnings has been tested by econometric estimations on a set of data which is a one in ten sample of white collar workers in the private sector in 1974. The number of individuals is 32 000. The hypothesis tested is that the monthly salary of 1974 depends on how the individual has allocated his time between years of studying, years of labor market work and years spent neither studying nor working on the labor market.

The hypothesis has been tested by applying the model:

$$\operatorname{Ln} Y_i = \beta_0 + \beta_1 S + \beta_2 (NX) + \beta_3 (PX) + \beta_4 (PX)^2 + \epsilon_i,$$

where
Y_i = monthly salary in 1974 for individual i
S = number of years of schooling
NX = years of nonexperience during the period 1960–74
PX = potential experience measured as actual age minus age at graduation.

The expectations are that
$\beta_1 > 0, \beta_2 < 0, \beta_3 > 0, \beta_4 < 0$.

The model was applied on 12 subsamples defined by education and sex. The β_1, β_3 and β_4 coefficients were found to have the expected signs and to be statistically significant. Most of the β_2 coefficients were negative and significant.

The β_2 coefficient may be interpreted as the effect of nonexperience years on current salary. The antilogs of these coefficients expressed as percentages are given in Tables 4 and 5.

Older men with compulsory schooling who had experienced one year of labor force interruption during the 15 year period earned, on the average, 1.8 per cent less than did men of the same educational background and age but with no interruption. The effect refers to after tax real salary.

It also turned out (see Table 4) that the effect on earnings of labor force interruption is about 2 per cent per year of interruption independent of both sex and education. This effect refers to people who had finished school at least 15 years before 1974.

For younger employees (with less than 15 years' experience after finishing school) the effects of labor force interruption were found to be different between men and women (see Table 5). The young women had a smaller salary in 1974 as a result of labor force interruptions, whereas this was not found to be true for young men. One interpretation of this finding is that labor

Table 4. *Effects of labor force interruptions on future salaries of older employees*

Education	Effect of interruption (in per cent per year)		Average interruption during 1960–1974 (in number of years)	
	Men	Women	Men	Women
Compulsory school	− 1.8	− 2.0	0.3	1.9
Secondary school	− 1.7	− 2.4	0.4	2.2
University	− 2.3	− 1.0[a]	0.4	1.7

[a] The regression coefficient is not statistically significant.

Table 5. *Effects of labor force interruptions on future salaries of younger employees*

Education	Effect of interruptions (in per cent per year)		Average interruption during 1960–1974 (in number of years)	
	Men	Women	Men	Women
Compulsory school	0.0[a]	− 0.4	2.4	1.9
Secondary school	0.5[a]	− 1.3	1.2	0.8
University	0.8[a]	− 2.2	0.3	0.3

[a] The regression coefficient is not statistically significant.

force interruptions have long-run effects for young women but not for young men. Another interpretation is that different causes of interruption have different effects on earnings.

For young men with compulsory or secondary schooling military service is a major reason for labor force interruptions. Effects of labor force interruptions are zero for young men with compulsory schooling. This may be interpreted to mean that men invest as much in their earnings capacity when in the military service as they do when in the labor force.

For men with secondary or academic training the effect of nonexperience years is positive but not statistically significant. If the effect really is positive it would imply that these men had a higher earnings capacity as a result of the interruption than they would have had if there had been no interruption. The most likely interpretation of this result is that men have used their years of interruption for education of some kind which has not been registered in the educational variable of this study.

Sorting mechanisms in the labor market

Our results suggest that female employees have labor force interruptions of similar magnitude as male employees, when interruptions are recorded per year. Differences in labor force interruptions do not explain more than a minor part of the salary differentials between the sexes. How can we then explain salary differentials between men and women of the same age, with the same education and who, furthermore, have been on the labor market the same number of years? Is part of the explanation that employers expect a typical labor force participation pattern of women? These expectations should then include higher absenteeism, higher propensity to take part-time work and a lower propensity to accept overtime work. Some of these expectations might not be confirmed if we had properly standardized data. Difficulties in assessing the real productivity potential of the individual at the point of hiring and potential promotion always make it profitable to economize the information gathering. Is this a reason for using sex as a sorting criterion and what is the effect of this sorting criterion if it is incorrect?

Some probable disadvantages of the Åman laws are a parallel case in point. If standard recruitment practices are sharpened persons with limited labor force experience, of higher age and with different sorts of handicaps or social problems are likely to experience increased difficulties in getting job offers. In this and other senses the welfare implications of the Åman laws may turn out to have both a desirable and a non-desirable side.