Wage and Labor Mobility in Denmark, 1980-2001

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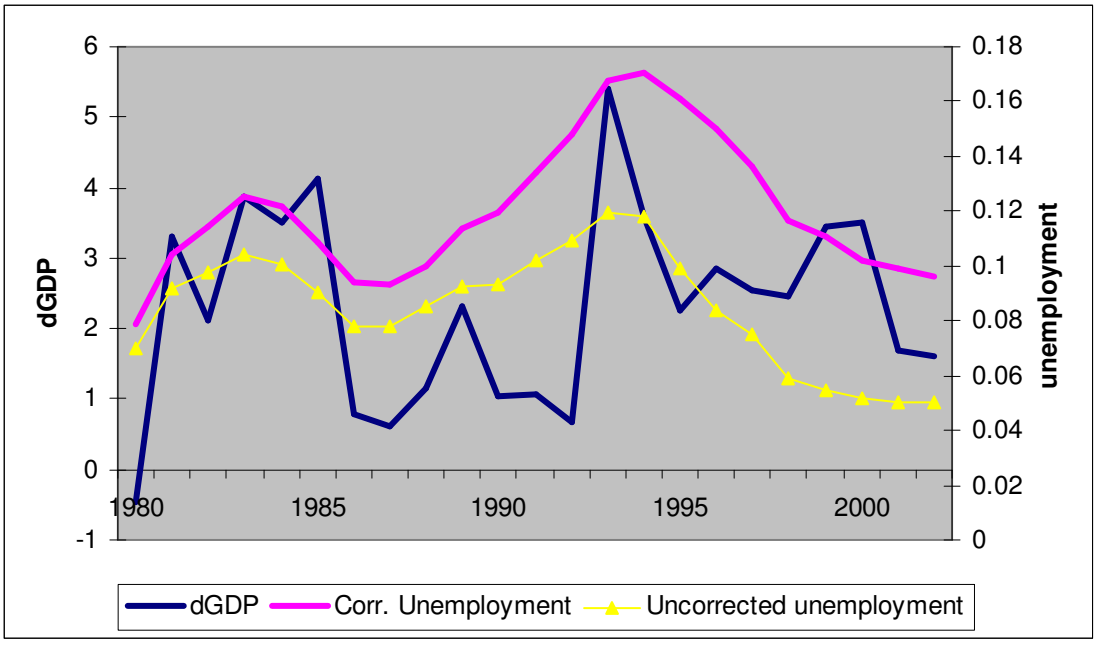
Introduction

These notes presents the statistics for worker wage and mobility for Denmark covering all employees and all private work places over the period 1980-2001. In particular, we have looked at the years 1981, 1990, and 2000.
The first part presents a description of the Danish labor market and its institutions over the years since 1980. The second part describes the data, and the third part describes the questions as listed in the notes for the NBER-project.

Macroeconomic Conditions

Figure 1 below describes the development of unemployment and annual change in GDP. Unemployment has gradually become more and more dubious as a benchmark because passive and active labor market policies play an ever bigger role. We have therefore included an uncorrected unemployment curve together with a curve including the active and passive labor market policies for those below 60 years of age. The main difference is the level, while the peak points is untouched.

Figure 1. Development in unemployment and annual growth in GDP.



Institutional settings

Though the Danish labor market in many ways looks like other labor markets in Europe and North America, it has a number of features that differentiates it. Some of these, but not all, are shared with the other Nordic labor markets. First, the participation rate of women has been among the highest in the western world. Second, retirement age

used to be relatively high in Denmark but has in relatively few years moved downwards. Third, unemployment benefit to low-wage earners, measured as the compensation given to none working compared to their alternative wage, is the highest in the world. The compensation is not as good for high wage earners. Fourth, unemployment benefit is relatively easily obtainable. Fifth, membership of Unemployment Insurance funds is voluntary. Sixth, wage bargaining used to be highly centralized, but is now decentralized. Seventh, the membership rate of trade unions and the coverage rate are both high. Eighth, there is little job protection for blue collar workers and only a modest protection for white collar workers. Ninth, indirect wage costs are low in Denmark, while direct taxation is high. Tenth, agreements between employers and trade unions are more important as regulatory mechanisms than legislature and Government interventions compared with many other countries. The latter is one of the most important ingredients in "the Danish model". Each of these aspects has consequences for the behavior of people, firms, and for the functioning of the labor market.

Some of these specific features make Denmark look much more like the United States than like most other European countries. Below, we have touched each of these issues so the reader can get an impression of the Danish Institutions and the result of this system. We have organized the following so that the general descriptions are placed in an appendix, while those parts that are of most interest for the NBER project is in the text.

Wage bargaining

The wage setting in Denmark has undergone huge changes in recent years. The old system is, however, still relevant when one looks at relative recent wage statistics and there are still groups covered by the old system. The new system is much more decentralized and leaves only non-wage issues to the central level. All wage bargaining have been moved down to lower level organizations or to the firm level.

The wage formation in Denmark used to be highly centralized with biannual wage bargaining between LO[1] and DA[2] and between the unions of the public employees and the Government. As a result of these negotiations, wages and planned wage hikes were set for large groups of employees and were fixed for a contract period that usually ran for 2 years. However, the contracts were not equally binding for all groups of workers and employers on the private labor market. Thus, wages were fixed for employees in the private labor market under the so-called "normallønssystem". The workers covered under this wage system were mainly non-skilled and most were women. Other groups of workers (in particular skilled workers) had wage contracts, where discrete wage increases were allowed and anticipated during the contract period. The wage setting system has over the last couple of general agreements become more and more directed towards a system where only the lowest wage is negotiated and where the employer and employee agree on additional pay (mindstebetalingssystemet). As a consequence the central wage negotiations are less and less concerned with wages, while issues covering pension, working hours, and vacation are still left for central bargaining.

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[1] LO is the Federation of Trade Unions.

[2] DA is the Employers Federation.

The result is that there are increased possibilities for agreeing on special local wage systems and for introducing new performance related pay including bonus. These new possibilities could in theory be used as a way of lowering the base wage and levying a larger part of the business risk on the worker. However, this seems not to happen, though the case interviews should clearly ask questions in this direction. Though most ordinary employees nowadays get their wage by the month, wages are for most workers calculated by the hour. This means that overtime is normally remunerated with a higher rate, as there will be reductions for absence due to sickness. (It is worth remarking that the overtime rate kicks in earlier in Denmark than in the US due to the shorter working hours). Consequently, this group of employees is categorized as hourly paid contrary to other groups of personnel working with administrative processes, supervisors, and managers who are usually paid by the month. Overtime for salaried employees is remunerated with extra pay, no pay, or time off.

The group of hourly waged is different from the group of salaried employees with respect to employment protection. Thus, there is little job protection for the first group unless there are special agreements made by Unions for example. In principle an employer may lay off an employee almost instantaneously unless special agreements on advance notices have been made with the Trade union. But even then, these notices are usually short. In most European countries there are different obstacles in such situations, and in this respect Denmark looks more like the US than Continental Europe. For most salaried employees the situation is different. A law provides rules for how long in advance the employee should have notice of a lay off. But the legislation is not prohibiting lay offs.

While the wage setting has been decentralized on the private labor market, the public sector wage bargaining is still highly centralized with central negotiations every 2 years. However, a new wage system called “New-wage” has much fewer steps on the ladder than used to be the case. It is the intention that more of earnings should be paid as personal allowances, depending on qualifications, job functions and individual productivity. The element of individual performance related pay is still fairly small within the public sector. The public sector, however, has always had a career system, where promotions to some extent are dependent of performance.

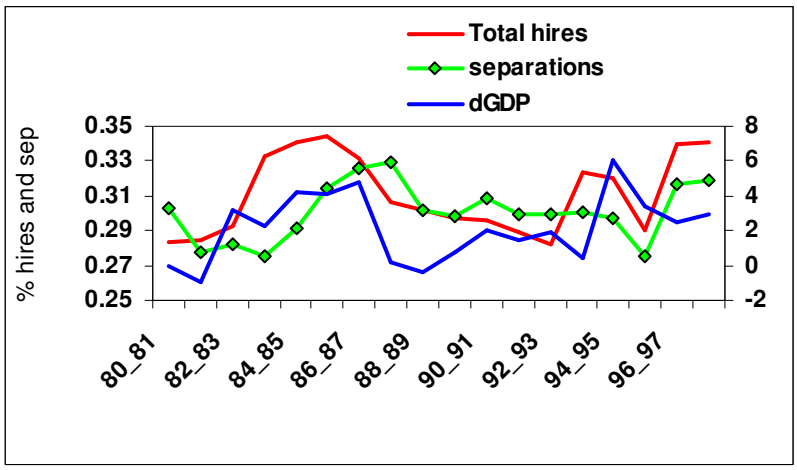
Flexibility

One of the outcomes of the organization of the Danish labor market is that it is as flexible as the US labor market though with a distinct element of welfare. One of the reasons is that there is the same (low) level of job protection in the two countries together with an unemployment system that provides high coverage. On top of that comes that Denmark has a fine meshed welfare safety net consisting of unemployment benefit and social welfare. Furthermore, all work related benefits as sickness pay, vacation pay and pension are almost independent of the current employer (see the appendix on the Danish Model). This probably has consequences for the job search of individuals and for the perceived sense of security in case of job change and unemployment. However, the existence of the Danish Welfare State will also have consequences for the way firms are acting when deciding on lay-offs and other personnel relations. The consequences are

that the Danish labor market has very high job mobility and high mobility with respect to wages.

Job mobility measured as the separation rate from jobs is as high as 29% measured over a 20 year period (Anders Frederiksen and Niels Westergaard-Nielsen, 2002). Figure 2 shows the pattern over the business cycles.

Figure 2. Hires and separations over the business cycle. (right hand scale is dGDP)



Of course it is higher for young than for older. Furthermore, job changes are found to be closely related to wage growth. For instance, (Paul Bingley and Niels Westergaard-Nielsen, 2004) find that about 1/3 of accumulated wage growth for a 50 year old employee has happened in connection with change of employer. More interestingly, mobility out of low-wage jobs is also found to be high. Thus, following a cohort of 100 low-wage earners three years after there is only between 20 and 40 left. Some have exited to the welfare system, though most have actually got better paid jobs. In Frederiksen and Westergaard-Nielsen, 2002, we have looked at destinations for all transitions (separations from a private sector job). On average 29% leave their job every year. 2/3 find another job within a year, while 1/3 transit to unemployment, out of labor force, education or retirement. The wage gain by moving job compared to staying for another year is about 2 times the wage increase obtained by staying on in a job. (Bingley and Westergaard-Nielsen, 2004).

The reason for the high job mobility is undoubtedly the lack of job protection, as known in the rest of Europe, together with a generous unemployment benefit. Thus, eligibility is high and the use of the system is widespread, as about 20% of all employees appear to receive unemployment benefit at least once every year. The main factor responsible for this is that there is no experience rating on members or employers contributions as in the US. Surprisingly, this has an impact on all jobs in Denmark since even high wage earners are using unemployment benefits to bridge spells of unemployment between jobs. One of the costs of the present UI system is that the number of hours worked is relatively low in Denmark. (See the appendix for details).

Finally, it should be mentioned that the income tax in Denmark is high for everyone with the lowest marginal tax bracket of about 38%. Means tested benefits for the low wage earners means that the effective tax rate can be very high.

Data sources

The main data source is a dataset developed at CCP based on administrative register data from Statistics Denmark called IDA. This covers the whole population aged 15 to 74 after 1980. Data have been extended with different sets of surveys using the common population ID-number as the merge key.

The basic register data is longitudinal in nature and allows us to follow persons on an annual basis. Data covers approximately 4.5 million persons each year from 1980 to 2001 and probably onwards. Data contains information on an individual level covering areas such as income, employment, municipality of work, education, municipality of residence, and detailed demographics. A special feature of the CCP data is that they are linked with workplaces and with employer ID's. Statistics Denmark determines this link on a specific day in November on the basis of tax reports from firms. For the years 1992 until 1997 we have accounting information on a subset of firms (about 7000). We are currently working on extending this with more years and more firms.

The background data consists of data from various registers supplemented with data from the latest census in 1970. Thus, data on education come from the Census in 1970 and from reports from all educational institutions on their current population of students and their completion. This means that the educational register contains status and possible updates after the census. Almost all educations and most vocational training are covered in this way.

Data offers the unique feature of tracking personal movements over time with respect to i.e. jobs, firms and earnings.

There are two sources of wages. First, the register data contains tax based information on the total earnings paid to each individual worker during the year. Earnings may consist of earnings from several employers. For most purposes, we are using the wage earned in the November firm. These data are considered to be of high quality because they are used by the tax authorities to determine the earnings of the employee and at the same time the deductible costs of the employer.

The amount of work measured in hours as a fraction of the normal working year is related to employers' contributions to a comprehensive pension scheme. For hourly paid, i.e. all blue collar workers pension contributions are proportional to the number of hours worked up to 1993. For monthly paid the supplementary pension is paid according to the normal length of the working day using a three step ladder scale. One further problem in using the supplementary pay for hours is that overtime does not give extra points.

An hourly wage can be calculated in a relatively safe way by dividing the earnings at that particular employer with the similar pension contribution times the normal working hours of the year. The results are probably best for the hourly paid, but results seem reasonable until 1993 when comparing to wage statistics of the Employers Federation (DA). After 1993 pension contributions were gradually also paid during sickness and unemployment spells. Consequently, the quality has deteriorated and we are looking for alternative ways to calculate an hourly wage..

The other source is a new wage statistics that originates from the data reported to the Employers Federation and is the basis for the membership fee. Other employers deliver similar statistics as a survey. These data contains the hourly pay and the number of hours on each individual worker. The statistics has only been usable for the most recent years. We are currently working on implementing the new information given in the new survey.

The conclusion with respect to wages is that total wages are highly reliable. The amount of work is however less reliable and has become less reliable. Consequently, calculation of an hourly wage rate may become less reliable. However, for general comparisons, this has been shown to be acceptable.

Appendix

The appendix contains a description of the Danish labor market institutions.

Female participation

The high female participation is an important characteristic in Denmark. The interesting aspect here is that women are now participating almost as much in the US as they are in Denmark. Unlike the US in Denmark, this has happened simultaneously with a massive growth in child care facilities that started in the late 60's. Child care is provided by the public sector to an extent where 6 out of 10 children in the age group 1-6 is under publicly provided daycare (Stat.Dk). Daycare used to be highly subsidized but is now less so. Female participation started to grow as late as in the 1970'es closely related to the growth of the public sector and the creation of the present welfare state. Many of the jobs, particularly in the public sector, started as part time jobs. Now only about 8-9% of women above 25 years old and less than 55 work part time. Young women tend to work much more part time and so do older women probably because jobs are combined with some other activity. The different sectors of the economy do not differ anymore with respect to the part time participation. Thus, it is characteristic that female participation has gone via part time to full time over the years since the 1970s.

The lowest wages are still found for females. Despite a law requiring that men and women get the same salary for equal work the difference is still about 7-8%. It has been shown in several studies that the main gender difference with respect to wages is in the allocation on jobs.

Pension systems and retirement

Denmark has for many years had a pension system, where the entire population (and not limited to the working population) could get old age pension from the age of 67 (65 for women and now gradually lowered to 65 for men and women). This is a pay as you go system, where the Parliament regulates benefits and where revenue comes from current tax revenue. In 1979 an early retirement program was introduced. All members of the UI system could receive a benefit similar to the UI from the age of 60 and until normal pension could be obtained. Additionally, a publicly provided disability pension exists for all age groups, where eligibility is determined on health grounds. The proportion receiving disability pension was in 2000 about 10% of the labor force. The

result of especially the early retirement program has been that the average retirement age has been falling over time. In 2001, 50% of a cohort had retired at the age of 61.

Especially the early retirement program has been important for older workers because it creates a vacuum for workers in their late or mid 50's who become unemployed, where employers are reluctant to hire them, because they expect that they will go on early retirement when they become eligible. It has been tested if the early retirement program is used by employers to "get rid of older workers". Bingley and Lanot (forthcoming) have shown that there is no firm effect with respect to the use of the program, indicating that employers are not systematically pushing elderly employees into early retirement. Rather it is other factors such as the work situation of the spouse that is important.

Unemployment benefit

Unemployment benefit is still partly organized along the "Bismarckian lines". Thus, it is voluntary for workers to become members of the UI-system, which is organized in more than 30 different occupational unemployment insurance funds. Membership is conditional on that the person has had a job for at least one year. After 1 years of work a worker is eligible to unemployment benefit. Unemployment benefit is calculated as 90% of the previous wage with a maximum of 1800€ per month, thus low income groups have a replacement ratio of 90%, while it is lower for higher income earners. Unemployment benefit is taxed, though a special tax of 8% on all earned income is not paid of unemployment benefit. The high replacement ratio and the asymmetric tax create an incentive problem for the lowest income earners as they earn little by working compared to being unemployed. It has been demonstrated that 23% of all employed women and 12% of all employed men earn 80€ less per week by working relative to receiving unemployment benefits. (Smith, 1998). Unemployment benefits can be obtained from the first day of unemployment and last 1 year without other obligations than seeking work. After 1 year of unemployment the unemployed has to take part in active labor market policies. Since there is almost no experience rating for employers and no experience rating for workers together with a high replacement ratio there are many short spells of unemployment. Even in years with low unemployment more than 20% of the wage earners have experienced at least one spell of unemployment. Furthermore, it is quite common that these spells are concentrated around Christmas/New Year vacation and other vacations. As a result, total working hours are about 80% of the total normal hours (explained below) for lower income earners who instead receive unemployment benefits.

The UI system is financed by general tax revenue but paid by the private UI funds. The UI funds are unofficially connected to the Trade Unions with the result that membership of the UI system is considered as a package together with a union membership. About 80% are members of the UI system and about 85% are members of Trade Unions. The close relationship has been shown to explain the high Union Membership, (Neumann et *al.*, 1991).

Education and qualifications

Denmark is by no means in the top group of countries with respect to education. First, a relatively large share of the population has no further education than compulsory schooling. Second, a low share has upper tertiary education.

Table 2: *Formal qualifications in Denmark compared to other countries.*

	Primary and lower secondary education	Upper secondary education	Lower tertiary education	Upper tertiary education
ISCED	*0; 1; 2*	*3; 4*	*5*	*6*
United States	11	51	9	29
Denmark	17	54	22	6
Finland	26	41	18	15
France	34	43	11	12
Germany	12	61	10	16
Norway	14	58	2	26
Sweden	21	49	16	14
Country mean	38	68	10	16

Notes:
ISCED 0; 1; 2: Kindergarten and basic school
ISCED 3; 4: Vocational training (apprenticeships) and high school
ISCED 5: Short, non university educations, college etc.
ISCED 6: University educations, Master and PhD
Source: OECD, Education at a Glance, 2000

The most important qualification comes from the formal educational system, which consists of 9 years of compulsory school together with higher educations and vocational training. The public sector in Denmark provides most of these educations at no direct cost to the individual. For comparisons, educations are usually divided into several levels. The lowest level of school is the compulsory 9 years of basic school. The next is the 10th grade, and on top of that comes “gymnasium” (high school), which is another 3 years. At the same level is the apprentice training. Then comes college educations and on top of that BA, MA and Ph.D. educations. The apprentice training is the most widespread vocational training in Denmark. 33% of a youth cohort gets an apprentice training. Nowadays such training is common in Denmark, Germany, Austria and Switzerland and organized as school combined with practical training. Employers and representatives from the Trade and the State determine the curriculum jointly. Workers who have served an apprenticeship are traditionally called skilled workers in contrast to non-skilled. The latter characterization does not preclude that many of these workers have actually acquired high skills within a specific area. Skilled workers have traditionally a broad general training of 3-4 years that makes them flexible.
Additionally, there is a large element of on-the-job-training, where people improve their skills by doing the job and by taking part in specific courses. Some of these are organized through the public system of AMU-courses, which are mainly targeted on ordinary wage earners. Another segment is largely privately organized. There is no statistics for the latter, but there are occasional surveys that show a huge activity in this area.

The Danish model for co-operation

The overall labor market model in Denmark is often dubbed "The Danish Model". The key ingredient in the Danish Model is that the Trade Unions and the Employers Federation (the social partners) make agreements on most of the regulatory issues, while it remains to the government to "pay the bills". The social partners do wage setting and bargaining. They also make agreements on normal working hours, and set rules for labor protection with respect to overtime and work environments. Another example is that there is no minimum wage legislation in Denmark. Nevertheless, the social partners have agreed that no member firm will pay less than 89.50 DKK per hour plus 15% vacation pay, i.e. altogether 13.8€. Though the employers' organizations do not have full coverage the unions are very keen on identifying workplaces paying less. Still, cases exist where workers get less. Anecdotal evidence indicates that it happens within the unorganized part of the retail sector, and hotels and restaurants. The legislation in most other countries regulates many of these issues. As a result, the Danish Government provides unemployment benefits and retraining for those who are pushed out of their jobs because their productivity in their current job is too low. The Government also provides health care and disability pension to those who cannot follow the pace of one reason or the other. In other words, the Government provides the safety net. This is also the case with respect to those who are not covered in case of unemployment. These are in general eligible to social assistance, which is of the same size as the UI-benefit but with the main difference that all payments are means tested so that benefits can only be obtained if there are no other sources and no wealth.

The Danish labor market model has close ties to the similar Swedish Model and because of the similarities one sometimes talks about a Nordic Labor Market Model. The main idea is that whenever a firm cannot keep workers productive in their current job the Government should take responsibility and retrain workers. After retraining the workers should now be more productive and can therefore be hired in a new firm and thereby increase overall productivity.

There are, however, distinct differences between the Danish and Swedish models. One of these is that the Danish Model does not prohibit lay-offs, where the Swedish is more restrictive. The idea in the Danish model is that firms should not be forced to maintain a large workforce if it is not productive any more. In such a situation it is better for society that firms can rehire workers where these workers will have a larger productivity. This increases overall flexibility and productivity. Of course, it also puts a burden on the workers and that is probably the reason why unemployment benefit in Denmark has remained so relative high for the low wage earners, at least. Another difference is that the Swedish model builds heavily on a tripartite cooperation between Government, Unions and Industry. That has lead to a different firm structure dominated by relatively few big firms compared to Denmark.

Working hours

In Denmark the so-called "normal hours" are set as a result of the general wage bargaining between The Trade Unions and the Employers Federation. As elsewhere, the normal hours have been gradually reduced in Denmark as a consequence of Union

pressure and the general increase in welfare. The reduction is on average about 0.7% per year (Andersen et *al*., 2001). The reduction has had different causes. In the late 1960s and in the beginning of the 1970s the reduction was in hours per week, then a period came where vacation was increased from 4 to 5 weeks; and in the 90's the reduction happened again through a reduction of the weekly hours from 40 to 37 hours. Recently, we have started expanding vacation from 5 to 6 weeks.
Normal hours in Denmark are among the lowest in the world. Only the Germans work less than the 1690 hours per year worked by the Danes. However, on average people do not work that much. Especially the low-wage earners work less. The average hours for low-wage-earners is only about 1140 hours in Denmark, while it was about 1700 hours in the US in the same period (Westergård-Nielsen, 1999). The main reason is undoubtedly that the Danish UI system provides a subsidy to search time in between two jobs and to temporary lay offs.

References

Bingley, Paul and Westergaard-Nielsen, Niels. "Careermaking and Job Mobility," Aarhus: CCP, 2004.
Frederiksen, Anders and Westergaard-Nielsen, Niels. "Where Did They Go?," Bonn: IZA, 2002.

Tables with data

Below are our calculations of the different statistical measures.
We have applied a brand new update of the data. As usual, this gave problems, and has meant that we are still lacking computation of tenure.
All calculations are made on privately employed people. There is a data break in 1995 with respect to occupations due to a changed classification. Unfortunately, there seems to be no way to bridge the break.

Table 2: Structure of Wages Within and Between Firms

	Wages in 1990 kroners				Log monthly wages in 1990 kroners		
	1981	1990	2000		1981	1990	2000
Average Wage	17288.34	19060.5	20157.67		9.709563	9.800561	9.849048
(s.d.)	5699.496	6831.104	7925.023		0.3064424	0.3241443	0.340621
(90%-ile)	24347.5	27560.05	29915.62		10.81222	10.22412	10.30614
(10%-ile)	11540.83	12578.14	12859.45		9.353646	9.439715	9.461834
[N]	647221	770474	824180		647221	770474	824180
Average of firm average wage	16513.33	18335.26	19169.96		9.658528	9.757951	9.799296
(s.d.)	3041.279	3727.952	4167.398		0.177061	0.1873258	0.1940037
(90%-ile)	20485.32	23123.92	24697.78		9.885296	9.998677	10.059
(10%-ile)	12898.29	14213.53	14719.13		9.43165	9.53202	9.569417
[N]	9355	11379	12457		9355	11379	12457
Average of s.d. of wage	4637.298	5381.528	5900.564		0.262876	0.2713001	0.2720371
(s.d.)	1918.341	2344.477	2726.33		0.084617	0.086943	0.0810219
(90%-ile)	7198.385	8571.457	9616.76		0.3712647	0.3803248	0.3732103
(10%-ile)	2359.091	2613.81	2800.97		0.1565487	0.1617198	0.1691287
[N]	9321	11347	12410		9321	11347	12410
Correlation(average wage, s.d. of wage)	0.5198	0.6465	0.7202		0.2068	0.3424	0.4203
Average Wage for workers between 25 and 30	16363.21	17662.44	18020		9.675606	9.747465	9.761598
(s.d.)	3979.411	4692.908	5272.122		0.2308222	0.2482651	0.2695617
(90%-ile)	21258.39	23580.46	24374.04		9.964507	10.06817	10.10127
(10%-ile)	12109.15	12855.73	12573.51		9.401716	9.461545	9.439347
[N]	106716	138199	124947		106716	138199	124947
Average Wage for workers between 45 and 50	18293.09	20721.52	21330.95		9.764721	9.881171	9.904271
(s.d.)	6221.748	7718.404	8527.508		0.3069067	0.3289351	0.342329
(90%-ile)	26290.48	31011.26	32239.7		10.17696	10.34211	10.38095
(10%-ile)	12148.64	13441.75	13553.43		9.404973	9.506121	9.514395
[N]	74976	115411	118105		74976	115411	118105

Each cell would have the specified summary statistic, the standard deviation of that variable, and the number of observations used.
Where appropriate, cells would also have the 10^{th} and 90^{th} percentile.

Table 3: Wage Dynamics

	Change in Wages in 1990 kroners (defined as wage in year t – wage in year t –1)			Change in Log monthly wages in 1990 kroners (defined as log wage in year t – log wage in year t-1)		
	1981	1990	2000	1981	1990	2000
Average change in wage	2217.207	976.1172	1109.485	0.1212087	0.0502797	0.0495419
(s.d.)	2086.784	2348.976	3096.111	0.0982103	0.1050066	0.1259401
90%-ile	4126.449	2976.866	3578.139	0.2182162	0.1504674	0.1665259
10%-ile	574.5026	-745.5479	-925.1058	0.0331908	-0.0395742	-0.0475088
[N]	525283	556411	589511	525283	556411	589502
Average of firm average change in wage	2150.538	887.576	1069.643	0.1215344	0.0469192	0.0491537
(s.d.)	990.8868	1376.224	1495.764	0.0481586	0.0612161	0.065
90%-ile	3232.669	1910.423	2289.773	0.1720425	0.097059	0.1047942
10%-ile	1152.274	-79.12582	-20.34767	0.0728458	-0.0029049	-0.0003127
[N]	8055	9248	10682	8055	9248	10682
Average of s.d. of change in wage	1821.989	1960.379	2290.161	0.0957222	0.0983593	0.1040766
(s.d.)	1186.844	1616.669	2084.272	0.0495169	0.0559466	0.0617335
90%-ile	3011.944	3266.459	3945.804	0.151893	0.1584089	0.1669178
10%-ile	839.2239	840.88	920.3848	0.0490955	0.0482045	0.051038
[N]	8018	9185	10610	8018	9185	10610
Average change in wage for people who change firms	1714.381	774.3456	657.8939	0.0964017	0.0400358	0.0269234
(s.d.)	4064.286	3466.93	4521.082	0.2266538	0.1726451	0.2128798
90%-ile	5697.188	3716.523	4516.086	0.3298258	0.194932	0.217884
10%-ile	-2419.4	-2183.728	-3363.189	-0.1371439	-0.1151857	-0.1707388
[N]	31630	97610	111174	31624	97604	111129
Average change in wage for people with tenure < 3 years, observ = a person						
(s.d.)						
90%-ile						
10%-ile						
[N]						
Average change in wage for people with tenure ≥ 3 years, observ = a person						
(s.d.)						
90%-ile						
10%-ile						
[N]						

Table 4: Mobility
Panel A
All Jobs*

	All firms (20+ employees)				Firms with 100+ employees		
	1981	1990	2000		1981	1990	2000
# firms	8027	9014	10453		1237	1303	1498
Employees (s.d.)	105.7403 399.258	98.93754 383.7956	92.78284 444.9468		450.1754 944.1902	424.8741 938.796	391.2497 1127.398
Number of occupations (s.d.)							
Number of levels (s.d.)							
Employment growth (s.d.)	0.0479823 0.2102173	0.0440311 0.2292207	0.0305053 0.2177066		0.0391145 0.17089	0.0440931 02090938	0.025033 0.2116448
Exit rate (s.d.)	0.2357519 0.1711463	0.2523691 0.1861481	0.2652908 0.1766333		0.2052064 0.146449	0.2297054 0.1653539	0.2389035 0.1511207
Exit rate, top quartile of firm wages (s.d.)	0.1183516 0.170332	0.1340158 0.1965966	0.1418881 0.1810372		0.1146541 0.1500891	0.1306341 0.1627065	0.143375 0.1466558
Exit rate, bottom quartile of firm wages (s.d.)	0.3973659 0.2613462	0.4364041 0.2800441	0.4451788 0.2600802		0.3589074 0.2090061	0.4144992 0.2360454	0.4143813 0.2078656
Exit rate, top decile of firm wages (s.d.)	0.1065832 0.1960439	0.1267896 0.2216974	0.1235242 0.2064084		0.1105727 0.1572665	0.1275366 0.1728666	0.1398742 0.15669
Exit rate, bottom decile of firm wages (s.d.)	0.4777506 0.3303245	0.5282282 0.3462055	0.5286564 0.330502		0.4541591 0.2280379	0.5127856 0.2597174	0.509397 0.2326632
Entry rate (s.d.)	0.2498534 0.1709709	0.2740972 0.1796182	0.2909676 0.1793797		0.2321417 0.1717991	0.245053 0.1621212	0.2674562 0.1580109
Entry rate, top quartile of firm wages (s.d.)	0.067482 0.1461995	0.0745111 0.1525385	0.0724972 0.1442392		0.07368 0.1523628	0.0667731 0.129045	0.0739828 0.1299548
Entry rate, bottom quartile of firm wages (s.d.)	0.5633205 0.3084354	0.616836 0.2947451	0.6481173 0.3249204		0.5351659 0.3632209	0.5900384 0.2554184	0.6289241 0.2237445
Entry rate, top decile of firm wages (s.d.)	0.0576273 0.1621069	0.0656399 0.1684675	0.0569674 0.1466108		0.0656943 0.1548394	0.0600449 0.1276684	0.0624392 0.1227164
Entry rate, bottom decile of firm wages (s.d.)	0.6911112 0.3128796	0.7670385 0.3064445	0.7531069 0.2872336		0.6907523 0.2268912	0.7419794 0.2232107	0.7669118 0.1873895
% of employees who switch jobs* internally (s.d.)							
% of new jobs* filled internally (s.d.)							
% of workers who have been at firm 5+ years (s.d.)							
Correlation (exit rate, average wage), observ = a firm	-0.1362	-0.0702	-0.0409		-0.1302	-0.0598	-0.0663
Correlation(exit rate, average wage change), observ = a firm	-0.1323	0.0307	0.0837		-0.1880	-0.0589	0.1140
Correlation(exit rate, s.d. of wage), observ = a firm	-0.0923	-0.0573	-0.0359		-0.1230	-0.0809	-0.0735
Correlation (entry rate, average wage), observ = a firm	-0.1189	-0.1231	-0.1119		-0.0956	-0.1145	-0.1657
Correlation(entry rate, average wage change), observ = a firm	-0.0374	-0.0060	0.0584		-0.0311	0.0021	-0.0220
Correlation(entry rate, s.d. of wage), observ = a firm	-0.0549	-0.0148	-0.0238		-0.0182	0.0521	-0.0282

Table 4: Mobility
Panel B
High Level Jobs*

	All firms (# firms)				Firms with 100+ employees (# firms)		
	1981	1990	2000		1981	1990	2000
# firms	7707	8745	8958		1191	1280	1464
Employees	47.44233	45.94088	29.1276		211.084	206.0109	115.1947
(s.d.)	236.0023	225.029	151.1799		572.4673	559.408	360.1526
Number of occupations							
(s.d.)							
Number of levels							
(s.d.)							
Employment growth	0.01865	0.0894411	0.0138491		0.0182871	0.0866606	0.0196341
(s.d.)	0.2497471	0.2927638	0.4045497		0.1619059	0.2137018	0.3677674
Exit rate	0.1849875	0.2037349	0.2027278		0.1579158	0.1816704	0.2047047
(s.d.)	0.1867584	0.2009073	0.2390064		0.1335708	0.1514687	0.1843008
Exit rate, top quartile of firm wages	0.0601876	0.0752508	0.0547657		0.061307	0.0784009	0.0608494
(s.d.)	0.11545	0.1330084	0.1145576		0.0799192	0.1091224	0.1003923
Exit rate, bottom quartile of firm wages	0.1621011	0.2033026	0.1209431		0.1459909	0.1924289	0.1104966
(s.d.)	0.1706073	0.190954	0.1653656		0.1118536	0.1422964	0.1233721
Exit rate, top decile of firm wages	0.057164	0.0792642	0.0544714		0.0606164	0.0803913	0.0617195
(s.d.)	0.1488018	0.1730787	0.1466327		0.0960364	0.1165411	0.1097153
Exit rate, bottom decile of firm wages	0.192492	0.2746487	0.1461621		0.1925124	0.2561053	0.1358839
(s.d.)	0.2445523	0.2738344	0.2293385		0.1433523	0.1731157	0.1485022
Entry rate	0.1907601	0.2204561	0.2205414		0.1845431	0.1947743	0.2228148
(s.d.)	0.1887154	0.1961826	0.245829		0.1558089	0.1389017	0.1861744
Entry rate, top quartile of firm wages	0.0324772	0.0418246	0.0271432		0.0391822	0.0382263	0.0265041
(s.d.)	0.093335	0.1017099	0.083548		0.0966126	0.0844157	0.0730133
Entry rate, bottom quartile of firm wages	0.2389426	0.296363	0.2025441		0.2470966	0.2981592	0.2056915
(s.d.)	0.2097736	0.2194831	0.2281273		0.1608989	0.1590855	0.1871087
Entry rate, top decile of firm wages	0.0314264	0.0450637	0.0290137		0.0377547	0.0381749	0.0244526
(s.d.)	0.1170278	0.1358628	0.1101896		0.1029057	0.0878995	0.0728732
Entry rate, bottom decile of firm wages	0.3147308	0.4248419	0.2538293		0.3597634	0.4258954	0.2815144
(s.d.)	0.2984987	0.3028245	0.294021		0.2048427	0.1955324	0.2341963
% of employees who switch jobs* internally							
(s.d.)							
% of new jobs* filled internally							
(s.d.)							
% of workers who have been at firm 5+ years							
(s.d.)							
Correlation (exit rate, average wage), observ = a firm	-0.1230	-0.0459	0.0045		-0.1445	-0.0322	-0.0279
Correlation(exit rate, average wage change), observ = a firm	-0.1083	0.0405	0.1155		-0.1484	-0.0520	0.1493
Correlation(exit rate, s.d. of wage), observ = a firm	-0.0971	-0.0558	-0.0264		-0.1354	-0.0773	-0.0749
Correlation (entry rate, average wage), observ = a firm	-0.0794	-0.0703	0.0232		-0.0813	-0.0563	-0.0196
Correlation(entry rate, average wage change), observ = a firm	-0.0025	0.0067	0.1001		0.0079	0.0154	0.0726
Correlation(entry rate, s.d. of wage), observ = a firm	-0.0563	-0.0285	0.0184		-0.0421	0.0330	-0.0210

Table 4: Mobility
Panel C
Low-level Jobs*

	All firms (+20 employees)				Firms with 100+ employees		
	1981	1990	2000		1981	1990	2000
# firms	7441	8160	10146		1190	1275	1474
Employees (s.d.)	47.08762 168.0717	42.43897 147.0767	56.45437 337.6511		190.5571 388.2481	167.8329 343.0645	236.7449 863.085
Number of occupations (s.d.)							
Number of levels (s.d.)							
Employment growth (s.d.)	0.0066872 0.307412	- 0.1163935 0.4067353	- 0.0083464 0.314058		-0.001939 0.2213334	- 0.1706078 0.3776558	- 0.0124354 0.2750122
Exit rate (s.d.)	0.2481936 0.2200862	0.2668395 0.2428826	0.2762641 0.2026382		0.2208357 0.1663497	0.2518993 0.198935	0.2511057 0.1679982
Exit rate, top quartile of firm wages (s.d.)	0.0719516 0.1281476	0.0762634 0.1348483	0.1024617 0.145628		0.0638616 0.0899473	0.0660302 0.1128389	0.098366 0.1244539
Exit rate, bottom quartile of firm wages (s.d.)	0.2348094 0.216499	0.2485799 0.218768	0.3236565 0.2301141		0.2251757 0.1629791	0.2263334 0.1759925	0.3155332 0.1902969
Exit rate, top decile of firm wages (s.d.)	0.0636102 0.1598169	0.0795994 0.1791632	0.090232 0.1803001		0.057943 0.1003647	0.0615646 0.1225933	0.0927957 0.1328364
Exit rate, bottom decile of firm wages (s.d.)	0.2716654 0.2867176	0.312704 0.2939885	0.3724144 0.3069911		0.2782924 0.2008978	0.2804268 0.2070764	0.3805675 0.2217521
Entry rate (s.d.)	0.2647197 0.2328334	0.2921573 0.2543327	0.308259 0.2160827		0.2535059 0.1990836	0.2749841 0.2143975	0.2856436 0.1833927
Entry rate, top quartile of firm wages (s.d.)	0.0449868 0.1107979	0.0447308 0.1080336	0.0504457 0.1123996		0.0460913 0.1092574	0.0321425 0.0746729	0.047914 0.096356
Entry rate, bottom quartile of firm wages (s.d.)	0.3212004 0.2573035	0.342834 0.2489292	0.4626035 0.2572226		0.3156161 0.2214578	0.3221961 0.2223894	0.4656958 0.2271213
Entry rate, top decile of firm wages (s.d.)	0.0417876 0.1382106	0.0475063 0.1443151	0.0403134 0.127099		0.0418482 0.1125847	0.0296707 0.0789484	0.039842 0.0962054
Entry rate, bottom decile of firm wages (s.d.)	0.3872706 0.3244325	0.4623066 0.3141573	0.5339829 0.316649		0.4036338 0.2536121	0.4111054 0.2458398	0.561423 0.2321445
% of employees who switch jobs* internally (s.d.)							
% of new jobs* filled internally (s.d.)							
% of workers who have been at firm 5+ years (s.d.)							
Correlation (exit rate, average wage)	-0.0991	-0.0241	-0.0090		-0.1636	-0.0138	-0.0324
Correlation(exit rate, average wage change)	-0.0692	0.0198	0.1086		-0.1099	0.0109	0.1542
Correlation(exit rate, s.d. of wage)	0.0239	0.0189	-0.0141		0.0325	0.0164	-0.0458
Correlation (entry rate, average wage)	-0.0672	-0.0191	-0.0361		-0.0845	-0.0164	-0.0905
Correlation(entry rate, average wage change)	0.0342	0.0591	0.1150		0.0428	0.1224	0.0760
Correlation(entry rate, s.d. of wage)	0.0906	0.1066	0.0228		0.1356	0.1797	0.0265

*The definition of "job" as well as high-level and low-level will need to be discussed as these are data set specific. Job is not unambiguous and we may decide to do this on the basis of position in the wage distribution.