

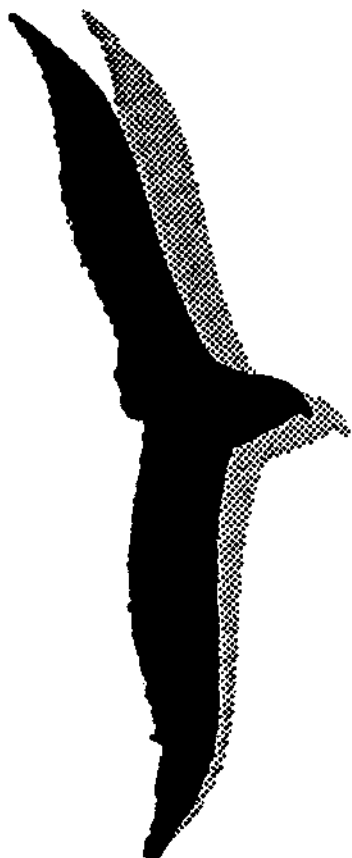
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Union growth in the Netherlands 1961 - 1989

J.C. van Ours

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**UNION GROWTH
IN THE NETHERLANDS
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UNION GROWTH IN THE NETHERLANDS: 1961-1987

Jan van Ours¹

ABSTRACT

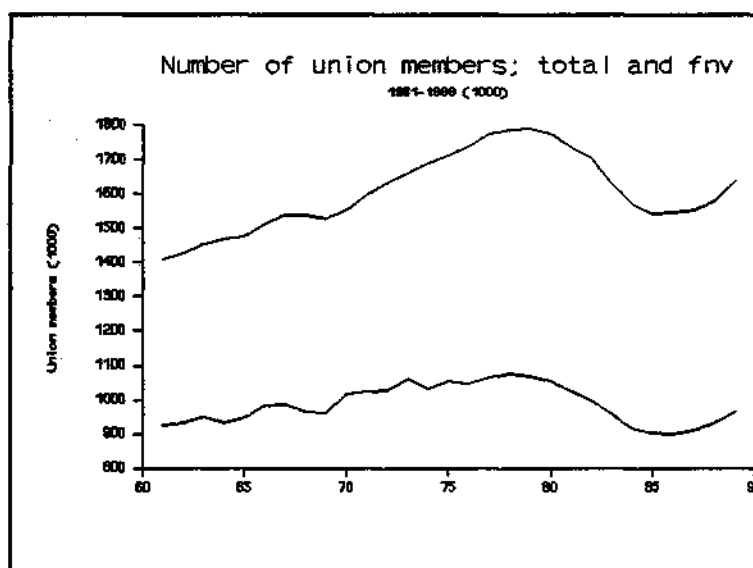
This paper presents an empirical analysis of union growth in the Netherlands over the past decades. The analysis shows that the effect of changes in the industrial structure is very small. It appears that both in the short and in the long run union growth is influenced by the labour income ratio and by unemployment. If the labour income ratio rises (because real wage increases more than labour productivity) or if unemployment declines union membership increases.

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1. INTRODUCTION

Unions in the Netherlands are organized by industry. Most of these unions cooperate at a national level and belong to one of the union federations FNV, CNV or MHP²³. This paper is concerned with developments in union membership at the national level. After a steady growth in the sixties and seventies union membership declined substantially in the beginning of the eighties from 1.8 mln in 1980 to 1.5 mln in 1985 (see figure 1). In recent years there has been a small recovery. The largest union federation, the FNV had 1.05 mln members in 1980, 0.90 mln members in 1985 and about 1.0 mln members in 1990.

Figure 1 Union growth in the Netherlands: 1961-1989



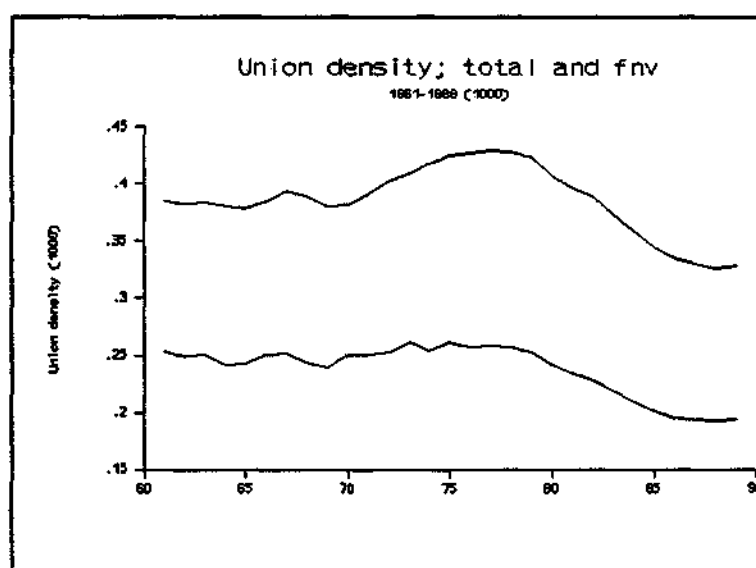
² The FNV (Federatie Nederlandse Vakbeweging) originated in 1982 from the amalgamation of the Socialist federation NVV (Nationaal Verbond van Vakverenigingen) and the Catholic federation NKV (Nederlands Katholiek Vakverbond). For the period before 1982 we take the sum of NVV and NKV-membership as the membership of the FNV. The CNV (Christelijk Nationaal Vakverbond) is a Protestant union federation. In 1975 the MHP (Vakcentrale voor Middelbaar en Hoger personeel), a union federation especially for white collar workers unions was established.

³ Data on union membership in this paper are from the Central Bureau of Statistics. Union density is defined as a share of employment. The data used in the time series analysis are shown in Appendix 1.

One of the most interesting questions when looking at long term union growth is the stability of union density. Is this density stable over a long period of time or are there tendencies for decline caused by changes in the sectoral structure of the Dutch economy, with low density sectors growing faster than high density sectors.

Figure 2 shows union density, defined as a share of employment. Union density remained quite stable in the sixties and seventies but declined substantially in the eighties, total union density was about 38-40% in the sixties, increasing somewhat in the seventies. In the eighties the total union density declined from 43% to 33%. FNV union density was about 25% in the sixties and seventies and decreased in the beginning of the eighties to 19% in 1985, to remain stable in later years.

Figure 2 Union density in the Netherlands: 1961-1989



This paper is about union growth in the Netherlands. We are especially interested in the determinants of the decline in union membership in the beginning of the eighties. To investigate the determinants of union growth we perform both a decomposition analysis and a time series analysis. The decomposition analysis disentangles the effects of changing industrial structure and the effect of changing union membership within sectors. The time series analysis investigates the influence of other determinants.

In time series studies of union growth the dependent variable is usually either the rate of growth of union membership or union density. This paper uses the rate of growth of union membership as the dependent variable and uses lagged union density as one of the explanatory variables. Apart from lagged union density we use explanatory variables specified in levels as well as in first

differences. Our interpretation of the variables specified in levels is that they represent a long term relationship, while the first difference variables represent short term effects. We use co-integration analysis to test for long term relationships, and estimate a first difference equation to analyze short term fluctuations. In doing this we attempt to determine whether or not the sharp decline in union density in the beginning of the eighties is a short term deviation from a long term development or a structural break.

Data on union membership are collected by the Central Bureau of Statistics (CBS) on a quarterly basis for unions belonging to the federations FNV, CNV or MHP. A CBS-survey among all unions is only undertaken every two years. Total union membership data are therefore not available for every year: yearly data for non-survey years are constructed by averaging over two surveys. In the decomposition analysis in section 3 we use the data from the survey held every two years. For our time series analysis we employ annual data. We restrict our analysis to FNV union membership⁴.

This paper is set up as follows. In section 2 we briefly discuss theory of union membership and some empirical studies. Section 3 describes developments in union membership both qualitatively and quantitatively. We present a decomposition of union density in a sectoral and non-sectoral part, from which it appears that changes in the sectoral structure only added a small contribution to the decline in union density. Furthermore, we present some information on inflows to and outflows from unions. In section 4 we present the results of the time series analysis of union growth. Section 5 concludes.

⁴ Data on the MHP union federation only exist since 1975. CNV-data are less suitable for time series analysis because the number of CNV-members shows some large fluctuations, due to individual unions joining this federation.

2. UNION MEMBERSHIP: THEORY AND EMPIRICAL RESEARCH

From the perspective of the individual worker the decision to become a union member depends in theory on the costs and benefits connected to that membership. Theory on union membership, however, is not developed to a high degree of sophistication. Membership studies usually just mention the factors involved, like the individuals' expected benefits of higher wages, greater employment security or better working conditions when joining a union. A reduced form model is then estimated, with a focus on the analysis of the effects of changes in the economic environment on union membership. The dependent variable is either the change in the number of union members or union density. When using the change in the number of union members as the dependent variable, lagged union density is often used as an explanatory variable, which is supposed to have a negative effect on union growth due to a 'saturation effect': if the density gets higher it is more difficult to persuade the remaining non-union members to become a union member and union growth will become less.

Explanatory variables usually refer to economic conditions: prices, wages, employment and unemployment. Other explanatory variables used in empirical analysis are for example: political environment, strikes, government expenditures on social benefits.

Rising prices are supposed to induce union growth due to a 'threat effect'. Rising prices are a threat to the standards of living of workers. Rising nominal wages are usually also expected to induce union growth because of the credit workers attribute to the unions.

Employment and union membership are also positively related. If the union is as attractive to new workers as it is to incumbent workers a growth of employment will automatically lead to a growth of union membership.

The influence of unemployment is ambiguous. Ashenfelter and Pencavel (1969) use unemployment in the preceding trough of the business cycle as explanatory variable, because this is supposed to represent workers stock of grievances. Therefore a positive influence is expected: the larger this unemployment variable, the more workers are inclined to become a union member. There is however also an argument in favour of a negative relation between unemployment and union membership. The higher unemployment the stronger the position of employers on the labour market. Therefore workers may be less willing to risk employer retaliation by being union members.

Political environment may influence union growth because some political parties are supposed to be more 'pro-union' than others. A change in the political scene may therefore have its effects on union growth.

Strikes may induce workers to join unions in order to receive a strike pay or because of the public relations: strikes may favour the charisma of the unions.

Finally, increasing government expenditure on social benefits

may have a negative influence on union growth, if government is taking over some of the unions former tasks, thus making the unions less attractive to workers.

It is not the intention of this paper to give an extensive survey of studies on union growth. A brief survey suffices to show that there are many differences between studies, not only with respect to the kind of explanatory variables used in the analysis, but also with respect to the dependent variable. Furthermore, there are differences in the way economic variables appear to influence union growth.

Ashenfelter and Pencavel (1969) use consumer prices, unemployment and employment as explanatory variables in their seminal study on US union growth. All of these factors have a positive influence on union growth. Furthermore, they find a positive relationship between union growth and the percentage of Democrats in the House of Representatives, from which they conclude that pro-union sentiment leads to a greater demand for union representation by unorganized workers. Finally they find a negative influence of the union density variable.

Bain and Elsheikh (1976) in their study of UK union growth find a positive influence of prices and wages, but a negative influence of unemployment. Union density has a negative influence.

A study of German union growth by Schnabel (1987) also concludes that wages and prices have a positive influence. Schnabel finds that the level of unemployment in year $t-1$ has a negative influence on union growth in year t , while unemployment in year t has a positive influence of about the same size. So, there is no long term influence of unemployment on union membership. Finally, Schnabel finds a positive influence of the number of strikes, but no influence from lagged union density.

Carruth and Disney (1988) analyzing UK union growth, find a positive influence of employment, a negative influence of unemployment and - surprisingly - a negative influence of wages. Carruth and Disney use the previous year's union density as an error correction term in their estimates. The coefficient of this error correction term appears to be significant, which seems to imply that union density is stable over long periods of time.

Recent examples of studies which use union density as the dependent variable are by Booth (1983) and Neumann and Rissman (1984). Booth finds that prices and wages have a positive influence on UK union density, while actual unemployment has a negative and previous unemployment has a positive influence. In the long run union density only depends on prices and wages.

Neumann and Rissman find a positive influence on US union density of prices, employment and unemployment. Furthermore, they find a positive influence of the fraction of representation elections won by unions and a negative influence of government expenditures on social welfare (expressed as a fraction of GNP). The latter phenomenon is ascribed as a substitution from union services to government services, which makes union membership less attractive. Neumann and Rissman also present a decomposition

analysis of changes in union density from which it appears that about 45% of the decline in union density may be attributed to secular changes in the structure of employment by industry.

With respect to the influence of economic variables most studies only have one effect in common: rising prices have a positive influence on union membership. The evidence on the influence of nominal wages is mixed. Some studies do not investigate this influence, whilst most studies that do, find a positive influence with the remarkable exception of Carruth and Disney (1988). Employment appears to have a positive influence on union growth, which is not surprising. The influence of unemployment is unclear. There seems to be a difference between US and UK studies, the former finding a positive, the latter a negative influence. Perhaps this is due to the fact that in the US short term fluctuations in unemployment prevail, whereas in the UK, especially in the seventies and eighties, there was a strong increase in unemployment. If union density is used as an explanatory variable its influence is usually negative, this is consistent with the saturation hypothesis. An alternative explanation is that (lagged) union density is part of a long-run equilibrium relationship, whereas the influence of the other factors attributes to short run fluctuations.

3. UNION MEMBERSHIP IN THE NETHERLANDS: 1961-1987

Each country has its own characteristics in political and legal structure. Structural differences may attribute to differences in union growth. In this section, we start with a brief survey of the characteristics of the Dutch labour market, with a focus on the role of the labour unions (see for a survey of Dutch unions: Flanagan, Soskice and Ullman, 1983, and for a survey of industrial relations in the Netherlands in the past decades: Van de Wijngaert, 1990).

The main task of labour unions in the Netherlands is to negotiate on wages and non-wage working conditions, to offer special services to their members (for example legal support) and to pay benefits when it comes to strikes. Unions have no task in paying social benefits to unemployed workers.

Employers and unions negotiate on wages in the context of important laws on collective agreements between individual or groups of employers and unions. These laws provide a legal status to collective agreements, and make it possible for the results of multi-employer negotiations also to apply to non-union members and employers not present at the bargaining table. Over the last decades negotiations were usually on real wages. Wages are protected from price inflation by cost of living allowances based on changes in the national consumer price index. Then the bottom line in the negotiations is last years real wage. In the beginning of the eighties the unions gave up this automatic price indexation in exchange for shorter working hours, which was thought to reduce unemployment.

There is also a strong government influence on wage negotiations. In the fifties there was a 'strictly guided wage policy': the government decided the wage increases of the workers. There were no actual wage negotiations between employers and unions. Since the sixties, unions and employers negotiated over the wages but in the seventies and the beginning of the eighties, there were government interventions if the negotiation results were deemed harmful to the national economy. These wage controls did not occur later on in the eighties.

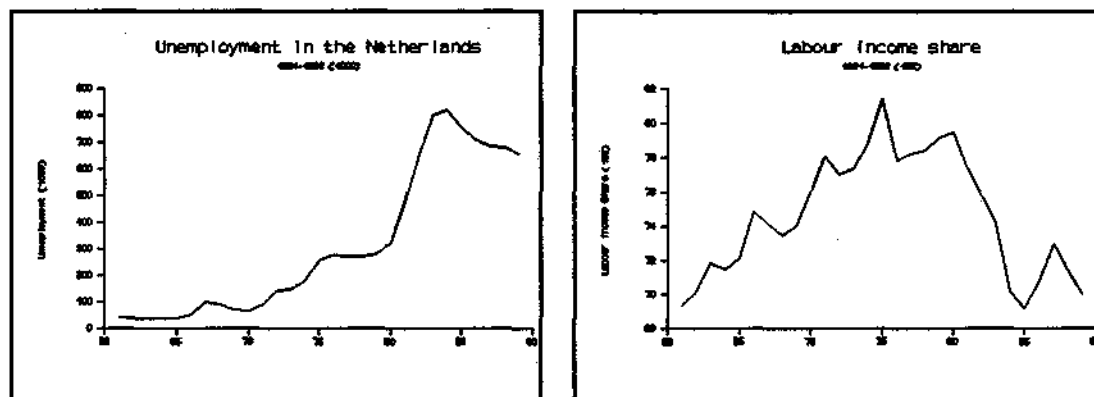
Union membership does not provide a direct wage benefit for the individual. Negotiation results achieved by labour unions are also granted to non-union members. There is definitely a free rider problem here⁵.

Figure 3 shows the development of unemployment and the labour income ratio over the period 1961-1989. In the sixties unemployment fluctuated between 50,000 and 100,000. In the first half of the seventies unemployment increased to 300,000 to remain stable in the rest of the seventies. In the period 1980-83 unemployment rose sharply to reach a maximum of 820,000 in 1984,

⁵ There is no closed shop except in the printing industries, where every worker is obliged to become a union member.

since then unemployment has decreased somewhat⁶. It is obvious that the decline in union membership at the beginning of the eighties must have something to do with the deterioration of the Dutch labour market in that period, when unemployment grew explosively.

Figure 3 Unemployment and labour income ratio: 1961-1989



Another important determinant of union growth may be the negotiations result in terms of real wages. Workers will try to get a fair share of the value added in production. An indicator of this share is the labour income ratio⁷. If real wages rise as fast as labour productivity the labour income ratio remains constant. If real wages rise faster than labour productivity the labour income ratio increases, while firms profit decrease⁸. The labour income ratio fluctuates in the

⁶ The unemployment data presented in figure 3 are from the public employment office according to which in 1989 there were 660,000 unemployed workers. In recent years the official number of unemployed workers is estimated by panel surveys in combination with data from the public employment offices. The resulting number is thus considerably lower; in 1989 it was 390,000. The difference between both numbers for 1989 is mainly due to the fact that the registration of public employment offices lags behind actual developments in workers finding jobs.

⁷ The labour income ratio is defined as the ratio of the sum of gross wages and assigned wage of the self employed to the gross added value.

⁸ The relationship between labour income ratio, real wages and labour productivity holds exactly only if producer prices are used to calculate real wages.

sixties and seventies and increases from 69% in 1961 to a maximum of 81% in 1975. In the period 1980-1985 the labour income ratio decreases rapidly to 70% and fluctuates in the years afterwards.

Of course, union growth is not only influenced by cyclical factors. Union growth may also be influenced by secular trends, like changes in industrial structure from highly unionized sectors to low unionized sectors. To analyze the influence of sectoral changes in employment on union density we performed a so called shift-share analysis. This analysis decomposes the change in union density into three parts: the change in the sectoral structure holding union density per sector constant, the change in union density within sectors, holding sectoral structure constant, and the product of both changes:

$$\Delta D = \sum_j D_j \Delta E_j + \sum_j E_j \Delta D_j + \sum_j \Delta D_j \Delta E_j \quad [1]$$

in which: D_j = union density in sector j
 E_j = number of employees in sector j

We performed this shift-share analysis for two periods: 1973-79 and 1979-87. In the first period, union density did not change much, whilst in the second period it declined rapidly. The results are shown in table 1.

Table 1 Decomposition of changes in union density (%)^{a)}

	<u>Total</u>		<u>FNV</u>	
	73-79	79-87	73-79	79-87
Sectoral structure (ΔE)	-0.8	-0.3	-1.6	-1.4
Sectoral density (ΔD)	1.8	-9.8	-1.8	-7.2
Interaction ($\Delta D \Delta E$)	-0.0	-0.1	0.1	0.5
Total (ΔD)	1.0	-10.2	-3.3	-8.1

a) The calculations are based on an industrial structure of 8 sectors

From table 1, it appears that the contribution of sectoral changes to changes in total and FNV union density is marginal in both periods, as compared to the contribution of changes of union density within sectors. The huge decline in union density can almost entirely be attributed to the latter factor. From this we conclude that the influence of sectoral changes on union density is negligible. So, there appears to be no secular negative trend influence from changes in industry structures. This conclusion is surprising, given that other studies have stressed the importance of changes in industrial structure. As stated before Neumann and

Rissman found that these changes explained almost half of the changes in union density⁹.

Starting in 1973, the two-yearly CBS-survey on union membership also provides information on inflows in and outflows from unions. Table 2 gives an overview of this information. From this table it appears that the inflow of new members has decreased in the seventies and especially in the beginning of the eighties. Since 1986 the inflow has increased. The outflow which remained more or less stable in the seventies and the beginning of the eighties has decreased since 1984. The conclusion which may be drawn from table 2 is that the decline in union membership in the beginning of the eighties and the increase afterwards was due to fluctuations in the inflow of new members. The recession in the beginning of the eighties did not lead to union members giving up membership but led to a decrease in the flow of new union members. Apparently, union membership became less attractive to workers who were not yet union members. A possible reason for this is the rise in unemployment, which unions obviously were not able to prevent. Also real wages hardly increased or even decreased, which was another sign of weakness: the declining labour income ratio underlined the weak position of the unions. In the second half of the eighties unions regained some of their former charisma: employment was rapidly growing, unemployment decreasing and real wages increasing again. Yet, the growth in union membership was insufficient to raise union density.

Table 2 Inflow to and outflow from labour unions (%/year of total union members at the beginning of that year)

	Inflow	Outflow	Net growth
1972/3	12.4	11.0	1.4
1974/5	11.9	10.7	1.2
1976/7	11.4	10.0	1.4
1978/9	10.2	9.7	0.6
1980/1	8.3	11.1	-2.8
1982/3	7.3	10.0	-2.7
1984/5	6.1	8.8	-2.8
1986/7	8.3	7.7	0.5
1988/9	10.9	7.2	3.7

Source: CBS Union survey, held in March every two years

⁹ Visser (1987), performing a shift share analysis over the period 1979-1985, finds that, of the decline in union density in the Netherlands, about one third may be attributed to changes in industrial structure.

4. AN EMPIRICAL ANALYSIS OF UNION MEMBERSHIP

From the discussion in section 3 on the institutional structure of the Dutch labour market it is obvious that not all explanatory variables used in other studies on union growth are equally suitable for an analysis of union growth in the Netherlands. Government expenditure on social benefits, for example, is an irrelevant variable since the unions never had that task in the period of analysis. Political variables do not seem to be important either. Since World War II Christen Democrats have been in power, sometimes in coalition with the Socialists and sometimes with the Conservative-Liberal party. Drastic changes in the political environment have therefore never occurred, so we do not expect an influence from politics on union growth. Finally, prices will not influence union growth much, because from the end of the sixties until the beginning of the eighties there was a price indexation of the wages. Negotiations are, for a large part of the period of analysis, on real wages. Workers will also be interested in the rise in real wage compared to the rise in firms profits, so they will be interested in the development of labour income ratio.

We analyze developments in the period 1961-1989. We omitted the fifties from the analysis because in this period there were no actual wage negotiations between employers and unions. Wages as well as prices were determined by government policy uniformly over sectors.

We want to investigate short term fluctuations in union growth as well as long term relationships. We therefore use a co-integration approach (Engle and Granger, 1987). Thus, we specify a dynamic short run relationship between union growth and a number of economic variables, which places a constraint on the long run equilibrium relationship. For the long run equilibrium relationship we use union density as the explanatory variable. In this way our analysis can be compared with other studies which use the growth rate of union membership as the dependent variable and lagged union density as one of the explanatory variables. Instead of using the density variable as an indication for saturation we use the density variable as part of a long term equilibrium relationship.

Variables which are evolving over time often have time series which are non-stationary. Stationarity of these time series may be obtained by first differencing once, in which case the original series is integrated of order one. According to co-integration theory, a linear combination of variables integrated of order one may be stationary. In that case, these variables are co-integrated: the error term of a co-integration regression will not drift from zero and the co-integration variables may be used as explanatory variables in a first difference regression (see for a summary of co-integration literature: Vogelvang, 1990).

Table 3 Testing for unit roots: yearly data 1961-1989^{a)}

	ADF	ADF _c	ADF _t
M (FNV) union members	0.28	-1.66	-1.57
D union density	1.54	0.19	-0.81
U unemployment	1.22	-1.10	-2.01
P consumer prices	2.45	-0.85	-0.79
L nominal wage	0.35	-2.04	0.12
L ^r real wage (L/P)	-2.88 *	-3.88*	-1.25
S strikes	-0.88	-3.71*	-4.12 *
A labour income ratio	0.32	-2.20	-1.64
	DF	DF _c	
ΔM	-3.88 *	-3.83 *	
ΔD	-3.82 *	-4.20 *	
ΔU	-3.34 *	-3.70 *	
ΔP	-2.09 *	-3.57 *	
ΔL	-1.24	-1.67	
ΔL ^r	-2.85 *	-3.80 *	
ΔS	-7.32 *	-7.21 *	
ΔA	-4.70 *	-4.64 *	

- a) Logs of variables; ADF_c estimation with constant; ADF_t estimation with constant and time trend
 *: differs significantly negative from zero at 5% level
 critical 5% values: (A)DF: -1.95, (A)DF_c: -3.00, ADF_t: -3.60

A necessary condition for time series to be co-integrated is that each series is integrated of the same order. The hypothesis that a time series is integrated of order one, can be determined by testing whether that series has a unit root. For this we use the (Augmented) Dickey Fuller tests. Table 3 shows the results for the series we use in our analysis.

We estimated Augmented Dickey Fuller values in regressions without a constant term, in regressions with a constant term and in regressions with both a constant term and a time trend. Comparing the ADF-values from the different regressions it is obvious that only a few differ significantly negative from zero. There are differences between the ADF-values of regressions without a constant, with a constant and with both a constant and a time trend. For the real wage series the ADF value of the regressions with and without a constant differs significantly from zero. In the regressions with both a constant and a time trend the ADF value does not differ significantly from zero. Real wages have been growing rapidly especially in the sixties. So the inclusion of a time trend in the regressions may be necessary. Therefore we prefer the ADF value of the regressions with both a constant and a time trend. For the series of strikes the ADF value of the regressions with a constant and with both a constant and a time trend differ significantly from zero. In a regression without a

constant the ADF value does not differ significantly from zero. Given the development of the number of strikes in the Netherlands, which has definitely no positive or negative trend, we prefer the latter ADF value. Therefore we conclude that none of the ADF values differs significantly (negative) from zero at a 5% level, so the null hypothesis of a unit root cannot be rejected.

For the first differences of the variables we used Dickey Fuller tests, from which it appears that first differences clearly do not have a unit root, except for nominal wages. So nominal wages are probably integrated of order 2.

For the co-integration regression we use union density as an explanatory variable and we can use as explanatory variables the variables which have a unit-root: unemployment, real wages and labour income ratio and strikes¹⁰. The estimation results of the co-integration regressions are shown in table 4.

Table 4 Co-integration regressions: 1961-1989

Dependent variable: D (logs of union density)						
Const	U	A	L ² S	$\bar{R}^2$	ADF	
-1.11	-0.062	.	-	.	0.419	-1.07
-7.02	-	1.29	-	-	0.345	-1.41
-1.73	-	-	-0.15	-	0.110	-0.62
0.18	-0.151	-	0.44	-	0.644	-2.47
0.61	-0.178	-	0.51	-0.45	0.715	-1.50
-7.00	-0.065	1.37	-	-	0.840	-3.89
-6.88	-0.068	1.36	-	-0.01	0.840	-3.28

Since we do not have long time series we use simple co-integration tests. We calculated the Augmented Dickey-Fuller values to test the null hypothesis that the variables are not co-integrated. From table 4 it appears that if we use either unemployment, labour income ratio or real wages as single explanatory variable in the equation, we cannot reject the null hypothesis. The same holds for the combination of unemployment and real wages as explanatory variables. Adding the strikes to this combination does not help. Only if we use both unemployment and the labour income ratio as explanatory variables we are able to reject the null hypothesis. Adding strikes as explanatory variable has no use. Therefore we conclude that only union density, unemployment and the labour income ratio are co-integrated.

Having thus established the co-integration relation we derived our short run estimates, the results of which are shown in table 5. The dependent variable used is the change in union membership, explanatory variables are the change in unemployment,

¹⁰ We could use prices as well, but without nominal wages this does not seem very useful.

the change in labour income ratio and the lagged residuals of the co-integration equation. The estimate shows that both the change in labour income ratio and the lagged residuals from the co-integration variables are significant at a 5% level. The change in unemployment is significant at a 10% level. In the second estimate we used instead of the lagged residuals the lagged variables of the co-integration equation themselves as explanatory variables. The results of both estimates do not differ very much.

Table 5 Estimation results: 1962-1989

Dependent variable: ΔM (rate of growth of union membership)

ΔU	ΔA	$D(-1)$	$U(-1)$	$A(-1)$	$z(-1)$	$\bar{R}^2$	DW
-0.033 (1.8)	0.58 (4.0)	-	-	-	0.34 (3.7)	0.492	1.82
-0.040 (1.8)	0.52 (3.1)	-0.35 (3.6)	-0.026 (3.5)	0.50 (2.9)	-	0.467	1.93

$$z = 7 + D + 0.065 U - 1.37 A$$

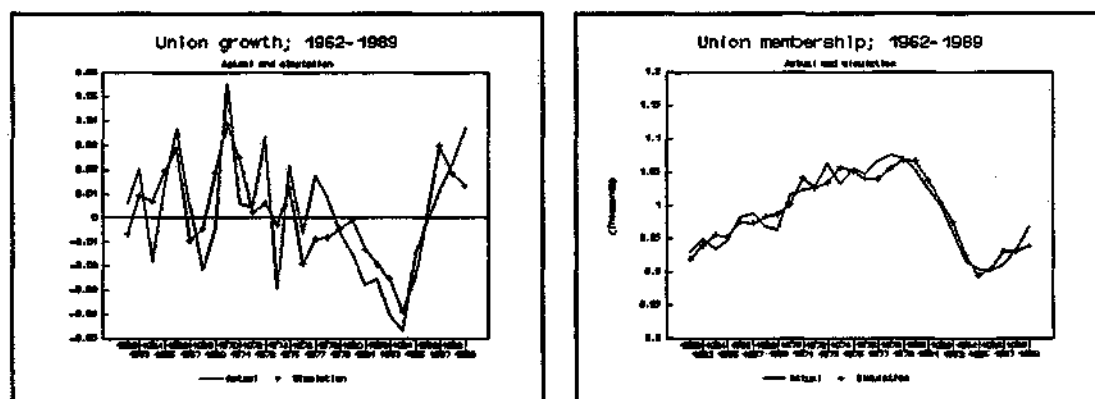
t-values between parentheses

to save space the values of the constant are not presented in this table

For both equations we also performed the Chow test for parameter constancy, splitting up the sample in two periods (1962-1979 and 1980-89). This test indicated that there has been no structural break in either equation when union membership started to decline rapidly.

Finally we used the results of the second estimate to simulate the developments in union membership over the past decades. The results of these simulations are shown in figure 4.

Figure 4 Union growth: actual development and simulation



5. CONCLUSIONS

Union membership in the Netherlands has grown in the sixties and seventies and kept up with the growth of employment. This led to a rather stable union density. In the beginning of the eighties union membership showed a remarkable decline while only in recent years there has been some recovery.

We performed a shift share analysis on union densities to disentangle the effect of a changing industrial structure from the effect of changes in union densities within sectors. It appears that the effect of changes in the industrial structure is very small.

This paper also presents a time series analysis of union growth in the Netherlands. From this analysis it appears that short term fluctuations in union growth may be attributed to changes in the labour income ratio and unemployment. If the labour income ratio rises (because real wages increase more than labour productivity) or if unemployment declines, union membership increases. In the long run union density also depends on the labour income ratio and unemployment. The higher the labour income ratio or the lower the unemployment, the higher union density.

Using our estimation results we conclude that the rapid decline of union density in the beginning of the eighties has nothing to do with changes in the industrial structure. About 60% of the decline may be attributed to the decline in the labour income ratio and about 40% to the growth of unemployment.

The strategy of the Dutch labour unions in the eighties was to moderate demands in wage negotiations in order to reduce unemployment. With respect to union membership, it is not obvious that this policy was the right one. Union membership is more sensitive to changes in the labour income ratio than it is to changes in unemployment. However, it not obvious either that union policy in the eighties was wrong. Higher wage demands might have increased unemployment even more, so the growth of union membership due to higher wages might have been less than the loss in union membership due to higher unemployment.

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Appendix 1 Data used in the analysis

	I	II	III	IV	V	VI	VII	VIII
1961	925	3660	.253	44	27	2.40	43	69
1962	931	3733	.249	41	28	2.62	24	70
1963	950	3785	.251	41	28	2.80	104	72
1964	933	3862	.242	38	30	3.21	53	72
1965	947	3898	.243	42	33	3.49	60	72
1966	982	3926	.250	54	33	3.84	20	75
1967	988	3914	.252	102	35	4.11	8	74
1968	966	3955	.244	94	37	4.45	11	74
1969	963	4015	.240	73	39	4.89	28	74
1970	1017	4064	.250	69	40	5.65	124	76
1971	1024	4083	.251	91	43	6.43	25	78
1972	1028	4060	.253	145	46	7.14	58	77
1973	1063	4060	.262	151	50	8.14	29	77
1974	1032	4060	.254	181	54	9.47	41	79
1975	1055	4033	.262	260	61	10.76	15	81
1976	1048	4064	.258	278	66	11.58	28	78
1977	1067	4130	.258	271	71	12.80	44	78
1978	1077	4175	.258	273	73	13.64	32	78
1979	1070	4229	.253	281	76	14.54	57	79
1980	1054	4362	.242	325	81	15.28	22	80
1981	1025	4374	.234	480	87	16.05	11	77
1982	999	4377	.228	655	92	17.03	12	76
1983	960	4364	.220	801	94	17.20	9	74
1984	916	4373	.209	822	98	17.34	11	70
1985	903	4473	.202	761	100	17.72	45	69
1986	901	4621	.195	711	100	17.95	35	71
1987	911	4691	.194	686	99	18.27	28	73
1988	932	4842	.192	682	101	18.56	38	71
1989	967	4985	.194	658	102	19.01	27	70

- I - Number of FNV union members as measured at December 31 of each year as measured by the quarterly CBS survey
- II - Number of employees: CBS, OECD and authors' calculations
- III - Union density: I/II
- IV - Number of unemployed: Central Planning Bureau (CPB)
- V - Consumer price index (1985=100): CBS
- VI - Nominal hourly wage rate (guilders/hour): CBS
- VII - Number of strikes: CBS
- VIII- Labour income ratio: CPB