The cyclical behavior of holdout durations

van Ours, J.C.

Published in:
Economics Letters

Publication date:
1999

Link to publication

The Cyclical Behavior of Holdout Durations

Jan C. van Ours

October1998

ABSTRACT

Holdouts are the negotiation periods between the expiration of an old wage contract and the signing of a new one. This paper presents an analysis of the hazard function for holdout durations using data on wage negotiations in The Netherlands. The unemployment rate is found to have a significant negative effect on the holdout hazard rate: holdout duration is counter-cyclical.

Keywords: Holdouts, wage bargaining

JEL Code: J30, J50

Address: Jan C. van Ours, Department of Economics, CentER for Economic Research, Tilburg University, P.O. Box 90153, 5000 LE Tilburg, The Netherlands.

Phone +31-13 4662316; Fax +31-13 4663042; Email vanours@kub.nl

1. Introduction

Holdouts are the negotiation periods between the expiration of an old wage contract and the signing of a new one. Holdouts occur if agreements cannot be struck before existing contracts expire. During a holdout the terms of the old contract apply. There is not a lot of research on holdouts, but they seem to be related to strikes. Cramton and Tracy (1992) present a theoretical model in which holdouts are used by unions to obtain information from firms at lower costs than strikes. Van Ours and Van de Wijngaert (1996) find empirical evidence that holdout durations have a negative effect on wage increases. This is similar to the way strike durations affect wage increases.

This paper investigates the cyclical behavior of holdout durations in The Netherlands. There is little theory on this type of fluctuations. Cramton and Tracy (1994) indicate that the decision of a union to opt for a holdout in stead of a strike is sensitive to economic changes. Furthermore, a holdout will be longer if there is more uncertainty over the firm's willingness to pay. Then if there is more uncertainty in bad times, holdout durations are counter-cyclical.

As Kennan (1985) did with strike durations, we investigate the cyclical behavior of holdout durations by estimating hazard functions. We use the unemployment rate as an indicator of the state of the business cycle. Usually, when such an economy-wide indicator is used, strike durations are found to be counter-cyclical (Kennan and Wilson (1993)). We find the same counter-cyclical behavior for holdout durations.

2. Data

The data are the same as in Van Ours and Van de Wijngaert (1996). Information about holdouts is gathered from administrative files and individual collective agreements of 7 industries (Metal industry, Cigar industry, Printing industry, Manufacture of dairy products, Breweries, Manufacture of printing ink, Insurance) and 8 firms (Philips, Unilever, Douwe Egberts, Heineken, Akzo, Chemiefarma, AMEV, DSM). The 15 bargaining pairs provide 150 data points in a balanced panel dataset covering the period 1975-1987, with no observations for the years 1976, 1981 and 1984. For the year 1976 this is due to government interference, when the government decided that changes in on-going contracts were not allowed. In 1981 and 1984 there where no negotiations because of the evolving biannual agreements in 1980 and 1983.

Figure 1 presents the frequency distribution of the holdout durations in our sample showing that there is a wide range in these durations. On the one hand about 50% is shorter than 6 months, on the other hand about 10% is longer than 1 year. Holdouts in the Netherlands are relatively long as compared to the US. Cramton and Tracy (1992) who define a holdout as the time between the expiration of the former contract and the time of a principle agreement find an average holdout of about one-month. Our definition of a holdout not only covers the negotiation period but also the period between the time of a principle agreement and the moment of registration at the government office. The latter period may be time consuming when experts have to settle details of the arrangement. This period in which the final text is drafted and the contract is signed averages 2-3 months. Since new agreements are commonly backdated to the date at which the former contract elapsed, there is little pressure to shorten holdouts. However, if holdouts are lengthy only because of administrative procedures, they would not be related to the economic cycle.

3. Industrial relations in the Dutch labor market

In The Netherlands collective bargaining covers the employment terms of 70-80 percent of the labor force in the private sector. Employer coverage approximates some 90 percent of all firms. These figures indicate that collective bargaining has a large impact on wage formation. In September of each year the Dutch government presents its budget and its macroeconomic forecasts to Parliament. Taking this into account, the managements of union and employers' federations consult their associated trade unions and employer associations on the common policy for the national negotiations. Actual wage bargaining starts in the new calendar year and is the responsibility of the trade unions, which are organized by industry. In the 1980s about 200 industry contracts regulated wages for approximately 80 percent of the workers under collective contracts. The employment terms for the remaining 20 percent of the workers were covered in 600 firm contracts since larger firms (multinationals) have their own collective agreements.

There do not appear to be many serious conflicts between employers and unions. The low strike activity in the Netherlands is reflected in our sample. In none of the firms and industries there was a strike in the period of analysis. The situation in the labor market in the 1970s differed from the one in the 1980s. As in many other European countries economic conditions in the Netherlands deteriorated dramatically in the early 1980s. Average unemployment rate in the 1970s was 4.5%, while it was 13.9% in the period 1980-87.

4. Empirical analysis

The evolution of the empirical hazard rate over the duration of the holdout is shown in Figure 2. The hazard rate steadily increases until 14 months and then starts fluctuating. These fluctuations have to do with the limited number of observations at longer durations.

The empirical analysis is based on traditional specifications of the hazard rate which is assumed to be of the mixed proportional type. So, the hazard rate is specified as the product of functions of observed characteristics, elapsed duration and unobserved heterogeneity:

$$\theta(t_{i_\tau};x_{i_\tau},v_i) = \theta_o(x_{i_\tau}).f(t_{i_\tau}).\exp(v_i) \qquad (1)$$

where θ is the hazard rate, t is the elapsed duration, τ an index of calendar time (1,..,10), i an index of bargaining pair (1,..,15), x a vector of observed characteristics, $f(t_{i_\tau})$ the baseline hazard and v represents unobserved heterogeneity, which is assumed to come from a probability density function $h(v_i)$. The survival function is specified as:

$$S(t_{i_\tau};x_{i_\tau}) = {}_0\int^\infty \exp(-{}_0\int^s \theta(t_{i_\tau}|x_{i_\tau},v_i)ds)\, h(v_i)\, dv \qquad (2)$$

where S(t) is the survival function with g(t)=dS(t)/dt as the probability density function of the holdout durations. Since we have do not have right censored durations and have inflow samples, the likelihood is straightforward:

$$L = \prod_i \prod_\tau g(t_{i_\tau};x_{i_\tau}) \qquad (3)$$

With respect to the observed characteristics we assume the following specification:

$$\theta_o(x_{i_\tau}) = \exp(\beta_i + \beta_o.u_\tau) \qquad (4)$$

where the β_i's represent bargaining pair specific fixed effects and u_τ is the unemployment rate at the start of calendar year τ. If the coefficient β_o is negative, holdout duration is counter-cyclical, if it is positive holdout duration is pro-cyclical.

To investigate the consequences of particular specifications of the duration dependence and the unobserved heterogeneity we compare the estimation results of two different functional forms. The first specification is based on the Burr distribution which is a Gamma mixture of Weibull distributions. The hazard rate is specified as:

$$\theta(t_{i_\tau};x_{i_\tau},v_i) = \theta_o(x_{i_\tau}).\alpha.t_{i_\tau}^{\alpha-1}/(1+\sigma^2.\theta_o(x_{i_\tau}).t_{i_\tau}^{\alpha}) \qquad (5)$$

where α is the duration dependence parameter of a Weibull distribution and σ^2 the variance of a Gamma-distribution with mean 1.

The parameters of the model have been estimated using the method of maximum likelihood. The first column of Table 1 shows the estimation results for the Burr distribution. It appears that α is significantly larger than 1 indicating that there is positive duration dependence. The hazard rate increases monotonically. Since σ^2 is not significantly larger than 0 there is no unobserved heterogeneity. The coefficient of the unemployment rate is significantly smaller than 0 indicating that holdout duration is counter-cyclical. The results in the second column of Table 1 show that the estimation results do not change if we impose that σ^2=0. This confirms that there is no unobserved heterogeneity, so the Burr distribution is reduced to a Weibull distribution. The third column shows the estimation results if we impose α=1 implying that there is no duration dependence. Since the estimation results deteriorate this restriction is not allowed. The fourth column shows the estimation results if we impose σ^2=1 thus assuming that the hazard rate has a log-logistic specification. Such a log-logistic specification with α >1 implies that the hazard rate first goes up and then goes down. Comparing the results of the first and the fourth column, it is obvious that such a restriction is not allowed. So, the Weibull distribution is superior to the log-logistic specification.

The second specification of the hazard rate is the piecewise constant hazard rate:

$$\theta(t_{i_\tau};x_{i_\tau},v_i) = \theta_0(x_{i_\tau}).\exp(\Sigma_k\beta_k I_k+v_i) \tag{6}$$

where the I_k's are dummy variables for the quarterly duration intervals, k=1,..6 and the β_k's are the coefficients representing duration dependence, with β_1 normalized to 0. Now, unobserved heterogeneity is specified as a discrete distribution with two points of support. The estimation results again indicate that unobserved heterogeneity is not present. The fifth column of Table 1 shows the estimation results when unobserved heterogeneity is ignored. The parameter of the unemployment rate in the piecewise constant hazard rate has about the same value as in the Weibull specification.

Finally, we estimated the coefficients of the hazard rate using Cox's partial likelihood estimator in which the baseline hazard is not specified. As shown in the sixth column of Table 1 we again find a significant negative effect of the unemployment rate of about the same size as before. Apparently, this result is robust and independent of the particular specification of the hazard function.

5. Conclusions

In the empirical analysis we find a significant negative effect of the unemployment rate on the hazard rate of holdouts. This relationship may be caused by the high level of uncertainty that unions face when unemployment is high. If the holdouts are intended to derive information about the firm's willingness to pay, then more uncertainty means longer holdout durations. Therefore, holdout durations are counter-cyclical. In this respect holdout durations resemble strike durations.

Table 1 Estimation results hazard rate models (t-values)[a)]

	Burr distribution	Weibull distribution	Exponential distribution	Log-logistic distribution	Flexible[b)] duration dependence	Cox regression
u	-0.066 (2.3)	-0.064 (2.3)	-0.037 (0.8)	-0.122 (3.0)	-0.064 (2.0)	-0.065 (2.8)
α	2.16 (9.6)	2.12 (15.7)	1 (-)	3.18 (16.8)	-	-
σ^2	0.03 (0.1)	0 (-)	0 (-)	1 (-)	-	-
-logL	387.5	387.5	435.6	393.5	388.6	570.1

[a)] In all the estimates dummy-variables for every bargaining pair are included; the coefficients of these dummy-variables are not presented in the Table.
[b)] The coefficients for the quarterly duration intervals 2-6 (6 being the open interval of more than 5 quarters) are: 1.12 (3.6), 1.95 (5.9), 2.24 (6.1), 2.58 (4.1), 2.96 (3.8).

REFERENCES

Cramton, P.C. and J.C. Tracy (1992), “Strikes and Holdouts in Wage Bargaining, Theory and Data”, *American Economic Review*, 82, 100-121.

Cramton, P.C. van J.C. Tracy (1994), The Determinants of U.S. Labor Disputes, *Journal of Labor Economics*, 12, 180-209.

Kennan, J. (1985), “The Duration of Contract Strikes in U.S. Manufacturing”, *Journal of Econometrics*, 28, 5-28.

Kennan, J. and R. Wilson (1993), “Bargaining with Private Information”, *Journal of Economic Literature*, 31, 45-104.

Ours, J.C. van and R.F. van de Wijngaert (1996), “Holdouts and Wage Bargaining in The Netherlands”, *Economics Letters*, 53, 83-88.

Figure 1 Frequency distribution of holdout durations

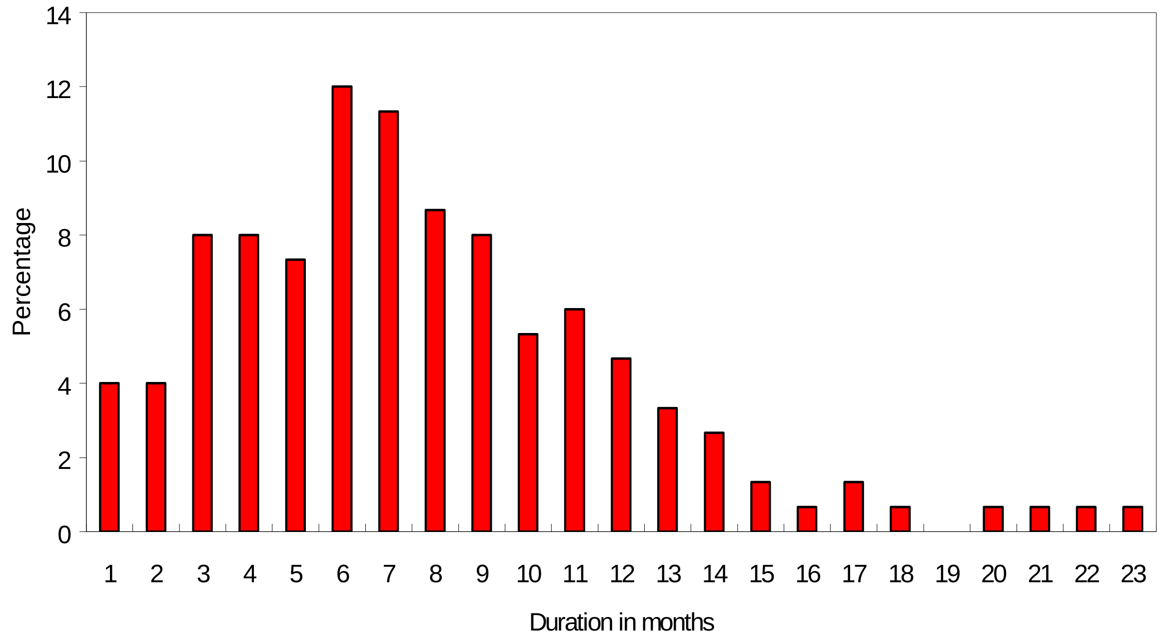

Figure 2 Monthly holdout hazard rates