Wirtschaftsuniversität Wien

Vienna University of Economics and Business Administration

Working Papers Series:

Growth and Employment in Europe: Sustainability and Competitiveness

Working Paper No. 42

A NOTE ON FRANCHISING AND WAGE BARGAINING

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September 2004

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Abstract

A franchise contract relocates distributable rent between franchisor and franchisee. With decentralized wage bargaining this modifies the position of the union in wage bargaining. If the rent is relocated to the franchisor completely, then even a strong union is not able to raise the wage above reservation level in the franchisee's firm. If franchisor and franchisee negotiate on rent division, there is an incentive to increase franchise fee with the consequence that franchisee's wage is pushed down. Therefore the overall rent assigned to labor depends on the differences of labor intensity in the franchisor's and franchisee's firm. Firm owners may be able to transfer distributable rents from a firm with a strong union to one with a weak union. Additional a franchising contract shows up a first mover advantage. The franchising contract is placed before wage bargaining, benefiting the franchisor.

JEL Codes

J51, L22

Thomas Grandner   27. September 2004

A Note on Franchising and Wage Bargaining

In economic analysis a horizontal perspective dominates. Competition is the magic word central in many scientific papers. Beside this horizontal aspect economic activity has also a vertical perspective. Upstream and downstream production stages influence the economic outcome and therefore wage finding processes in different ways. Between horizontally competing firms labor plays a substitutional role, from consumers' point of view labor of one firm can be substituted by labor from a competing firm, while between vertically connected firms labor plays a complementary role. Horn and Wolinsky (1988) have shown that the substitutability has an important influence on the organization of labor unions and therefore on the bargaining process. Grandner (2001b) has studied the effects of wage bargaining institutions in vertically connected oligopolies and Grandner (2001a) has analyzed the effects of wage bargaining on firm's incentive to integrate vertically.

A franchising contract is a special, well analyzed, vertical relationship, but its effects on wage bargaining have not been examined so far.

The most prominent reason for franchising contracts as analyzed in the literature is incomplete or asymmetric information (see for example Tirole (1988)). But following the argument of *double marginalization* (Spengler 1950) rent creation and rent extracting also play a role in motivating franchising contracts. The following note concentrates on these arguments and on the effects of rent extracting by a franchising contract on the wage bargaining process between a franchisee and a trade union.

The argument is simple. With a franchising contract (a two part tariff) the distributable rent is relocated between franchisor and franchisee. With decentralized wage bargaining, each firm faces a single union, the bargaining position of the union is modified by this relocation. If rent is relocated to the franchisor completely, even a strong union is not able to raise wage above the reservation wage in the franchisee's firm, because there is no rent left. If we apply this argument to a situation where franchisor and franchisee negotiate on the franchising contract and therefore on rent division, we find that wage bargaining in the franchisee's firm pushes up the franchise fee and as a result wages has to be lower in the franchisee's firm. As a consequence the overall rent assigned to labor depends on labor intensity differences in the franchisor's and franchisee's firm. If for example the franchisor does not produce at all but is a pure licensor, the rent share obtained by labor (in both firms) will be smaller than without franchising. A further example, where this argument may become important, is that firm owners may have an incentive to transfer distributable rents from countries (or regions) with strong unions to countries with weak unions. To avoid this incentive unions (or countries) would prefer centralized wage bargaining. An additional aspect of franchising is that there exists a *first mover advantage*. The franchising contract is negotiated before the wage bargaining takes place. This gives the franchisor an advantage to extract additional rent by increasing the fee, pushing down the wage rate in the franchisee's firm.

The presented model has a simple two-period time structure. In the first period franchise fee and transfer price are fixed by a rent division rule, described by Nash bargaining. In the second period the wage rate in the franchisee's firm (downstream firm) is determined in an *efficient bargaining*. (Consumer price and wage rate are chosen simultaneously.) The focus is on rent division and I assume therefore that franchisee and franchisor are (local) monopolists.

For simplicity let us assume a linear consumer demand.

$$q = 1 - \frac{p}{k} \tag{1}$$

with q is the quantity demanded, p the consumer price and k a constant. For economic reasons, let $p < k$.

Output is normalized in a way that one unit of output is produced by one unit of labor. The only costs for the franchisee are labor costs and payments to the franchisor, consisting of transfer price (p_u) times quantity and franchise fee (f). The franchisee's profit is given by

$$\pi_d = (p - p_u - w)\, q - f \tag{2}$$

Because the model has a recursive structure we have to start with analyzing period 2.

Period 2

In the second period franchise fee and transfer price are given for the wage bargaining partners. The franchisee and the union bargain over the wage rate and employment, given the specified franchising contract.

McDonald and Solow (1981) have shown, that *efficient bargaining* results in an employment decision off the labor demand curve. (For a discussion on different wage bargaining models, see Naylor (2003)). In the *efficient bargaining* framework the bargaining agendas are the wage rate and the employment level. With the present formalization the resulting contract curve is vertical, that means that employment is independent of the bargaining power of the union and the realized wage rate. (See Farber (1986) for possible shapes of contract curves.)

One of the franchisee's decision variables is the price. Together with the union he/she is fixing consumer price and wage rate in a bargaining. Consumer demand is given and by fixing the price, output and therefore employment also are determined.

The union tries to maximize the following objective function[1].

$$U = (w - \overline{w})\, q \tag{3}$$

with w is the actual wage rate and $\overline{w}$ is the reservation wage.

The franchisee tries to maximize profit (2) and its disagreement utility is zero.

The bargaining will be described by a (generalized) Nash bargaining. (See Nash (1950) or Booth (1995) for a recent text book treatment.)

$$N_d = U^\alpha \pi_d^{\,1-\alpha} \tag{4}$$

with $0 \le \alpha \le 1$ is the relative bargaining power of the union.

The bargaining partners are fixing price and wage rate in an optimal way. The two first order conditions give

$$p = \frac{k + p_u + \overline{w}}{2} \quad \Rightarrow \quad q = \frac{k - p_u - \overline{w}}{2k} \tag{5}$$

$$w - \overline{w} = \frac{\alpha(k - p_u - \overline{w})}{2} - \frac{2\alpha k f}{k - p_u - \overline{w}} \tag{6}$$

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[1] Labor force is normalized to one and disagreement utility of the representative union member is the reservation wage ($\overline{w}$). The union tries to maximize the difference between the expected utility of the representative member and his/her disagreement utility.

- Consumer price and therefore quantity depend on the reservation wage, not on the actual wage rate. This is caused by the *efficient bargaining* framework combined with the specific objective functions.

- The wage rate depends negatively on the franchise fee. By increasing the franchise fee firm owners can reduce the wage rate.

- If the union has no bargaining power at all ($\alpha = 0$), the wage rate is equal to the reservation wage.

Period 1

In time period 1 franchisor and franchisee bargain over the franchise contract, that is franchise fee and transfer price. Franchisor's profit is simply given by

$$\pi_u = (p_u - c)q + f \tag{7}$$

where c are the unit costs, including labor costs, if there is production by the franchisor. We do not analyze wage bargaining by the franchisor, which would be very easy to add in.

The rent division between franchisor and franchisee is characterized by maximizing the following Nash product.

$$N_u = \pi_d{}^\beta \pi_u{}^{1-\beta} \tag{8}$$

with $0 \leq \beta \leq 1$ is the relative bargaining power of the franchisee in the franchising contract bargaining.

Given the time structure of the model the franchise partners select an optimal fee and transfer price based on the calculated result of the wage bargaining (5) and (6).

Solving both first order conditions we get

$$p_u^* = c \tag{9}$$

Equilibrium price and quantity are therefore

$$p^* = \frac{k + c + \overline{w}}{2} \quad \text{and} \quad q^* = \frac{k - c - \overline{w}}{2k} \tag{10}$$

and

$$f^* = (1 - \beta)kq^{*2} \tag{11}$$

Equilibrium wage rate can be displayed as

$$w^* - \overline{w} = \alpha\beta k q^* \tag{12}$$

- Equation (9) is the standard result for franchising contracts between vertically connected monopolies. Rent is maximized by setting the transfer price equal to marginal costs.

- p and q depend on the reservation wage, not on the actual wage rate. Because p would increase and q would decrease with w, we get the lowest possible price and the highest possible quantity. Again rent is maximized.

- Compared to an exogenously fixed wage rate, q is higher with bargaining as long as the exogenously given wage is higher than reservation wage.[2]

- The franchise fee is higher with bargaining, compared to a situation with an exogenously given wage which is higher than the reservation wage. This characteristic lowers the actual wage rate.

- Franchisee's profit depends on the distribution of the bargaining power in the franchising contract negotiation and in the wage bargaining. But unions bargaining power does not influence franchisor's profit. (Equations are given in the appendix).

Simultaneous Setting

To figure out more precisely the effects of the timing of franchising on the wage bargaining process, assume that the negotiation on the franchising contract and the wage bargaining in the franchisee's firm take place simultaneously. The two separated processes are described again by Nash bargainings.[3]

$$N_d = U^\alpha \pi_d^{1-\alpha} \quad \text{and} \quad N_u = \pi_d^\beta \pi_u^{1-\beta} \tag{13}$$

U, π_d, π_u, α, and β are defined as before.

The analysis of the wage bargaining is the same as in the sequential setting, so first order conditions are the same (see equations (5) and (6)).

The analysis of the optimal franchise fee and the transfer price changes, because in the simultaneous setting franchisor and franchisee cannot anticipate the same reaction of wage bargaining partners as in the sequential one. With sequence franchisor and franchisee know that the union will react. With simultaneous bargainings a direct reaction is not possible. Furthermore with fixed quantity (by means of a fixed consumer price) the franchisor and franchisee have the freedom to transfer the rent by way of fee or by way of transfer price. The optimal values of variables p_u and f are related, but we can fix one arbitrarily. Let us set $p_u = \tilde{p}_u = c$ as in the above analysis.

Combining all remaining first order conditions we get the simultaneous equilibrium. (First order conditions are given in the appendix.)

$$\tilde{p} = p^* = \frac{k + c + \overline{w}}{2} \quad \text{and} \quad \tilde{q} = q^* = \frac{k - c - \overline{w}}{2k} \tag{14}$$

- The equilibrium values for p are the same in the sequential and in the simultaneous setting. p and therefore q do not depend on bargaining power. Again this result stems from the vertical contract curve in the present case.

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[2] No Wage Bargaining: $\hat{w} > \overline{w}$ is fixed exogenously, for example in a nation wide bargaining.

$$\frac{\partial \pi_d}{\partial p} = 0 \quad \Rightarrow \quad \hat{p} = \frac{k + p_u + \hat{w}}{2} \quad \Rightarrow \quad \hat{q} = \frac{k - p_u - \hat{w}}{2k}$$

$$\text{If } p_u = c \text{ and } \hat{w} > \overline{w} \Rightarrow \hat{p} > p^* \text{ and } \hat{q} < q^*$$

As a result, $\hat{f}$ is lower than f^* too.

[3] One can merge the two separated bargainings into one single bargain described by the solution of the Nash product $N_s = U^{\alpha_1} \pi_d^{\alpha_2} \pi_u^{1-\alpha_1-\alpha_2}$. For comparability reasons it must be valid that $\frac{\alpha}{1-\alpha} = \frac{\alpha_1}{\alpha_2}$ and $\frac{\beta}{1-\beta} = \frac{\alpha_2}{1-\alpha_1-\alpha_2}$. This merged model has the same results as the present model with two separated bargainings.

$$\tilde{f} = \frac{(1-\alpha)(1-\beta)(k-c-\overline{w})^2}{4k(1-\alpha(1-\beta))} = \frac{(1-\alpha)(1-\beta)kq^{*2}}{1-\alpha(1-\beta)} \qquad (15)$$

and

$$\tilde{w} - \overline{w} = \frac{\alpha\beta(k-c-\overline{w})}{2(1-\alpha(1-\beta))} = \frac{\alpha\beta kq^*}{1-\alpha(1-\beta)} \qquad (16)$$

Now we can compare wage and franchise fee determination in the sequential and simultaneous setting.

- In the simultaneous setting the franchise fee is lower (or equal) than in the sequential setting.

- In the simultaneous setting the franchisee's wage rate is higher (or equal) than in the sequential setting.

They are equal only if (a) the union has no bargaining power at all ($\alpha = 0$). Then the wage rate is equal to the reservation wage, or (b) the franchisee has no bargaining power in the franchising contract negotiation ($\beta = 0$). Then no rent is left for sharing in the wage bargaining and the wage rate is equal to reservation wage, or (c) the franchisor has no bargaining power at all ($\beta = 1$). Then the whole rent is divided between the franchisee and the union in both settings and the franchise fee is zero. (The algebraic expressions can be found in the appendix.)

Thus the introduction of a sequence implicates a redistribution between profit earner and labor in favor of profit earner. Additionally, there is a redistribution between franchisor and franchisee in favor of franchisor. Similar to a Stackelberg duopoly game there is a *first mover advantage*. The franchisor can attract additional rent by forcing the wage rate in the franchisee's firm down.

Finally, we can analyze the effect of an increasing union bargaining power on the *first mover advantage*. Given the bargaining power of the franchisee in the negotiation on the franchising contract (with $\beta \neq 0$ and $\beta \neq 1$), the difference in the wage rate given in the sequential and the simultaneous setting is increasing with the bargaining power of the union. ($\partial(\tilde{w} - w^*)/\partial\alpha \geq 0$, see appendix). A more powerful union is able to achieve a higher rent share but is also more vulnerable by the sequence in the model.

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Appendix

<u>Sequential Setting: Period 2</u>
The first order condition for the consumer price is given by

$$\frac{\partial N_d}{\partial p} = 0 \Rightarrow w = (2 - \alpha)p - (1 - \alpha)k - p_u - \frac{\alpha f}{1 - \frac{p}{k}} \qquad (17)$$

The first order condition for the wage is given by

$$\frac{\partial N_d}{\partial w} = 0 \Rightarrow w = \alpha(p - p_u) + (1 - \alpha)\overline{w} - \frac{\alpha f}{1 - \frac{p}{k}} \qquad (18)$$

Combining (17) and (18) generates (5) and (6) in the text.

<u>Sequential Setting: Period 1</u>
From the first order condition for the transfer price we get

$$\frac{\partial N_u}{\partial p_u} = 0 \Rightarrow f = \frac{kq^2((1 - \beta)k + (1 + \beta)c - (1 - \beta)\overline{w} - 2p_u)}{k + (1 - \beta)c - \overline{w} - (2 - \beta)p_u} \qquad (19)$$

The first order condition for the franchise fee is given by

$$\frac{\partial N_u}{\partial f} = 0 \Rightarrow f = \frac{q}{2}\left((1 - \beta)k - (1 + \beta)p_u - (1 - \beta)\overline{w} + 2\beta c\right) \qquad (20)$$

Combining (19) and (20) results in (9) and (11) in the text.
  Profits in the sequential setting are given by

$$\pi_d^* = (1 - \alpha)\beta k q^{*2} \quad \text{and} \quad \pi_u^* = (1 - \beta)k q^{*2} \qquad (21)$$

$$\pi_d^* + \pi_u^* = (1 - \alpha\beta)k q^{*2} \qquad (22)$$

<u>Simultaneous Setting</u>
The first order conditions for f and p_u, both give

$$\frac{\beta}{\pi_d} = \frac{1 - \beta}{\pi_u} \qquad (23)$$

Let $p_u = c$, then the first order condition for f is given by

$$\frac{\partial N_u}{\partial f} = 0 \Rightarrow f = (1 - \beta)(p - c - w)\left(1 - \frac{p}{k}\right) \qquad (24)$$

Combining $p_u = c$, (5), (6) and (24), we get the solution mentioned in the text.
  Profits in the simultaneous setting are given by

$$\tilde{\pi}_d = \frac{(1 - \alpha)\beta k q^{*2}}{1 - \alpha(1 - \beta)} \quad \text{and} \quad \tilde{\pi}_u = \frac{(1 - \alpha)(1 - \beta)k q^{*2}}{1 - \alpha(1 - \beta)} \qquad (25)$$

$$\tilde{\pi}_d + \tilde{\pi}_u = \frac{(1 - \alpha)k q^{*2}}{1 - \alpha(1 - \beta)} \qquad (26)$$

Effects of the sequence:

$$\tilde{w} - w^* = \frac{(1 - \beta)\beta\alpha^2 q^*}{1 - \alpha(1 - \beta)} \geq 0 \tag{27}$$

$$\tilde{f} - f^* = -\frac{(1 - \beta)\alpha\beta k q^{*2}}{1 - \alpha(1 - \beta)} \leq 0 \tag{28}$$

$$\tilde{\pi}_d - \pi_d{}^* = \frac{(1 - \alpha)\alpha(1 - \beta)\beta k q^{*2}}{1 - \alpha(1 - \beta)} \geq 0 \quad \text{and} \quad \tilde{\pi}_u - \pi_u{}^* = -\frac{(1 - \beta)\alpha\beta k q^{*2}}{1 - \alpha(1 - \beta)} \leq 0 \tag{29}$$

$$\tilde{\pi}_u + \tilde{\pi}_d - \pi_u{}^* - \pi_d{}^* = -\frac{(1 - \beta)\alpha^2\beta k q^{*2}}{1 - \alpha(1 - \beta)} \leq 0 \tag{30}$$

$$\frac{\partial(\tilde{w} - w^*)}{\partial\alpha} = \frac{(1 - \beta)(2 - \alpha(1 - \beta))\alpha\beta q^*}{(1 - \alpha(1 - \beta))^2} \geq 0 \tag{31}$$

8