CONTENTS

ARTICLES

A turnpike theorem for non-stationary Gale economy with limit technology. A particular case
Emil Panek

Product market cooperation under efficient bargaining with different disagreement points: a result
Domenico Buccella

Banks, non-bank companies and stock exchange: do we know the relationship?
Binam Ghimire, Rishi Gautam, Dipesh Karki, Satish Sharma

Measuring the usefulness of information publication time to proxy for returns
Itai Blitzer

Business tendency survey data. Where do the respondents’ opinions come from?
Sławomir Kalinowski, Małgorzata Kokocińska

Does outward FDI by Polish multinationals support existing theory? Findings from a quantitative study
Marian Gorynia, Jan Nowak, Piotr Trąpczyński, Radosław Wolniak

The complex relationship between intrinsic and extrinsic rewards
Orni Gov

Improvement of the communication between teachers and students in the coaching programme and in a process of action research
Michał Lory

BOOK REVIEWS

Barney G. Glaser, Choosing Classic Grounded Theory: a Grounded Theory Reader of Expert Advice, CA: Sociology Press, Mill Valley 2014 (Gary Evans)
Editorial Board
Ryszard Barczyk
Witold Jurek
Cezary Kochalski
Tadeusz Kowalski (Editor-in-Chief)
Henryk Mruk
Ida Musiałkowska
Jerzy Schroeder
Jacek Wallusch
Maciej Żukowski

International Editorial Advisory Board
Udo Broll – School of International Studies (ZIS), Technische Universität, Dresden
Wojciech Florkowski – University of Georgia, Griffin
Binam Ghimire – Northumbria University, Newcastle upon Tyne
Christopher J. Green – Loughborough University
John Hogan – Georgia State University, Atlanta
Bruce E. Kaufman – Georgia State University, Atlanta
Steve Letza – Corporate Governance Business School Bournemouth University
Victor Marinde – University of Birmingham
Hugh Scallion – National University of Ireland, Galway
Yochanan Shachmurove – The City College, City University of New York
Richard Sweeney – The McDonough School of Business and Economics, Chapman University, Orange
Jan Winiecki – University of Information Technology and Management in Rzeszów
Habte G. Woldu – School of Management, The University of Texas at Dallas

Thematic Editors
Economics: Ryszard Barczyk, Tadeusz Kowalski, Ida Musiałkowska, Jacek Wallusch, Maciej Żukowski
Econometrics: Witold Jurek, Jacek Wallusch
Finance: Witold Jurek, Cezary Kochalski
Management and Marketing: Henryk Mruk, Cezary Kochalski, Ida Musiałkowska, Jerzy Schroeder
Statistics: Elżbieta Gołata, Krzysztof Szwarc

Language Editor: Owen Eastal • IT Editor: Piotr Stolarski

© Copyright by Poznań University of Economics, Poznań 2015

Paper based publication

ISSN 2392-1641
Product market cooperation under efficient bargaining with different disagreement points: a result

Domenico Buccella

Abstract: This paper analyzes the effects of product market cooperation in a duopoly with homogeneous goods. Labor unions and firms are locked in bilateral monopoly relations and bargaining within the industry takes place under the efficient bargaining (EB) model. The paper discusses the role of different firms’ disagreement payoff on bargaining outcomes and their effect on social welfare components. It shows that the disagreement point of firms can play a crucial role in solving potential conflicts of interest between unions and firms concerning bargaining issues.

Keywords: efficient bargaining, cooperation, unionized oligopoly, social welfare.

JEL codes: D43, J51, L13.

Introduction

The interactions between product and labor markets are at the core of the functioning of advanced economies. Recently the impact of product market cooperation on negotiations between firms and unionized labor has attracted the attention of economists and antitrust authorities because of the consequences for social welfare. The literature has developed a large number of studies related to the impact of welfare of labor union activities. The research considered both the conduct of negotiations with firm-level unions [e.g. Horn and Wolinsky 1988; Symeonidis 2008, 2010] and industry-wide unions [e.g. Mukherjee 2010]. These works primarily focus on the right-to-manage (RTM) model [e.g. Nickell and Andrews 1983; Dobson 1994, 1997; Naylor 2002; López and Naylor 2004]: unions and firms first negotiate the wages; then, once the wages are fixed, the firms retain the right to choose employment levels. In comparison, the analysis carried out on the efficient bargaining (EB) model, where unions and firms negotiate simultaneously over wages and employment [e.g. McDonald and Solow...
1981; Oswald 1985; Espinosa and Rhee 1989; Bughin 1995, 1996] is scant. Kraft [2006] points out that several empirical studies have shown that negotiations conducted under the EB model have been practiced [MaCurdy and Pencavel 1986; Bughin 1993; more recently, Dobbaleare and Mairesse 2011]. The aim of this paper is to shed light on the impact of the EB agenda on product and labor market interactions.

Notable exceptions are represented by Symeonidis [2010] and Buccella [2014]. Symeonidis [2010] briefly discusses the case of firm-level negotiations with cross-ownership in an industry where the EB model is the reference bargaining framework. The author obtains the standard results that an increase in the degree of market cooperation, by restricting industry output, decreases the overall social welfare. The firms’ disagreement payoff is represented by a fraction of the monopoly output. Using a conjectural variation model Buccella [2014] analyzes the impact of market competition intensity on profits, union rent, consumer surplus and social welfare in a duopoly with differentiated goods where an industry-wide union conducts negotiations with the firms simultaneously, although separately, according to the EB model. The author shows that the consumer surplus definitely declines when the market becomes less competitive. On the other hand the industry-wide union and the duopolists mutually benefit from the restriction of market competition: the industry profits and the union utility increase. With regard to welfare the impact of the market competition on its overall level depends on the degree of product differentiation: with perfect substitute goods, Cournot competition maximizes social welfare; for more differentiated goods, intermediate levels of market competition maximizes welfare; for virtually independent goods, a less competitive market unambiguously decreases the social welfare.

The paper further extends Symeonidis’ [2010] analysis taking into consideration the situation where, in the case of breakdown of negotiations in one bargaining unit, the other firm can operate at the anticipated duopoly equilibrium level of output [e.g. Horn and Wolinsky 1988]. The paper demonstrates that, under the specific assumptions of the linear demand function, constant returns to scale technology and risk-neutral unions, the firms’ disagreement payoff is not crucial in determining the relationship between product market cooperation, consumer surplus and social welfare; however, it has a key role in shaping the potential conflict of interest between firms and unions during the bargaining process. In fact whilst increasing product market cooperation decreases wages when the firms’ disagreement payoff during negotiations is based on monopoly output, the opposite holds true in the case of the anticipated duopoly equilibrium output as a disagreement point. As a consequence both industry profits and union rents increase to the detriment of consumer surplus. This result mirrors Buccella [2014], therefore suggesting that, in certain cases, the EB framework may solve the conflict of interest between firms and unions, regardless of the form of product market cooperation.
The remainder of the paper is organized as follows. Section 1 describes the model and presents the results. The next section closes with plausible directions for further research on the subject.

1. The model and the results

Consider an industry with two firms, denoted 1 and 2, competing in homogeneous goods à la Cournot. Labor, $l$, is the only factor of production with a constant returns to scale technology. For simplicity, it is assumed that each worker produces one unit of the goods, $l = q$: hence, output and employment levels are equal.

In the economy there is a continuum of identical consumers who have preferences over goods $Q$ and $y$, characterized by a separable utility function $V(Q; y)$. The representative consumer maximizes $V(Q; y) = U(Q) + y$, linear in the numeraire goods $y$, with respect to quantities subject to the budget constraint $pQ + y = M$, with $Q$ non-negative and $M$ the exogenous consumer’s income. The utility function $U(Q)$ is assumed continuously differentiable and satisfies the desirable standard properties of the consumer theory [see e.g. Singh and Vives 1984]. Given the quasi-linearity of the function $V(Q; y)$, there are no income effects on the duopolistic sector. Therefore for an adequately high level of income, the optimization problem of the representative consumer is to choose $Q$ to maximise $U(Q) - pQ + M$. The utility maximization problem leads to the (inverse) demand function

$$(\partial U/\partial Q) = p(Q).$$

Following the usual specification of Dixit [1979] and Singh and Vives [1984], to obtain explicit demand functions the representative consumer is assumed to have a quadratic utility function over the homogeneous goods produced by the two firms and a linear function of a numeraire good, $y$. Thus the preferences of the representative consumer over $Q$ are $U(Q) = aQ - \frac{Q^2}{2}$. From this quadratic utility function, the maximization problem of the representative consumer subject to the budget constraint $pQ + y = M$ leads to the linear (inverse) market

---

3 The paper analyzes only the standard case when homogenous goods are normal. Thus the paper abstracts from cases where the homogenous goods might fall into the categories of Giffen and Veblen goods. The rationales for this choice are as follows. Giffen goods (where the income effect dominates the substitution effect) are relatively rare and the only empirical evidence of the existence of such goods can be found in Jensen and Miller [2008]. Anecdotal evidence indicates that Veblen goods (consumers are willing to pay a higher price for functionally equivalent goods) might be empirically considerable in markets for luxury goods [Bagwell and Bernheim 1996]. Empirical studies on Veblen effects are, e.g. Clark and Oswald [1996], Bowles and Park [2005] and Carlsson, Johansson-Stenman and Martinsson [2007].
demand curve $p = a - Q$, where $p$ is the price and $Q = \sum q_i = \left( \sum I_i \right)$, $i = 1, 2$ total output.

Both firms are unionized and the bargaining structure is firm-specific. In other words the firms and the unions are cast into bilateral monopoly relations. The EB model characterizes negotiations. Thus unions and management at each bargaining unit simultaneously negotiate wages and employment. The firm $i$’s profits can be written as

$$\Pi_i = \pi_i + \lambda \pi_j = (p - w_i)q_i + \lambda(p - w_j)q_j, \quad i, j = 1, 2; \ i \neq j. \quad (1)$$

As per Symeonidis [2008, 2010] the parameter $\lambda \in [0, 1)$ represents the degree of firms’ cross-ownership or, alternatively, the degree of product market cooperation [Mukherjee 2010]. The union utility takes the following form

$$\Omega_i = (w_i - w_0)q_i, \quad i = 1, 2, \quad (2)$$

that is each union is risk-neutral. A different interpretation of (2) is that unions assign an equivalent weight to wage and employment in their preferences (neutrally oriented unions). The positive utility derives from the fact that negotiated wages $w_i$ lie above the reservation wages $w_0$, or what workers receive if unemployed. In the present model, and without a loss of generality, $w_0$ equals zero.

Under the above outlined assumptions, it can be derived that the expression of the consumer surplus is [Mukherjee 2010]

$$CS = \frac{Q^2}{2}. \quad (3)$$

The social welfare of the economy is given by the sum of the industry profits, unions’ utility and consumer surplus, that is,

$$SW = \sum \Pi_i + \sum \Omega_i + CS = Q \left( a - \frac{Q}{2} \right), \quad i = 1, 2. \quad (4)$$

Under the EB framework, the parties set $w_i$ and $q_i$ to maximize the following generalized Nash Product

$$\max G_i(w_i, q_i) = (\Omega_i)^{\alpha} (\pi_i + \lambda \pi_j - \lambda \pi_j^*)^{1-\alpha}, \quad (5)$$

where $\alpha \in (0, 1)$ is the relative bargaining power, assumed equal across units, and $\lambda \pi_j^*$ is the firm $i$’s disagreement point in the case of negotiations’ failure. The
union i’s disagreement point equals zero. As known [Horn and Wolinsky 1988],
the disagreement payoff of the bargaining parties may have different specifications. This paper investigates the two most common assumptions considered in literature. First, the analysis focuses on the situation where, in the case of disagreement, firm j can produce the monopoly output. In this case, the firm i’s disagreement payoff is $\lambda \pi_{jM}^* = \lambda \left[ (a - q_{jM}^* - w_{jM}^*) q_{jM}^* \right]$, where $q_{jM}^*$ and $w_{jM}^*$ are the equilibrium monopoly output and wage, respectively. Second, the analysis investigates the situation where, in the case of disagreement, firm j produces at the anticipated duopoly equilibrium level of output. In this case, firm i’s disagreement payoff is $\lambda \pi_{jD}^* = \lambda \left[ (a - q_{jD}^* - q_{iD}^* - w_{jD}^*) q_{jD}^* \right]$, where $q_{jD}^*$ and $q_{iD}^*$ are the firms j and i’s equilibrium quantities, and $w_{jD}^*$ is wage.

1.1. Partial monopoly output as the firms’ disagreement point: a discussion

After the derivation of first-order conditions for maximization of (5), it can be derived that the firm i’s equilibrium output is $q_i^* = \frac{a}{\lambda + 3}$, and the equilibrium wage $w_i^* = \frac{a}{\lambda + 3}$, $i = 1, 2$ (see Appendix). As Symeonidis [2010] discusses, when bargaining is over wages (input price) and employment (quantities), straightforward calculations show that $\frac{\partial Q^*}{\partial \lambda} < 0$, $\frac{\partial w_i^*}{\partial \lambda} < 0 \ \forall \alpha \in (0, 1)$, and $\frac{\partial w_i^*}{\partial \alpha} > 0 \ \forall \lambda \in [0, 1)$. The first is the standard result: an increase in the degree of product market cooperation decreases total output in the industry.

Given (3) the qualitative effects on consumer’s surplus of an increase in \(\lambda\) is identical. The second finding establishes that the equilibrium wage decreases as \(\lambda\) increases. For given wages an increase in the degree of cooperation between firms causes a fall in total industry output. On the one hand, this increases firms’ profits and oligopoly rents: unions may demand higher wages, on the other, the fall in production levels due to coordination leads to a lower demand for labor at each firm. This poses a downward pressure on wages. However the latter effect dominates the former and the final result is a wage reduction. As expected the equilibrium wage is increasing in the union’s relative bargaining strength.

Reinserting the equilibrium wages and output into the relevant equations, the values for the industry profits, total unions’ rents, consumer surplus and social welfare are obtained

$$\Pi = \Pi_1 + \Pi_2 = \frac{2a^2(1-\alpha + \lambda)(1 + \lambda)}{(3 + \lambda)^2}, \ \Omega = \Omega_1 + \Omega_2 = \frac{2a^2\alpha}{(3 + \lambda)^2},$$

$$CS = \frac{2a^2}{(3 + \lambda)^2}, \ SW = \frac{2a^2(2 + \lambda)}{(3 + \lambda)^2}.$$
Analytical inspection shows that $\frac{\partial \Pi}{\partial \lambda} > 0$, $\frac{\partial \Pi}{\partial \alpha} < 0$, $\frac{\partial \Omega}{\partial \lambda} < 0$, $\frac{\partial \Omega}{\partial \alpha} > 0$, $\frac{\partial CS}{\partial \lambda} < 0$ and $\frac{\partial SW}{\partial \lambda} < 0$ in the relevant parameters’ space. The above results can be summarized in the following proposition.

**Proposition 1.** In an efficient bargaining framework if the firms’ disagreement point is a fraction of the monopoly output, a higher degree of product market cooperation: 1) decreases industry output and wages; and 2) increases industry profits at the expenses of unions’ rents and consumer surplus, decreasing overall social welfare.

### 1.2. Partial anticipated duopoly equilibrium output as the firms’ disagreement point

Let us now consider the case of partial anticipated duopoly equilibrium output as the firm $i$’s disagreement point. From the first-order conditions for maximization of (5), it is obtained that the equilibrium output is $q_i^* = \frac{a}{(\lambda + 3)}$, $i = 1, 2$, identical to the previous case. Consequently total industry output equals $Q^* = \frac{2a}{(\lambda + 3)}$, with $\frac{\partial Q^*}{\partial \lambda} < 0$. However the equilibrium wages are $w_i^* = \frac{\alpha a(1 + \lambda)}{(\lambda + 3)}$, $i = 1, 2$ (see Appendix). The differentiation shows that $\frac{\partial w_i^*}{\partial \alpha} > 0 \ \forall \alpha \in (0, 1)$, as expected; however, $\frac{\partial w_i^*}{\partial \lambda} > 0 \ \forall \lambda \in [0, 1)$: the equilibrium wage increases as the degree of product market cooperation increases. For given wages an increase in the degree of cooperation between firms triggers a fall in total output. As before there are two effects on negotiated wages. On the one hand, firms’ cooperation increases profits and oligopoly rents: unions, therefore, may claim higher wages, on the other the reduction in production levels decreases labor demand. Nonetheless if negotiations break down when the disagreement point is the partial anticipated duopoly output, the industry output will be higher than in the case of partial monopoly output as the disagreement point. As a consequence unions ask for higher wages. This result complements Symeonidis [2010] who shows that in the presence of bilateral monopoly relations, if the firms’ disagreement point is the partial monopoly output, under the EB framework the impact of higher product market cooperation (or cross-ownership) on negotiated wages in equilibrium is negative.

Substituting the equilibrium output and the equilibrium wage into the relevant equations, the following values for the industry profits and total union rents are obtained
\[ \Pi = \Pi_1 + \Pi_2 = \frac{2a^2(1-a)(1+\lambda)^2}{(3+\lambda)^2}, \quad \Omega = \Omega_1 + \Omega_2 = \frac{2a^2(1+\lambda)}{(3+\lambda)^2}, \]

\[ CS = \frac{2a^2}{(3+\lambda)^2}, \quad SW = \frac{2a^2(2+\lambda)}{(3+\lambda)^2}. \]

An analytical inspection reveals that, in the relevant parameters’ space, the following comparative statics hold: \( \frac{\partial \Pi}{\partial \lambda} > 0, \frac{\partial \Pi}{\partial \alpha} < 0, \frac{\partial \Omega}{\partial \lambda} > 0, \frac{\partial \Omega}{\partial \alpha} > 0, \frac{\partial CS}{\partial \lambda} < 0 \) and \( \frac{\partial SW}{\partial \lambda} < 0 \). It is extremely significant to remark that industry profits as well as union utility are now increasing in \( \lambda \): firms and unions find mutual benefit in increasing the degree of product market cooperation. That is both bargaining parties raise their relative gains to the detriment of consumers. Thus the technical conditions of the firms are relevant in determining the bargaining outcomes. In fact, if the firms are quantity constrained and cannot produce more than \( Q^C \in [\lambda \pi^*_C, \lambda \pi^*_D] \), negotiations may end with a situation of either conflict or common interest between labor and management. These results can be summarized in the following proposition.

**Proposition 2.** In an efficient bargaining framework, if each firm’s disagreement point is a fraction of the anticipated duopoly output in equilibrium, a higher degree of the product market cooperation: 1) decreases industry output; 2) increases wages; and 3) increases industry profits and union rents at the expenses of consumer’s surplus, decreasing overall social welfare.

**Conclusions**

In an industry characterized by the EB model with firms and unions locked into bilateral monopoly relations this paper has investigated the impact of different degrees of product market cooperation on profits, union rents, consumer surplus and social welfare and analyzes the role of different firms’ disagreement payoffs.

The analysis has shown that the firms’ disagreement point plays a key role in solving potential conflicts of interest between unions and firms in respect of bargaining issues. In fact the noteworthy finding is that, when the disagreement payoff is based on the partial anticipated duopoly equilibrium output, firms and unions mutually gain from product market cooperation because both industry profits and unions’ utility increase. Nevertheless the robustness of these findings needs to be checked for different conjectures concerning the strategic behaviour of firms in the product market. A more competitive product market environment (for instance, price competition à la Bertrand with differentiated products) may reverse many of the results obtained here. This issue is left for future research.
Appendix

When the disagreement payoff of the firms is based on the partial anticipated monopoly output, the maximization problem in (5) is

$$\max G_i(w_i,q_i) = (w_iq_i)^\alpha \times$$

$$\times \left[ (a - q_i - q_j - w_i)q_i + \lambda(a - q_i - q_j - w_j)q_j - \lambda(a - q_{jm}^* - w_{jm}^*)q_{jm}^* \right]^{\frac{1}{1-\alpha}},$$

$$i, j = 1, 2 \quad i \neq j. \quad (A.1)$$

The first-order conditions from the maximization of (A.1) are

$$\frac{\partial G_i}{\partial w_i} = \frac{\alpha G_i}{w_i} +$$

$$\frac{(1-\alpha)G_i q_i}{\left[ (a - q_i - q_j - w_i)q_i + \lambda(a - q_i - q_j - w_j)q_j - \lambda(a - q_{jm}^* - w_{jm}^*)q_{jm}^* \right]} = 0,$$

$$\frac{\partial G_i}{\partial q_i} = \frac{\alpha G_i q_i}{q_i} +$$

$$+ \frac{(1-\alpha)G_i \left[ a - 2q_i - w_i - (1 + \lambda)q_j \right]}{\left[ (a - q_i - q_j - w_i)q_i + \lambda(a - q_i - q_j - w_j)q_j - \lambda(a - q_{jm}^* - w_{jm}^*)q_{jm}^* \right]} = 0,$$

which, solved for $w_i$, lead to

$$w_i = \alpha \left[ a - q_i - (1 + \lambda)q_j \right] (\text{rent-sharing curve}), \quad (A.2)$$

$$w_i = a - (2 - \alpha)q_i - (1 + \lambda)q_j (\text{contract curve}) \quad i, j = 1, 2 \quad i \neq j. \quad (A.3)$$

Equating (A.2) and (A.3), firm $i$'s production as a function of the rival firm's output is

$$q_i = \frac{a - (1 + \lambda)q_j}{2}, \quad i, j = 1, 2 \quad i \neq j. \quad (A.4)$$

Solving the system of equations in (A.4), the equilibrium output and employment at each firm is $q_i^* = \frac{a}{(\lambda + 3)}$, $i = 1, 2$, and the further substitution in (A.2) leads to the equilibrium wage $w_i^* = \frac{aa}{(\lambda + 3)}$ as reported in the main text.
On the other hand when the disagreement payoff of the firms is based on the partial anticipated duopoly output, the maximization problem in (5) becomes

\[
\max G_i(w_i, q_i) = (w_i q_i)^{a_i} \\
\left[(a - q_i - q_j - w_i)q_i + \lambda(a - q_i - q_j - w_i)q_j - \lambda(a - q_{iD}^* - q_{jD}^* - w_{iD}^*)q_{jD}^*\right]^{1-a_i},
\]

\[i, j = 1, 2 \quad i \neq j, \quad (A.5)\]

where \(q_{iD}^*\) and \(q_{jD}^*\) are the firms' duopoly equilibrium quantities, and \(w_{iD}^*\) is the equilibrium wage.

The first-order conditions from the maximization of (A.5) are

\[
\frac{\partial G_i}{\partial w_i} = \alpha G_i w_i + \frac{(1 - \alpha)G_i q_i}{\left[(a - q_i - q_j - w_i)q_i + \lambda(a - q_i - q_j - w_i)q_j - \lambda(a - q_{iD}^* - q_{jD}^* - w_{iD}^*)q_{jD}^*\right]^{1-a_i}} = 0,
\]

\[
\frac{\partial G_i}{\partial q_i} = \alpha G_i q_i + (1 - \alpha)G_i \left[a - 2q_i - w_i - (1 + \lambda)q_j\right] + \frac{(1 - \alpha)G_i \left[(a - q_i - q_j - w_i)q_i + \lambda(a - q_i - q_j - w_i)q_j - \lambda(a - q_{iD}^* - q_{jD}^* - w_{iD}^*)q_{jD}^*\right]^{1-a_i}}{\left[(a - q_i - q_j - w_i)q_i\right]} = 0.
\]

Considering that at equilibrium \((a - q_i - q_j - w_i)q_j = (a - q_{iD}^* - q_{jD}^* - w_{iD}^*)q_{jD}^*\), those conditions reduce to

\[
\frac{\partial G_i}{\partial w_i} = \alpha(w_i q_i)^a \frac{\left[(a - q_i - q_j - w_i)q_i\right]^{1-a}}{w_i} + \frac{(1 - \alpha)(w_i q_i)^a \left[(a - q_i - q_j - w_i)q_i\right]^{1-a}}{\left[(a - q_i - q_j - w_i)q_i\right]} = 0,
\]

\[
\frac{\partial G_i}{\partial q_i} = \alpha(w_i q_i)^a \frac{\left[(a - q_i - q_j - w_i)q_i\right]^{1-a}}{q_i} + \frac{(1 - \alpha)(w_i q_i)^a \left[(a - q_i - q_j - w_i)q_i\right]^{1-a}}{\left[(a - q_i - q_j - w_i)q_i\right]}\left[a - 2q_i - w_i - (1 + \lambda)q_j\right] = 0.
\]
Solving the above system of equations for $w_i$, it is obtained

$$w_i = \alpha(a - q_i - q_j) \quad \text{(rent sharing curve)} \quad i, j = 1, 2 \quad i \neq j, \quad (A.6)$$

$$w_i = a - (2 - \alpha)q_i - \left[1 + \lambda(1-\alpha)\right]q_j \quad \text{(contract curve)} \quad i, j = 1, 2 \quad i \neq j. \quad (A.7)$$

Equating (A.6) and (A.7), the resulting firm’s $i$ reaction function to the rival firm’s production is as in (A.4). Therefore the equilibrium output and employment at each firm is $q_i^* = \frac{a}{(\lambda + 3)}$, $i = 1, 2$; however, the further substitution of the output expression in (A.6) leads to the equilibrium wage $w_i^* = \frac{\alpha a(1 + \lambda)}{(\lambda + 3)}$ reported in the main text.

References

Bagwell, L.S., Bernheim, B.D., 1996, *Veblen Effects in a Theory of Conspicuous Consumption*, American Economic Review, vol. 86, no. 3: 349–373.

Bowles, S., Yongjin, P., 2005, *Emulation, Inequality, and Work Hours: Was Thorsten Veblen Right?*, Economic Journal, vol. 115, no. 507: F397–F412.

Bughin, J., 1993, *Union-Firm Efficient Bargaining and a Test of Oligopolistic Conduct*, Review of Economics and Statistics, vol. 75: 563–567.

Bughin, J., 1995, *Bargaining over Employment as a Firm Strategic Choice*, Review of Industrial Organization, vol. 10: 723–735.

Bughin, J., 1996, *Trade Unions and Firms’ Product Market Power*, The Journal of Industrial Economics, vol. 44, no. 3, 289–307.

Buccella, D., 2014, *Product Market Competition with Differentiated Goods and Social Welfare in the Presence of an Industry-wide Union*, Portuguese Economic Journal, vol. 13, no. 2: 131–140.

Carlsson, F., Johansson-Stenman, O., Martinsson, P., 2007, *Do You Enjoy Having More than Others? Survey Evidence of Positional Goods*, Economica, vol. 74: 586–598.

Clark, A.E., Oswald, A.J., 1996, *Satisfaction and Comparison Income*, Journal of Public Economics, vol. 61, no. 3: 359–381.

Dixit, A., 1979, *A Model of Duopoly Suggesting a Theory of Entry Barriers*, The Bell Journal of Economics, vol. 10: 20–32.

Dobbalare, S., Mairesse, J., 2011, *Panel Data Estimates of the Production Function and Product and Labor Market Imperfection*, Journal of Applied Econometrics, vol. 28, no. 1: 1–46.

Dobson, P.W., 1994, *Multifirm Unions and the Incentive to Adopt Pattern Bargaining in Oligopoly*, European Economic Review, vol. 38: 87–100.

Dobson, P.W., 1997, *Union–Firm Interaction and the Right to Manage*, Bulletin of Economic Research, vol. 49, no. 3: 213–229.

Espinosa, M., Rhee, S., 1989, *Efficient Wage Bargaining as a Repeated Game*, Quarterly Journal of Economics, vol. 104: 565–588.
Horn, H., Wolinsky, A., 1988, *Bilateral Monopolies and Incentives for Merger*, RAND Journal of Economics, vol. 19, no. 3: 408–419.

Jensen, R.T., Miller, N.H., 2008, *Giffen Behavior and Subsistence Consumption*, American Economic Review, vol. 98, no. 4: 1553–77.

Kraft, K., 2006, *Wage Versus Efficient Bargaining in Oligopoly*, Managerial and Decision Economics, vol. 27: 595–604.

López, M.C., Naylor, R.A., 2004, *The Cournot–Bertrand Profit Differential: A Reversal Result in a Differentiated Duopoly with Wage Bargaining*, European Economic Review, vol. 48: 681–696.

MacCurdy T.E., Pencavel, J.H., 1986, *Testing between Alternative Models of Wage and Employment Determination in Unionized Markets*, Journal of Political Economy, vol. 94: S3–S39.

McDonald, I.M., Solow, R., 1981, *Wage Bargaining and Employment*, American Economic Review, vol. 71, no. 5: 896–908.

Mukherjee, A., 2010, *Product Market Cooperation, Profits and Welfare in the Presence of Labor Union*, Journal of Industry, Competition and Trade, vol. 10: 151–160.

Naylor, R.A., 2002, *Industry Profits and Competition under Bilateral Oligopoly*, Economic Letters, vol. 77: 169–175.

Nickell, S., Andrews, M., 1983, *Unions, Real Wages and Employment in Britain 1951–79*, Oxford Economic Papers, vol. 35: 183–206.

Oswald, A.J., 1985, *The Economic Theory of Trade Unions: An Introductory Survey*, The Scandinavian Journal of Economics, vol. 87, no. 2: 160–193.

Singh, N., Vives, X., 1984, *Price and Quantity Competition in a Differentiated Duopoly*, RAND Journal of Economics, vol. 15: 546–554.

Symeonidis, G., 2008, *Downstream Competition, Bargaining, and Welfare*, Journal of Economics & Management Strategy, vol. 17, no. 1: 247–270.

Symeonidis, G., 2010, *Downstream Merger and Welfare in a Bilateral Oligopoly*, International Journal of Industrial Organization, vol. 28, no. 3: 230–243.
Aims and Scope

Economics and Business Review is the successor to the Poznań University of Economics Review which was published by the Poznań University of Economics Press in 2001–2014. The Economics and Business Review is a quarterly journal focusing on theoretical and applied research work in the fields of economics, management and finance. The Review welcomes the submission of articles for publication dealing with micro, mezzo and macro issues. All texts are double-blind assessed by independent reviewers prior to acceptance.

Notes for Contributors

1. Articles submitted for publication in the Economics and Business Review should contain original, unpublished work not submitted for publication elsewhere.
2. Manuscripts intended for publication should be written in English and edited in Word and sent to: review@ue.poznan.pl. Authors should upload two versions of their manuscript. One should be a complete text, while in the second all document information identifying the author(s) should be removed from files to allow them to be sent to anonymous referees.
3. The manuscripts are to be typewritten in 12’ font in A4 paper format and be left-aligned. Pages should be numbered.
4. The papers submitted should have an abstract of not more than 100 words, keywords and the Journal of Economic Literature classification code.
5. Acknowledgements and references to grants, affiliation, postal and e-mail addresses, etc. should appear as a separate footnote to the author’s name(s) and should not be included in the main list of footnotes.
6. Footnotes should be listed consecutively throughout the text in Arabic numerals. Cross-references should refer to particular section numbers: e.g.: See Section 1.4.
7. Quoted texts of more than 40 words should be separated from the main body by a four-spaced indentation of the margin as a block.
8. Mathematical notations should meet the following guidelines:  
   – symbols representing variables should be italicized,  
   – avoid symbols above letters and use acceptable alternatives (Y*) where possible,  
   – where mathematical formulae are set out and numbered these numbers should be placed against the right margin as... (1),  
   – before submitting the final manuscript, check the layout of all mathematical formulae carefully (including alignments, centring length of fraction lines and type, size and closure of brackets, etc.),  
   – where it would assist referees authors should provide supplementary mathematical notes on the derivation of equations.
9. References in the text should be indicated by the author’s name, date of publication and the page number where appropriate, e.g. Acemoglu and Robinson [2012], Hicks [1965a, 1965b]. References should be listed at the end of the article in the style of the following examples:  
   Acemoglu, D., Robinson, J.A., 2012, Why Nations Fail. The Origins of Power, Prosperity and Poverty, Profile Books, London.  
   Kalecki, M., 1943, Political Aspects of Full Employment, The Political Quarterly, vol. XIV, no. 4: 322–331.  
   Simon, H.A., 1976, From Substantive to Procedural Rationality, in: Latsis, S.J. (ed.), Method and Appraisal in Economics, Cambridge University Press, Cambridge: 15–30.
10. Copyrights will be established in the name of the E&B Review publisher, namely the Poznań University of Economics Press.

More information and advice on the suitability and formats of manuscripts can be obtained from:  
Economics and Business Review  
al. Niepodległości 10  
61-875 Poznań  
Poland  
e-mail: review@ue.poznan.pl  
www.puereview.ue.poznan.pl
Subscription

Economics and Business Review (E&BR) is published quarterly and is the successor to the Poznań University of Economics Review. The E&BR is published by the Poznań University of Economics Press.

E&BR is listed in ProQuest, EBSCO, and BazEkon.

Subscription rates for the print version of the E&BR: institutions: 1 year – €50.00; individuals: 1 year – €25.00. Single copies: institutions – €15.00; individuals – €10.00. The E&BR on-line edition is free of charge.

Correspondence with regard to subscriptions should be addressed to: Księgarnia Uniwersytetu Ekonomicznego w Poznaniu, ul. Powstańców Wielkopolskich 16, 61-895 Poznań, Poland, fax: +48 61 8543147; e-mail: info@ksiegarnia-ue.pl.

Payments for subscriptions or single copies should be made in Euros to Księgarnia Uniwersytetu Ekonomicznego w Poznaniu by bank transfer to account No.: 96 1090 1476 0000 0000 4703 1245.