AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

The Importance of and Economic Motivation for the International Licensing of Branded Food and Related Products*

by

Ian M. Sheldon
Associate Professor
Department of Agricultural Economics and Rural Sociology
The Ohio State University

Dennis R. Henderson
Professor
Department of Agricultural Economics and Rural Sociology
The Ohio State University

Abstract

Casual empiricism suggests that the international licensing of the production and marketing of branded food and related products may become an increasingly important aspect of the globalization of the food industry, particularly in sectors such as soft drinks, brewing and confectionery products. For example, Coca-Cola and Pepsi-Cola both license the canning and distribution of their final products in overseas markets, Anheuser-Busch and Miller license production of various of their beer brands whilst Nestlé chocolate products are manufactured under license in the United States by Hershey.

The purpose of this paper is twofold; first, in Section 1 empirical evidence on the extent of international licensing is presented and evaluated. In particular, due to recent developments, the specific focus of the analysis is on the case of brewing where the licensing of branded beers appears to be a fairly widespread international phenomenon and is often two-way in nature, i.e. U.S. brewers act as both licensor and licensees. Second, because much of the recent theoretical literature on licensing has dealt only with the licensing of process technologies rather than branded products, Section 2 considers the possible motives for such licensing using a simple game-theoretic structure. The results suggest that imperfect competition in overseas markets and imperfect information may be important determinants of international licensing. Finally, the research and strategic implications of international licensing are considered.

*This paper is based on research conducted as a part of North Central Regional Project NC-194, entitled "The Organization and Performance Of World Food Systems: Implications for US Policies."

Introduction

Casual empiricism suggests that international licensing of the production and marketing of branded food and related products may become an increasingly important aspect of the globalization of the food industry, particularly in sectors such as soft drinks, brewing and confectionery products. However, much of the recent theoretical literature on licensing has dealt only with the licensing of process technologies, rather than branded products (see Tirole, 1989, for a survey). The purpose of this paper is to consider the possible motives for food manufacturing firms to license their branded products to overseas firms.

Section 1 deals in general with brand licensing in the food processing sector and focusses in some detail on empirical evidence for licensing and the brewing industry. Currently major U.S. brewers are both licensees for foreign beers and have recently begun to license their products to foreign firms. Section 2 considers the possible motives for such licensing using a simple game-theoretic structure. The results suggest that imperfect competition in overseas markets and imperfect information may be important determinants of international licensing. Finally, the research and strategic implications of international licensing are considered.

1. Branded Food Products and Licensing

As a form of business activity, the licensing of branded food and related products has existed for many years in both the United States and other developed countries' food processing sectors. For example, both Coca-Cola and Pepsi-Cola have licensed the domestic canning and distribution of their final products. The activity also crosses national borders. For example, Cadbury-Schweppes and Britvic-Corona own the U.K. canning and distribution rights to "Coca-Cola" and "Pepsi-Cola" respectively; the chocolate products "Kit-Kat" and "Rolos," both made in the United Kingdom by Nestlé-Rowntree, are manufactured under license in the United States by Hershey; "Yoplait" yoghurts are made under license in both the United States and Canada from the French firm Sodima; and "Knorr" products are licensed by CPC to Ajinmoto in Japan. Table 1 lists a sample of food product licenses, listed in firms' accounts, which are predominantly in the confectionery sector.

It is interesting to consider in more detail the case of brewing. As Table 2 indicates, it is a fairly widespread phenomenon, with a good deal of inbound licensing into Canada and the United Kingdom. For example, leading U.S. brewers, Anheuser-Busch and Miller, are now licensing the production and marketing of their respective products "Budweiser" (U.S. market share, 27%) and "Miller Lite" (U.S. market share, 10%) to leading U.K. brewing companies. U.S. brewers also own the rights to produce foreign beers in the United States. For example, "Löwenbrau" (German) and "Killian's Red" (French-owned) are made under license by Miller and Coors respectively.

In order to set licensing in context, it is relevant to consider the example of the U.S. and U.K. brewing sectors (see Connor et al., 1985 and Monopolies and Mergers Commission, 1989 for discussion of the U.S. and U.K. brewing industries respectively). The U.S. brewing industry is best described as an oligopoly where the three leading firms, Anheuser Busch, Miller and Coors, each selling a portfolio of branded and heavily advertised beer products, account for an 83 percent market share (Modern Brewery Age, March 1989). Whilst many foreign beers are imported into the United States, they take only a 5 percent market share and appear to be sold at a premium over domestically produced beers. Exports account for only 2 percent of U.S. shipments. This market structure is set in the context of a slowdown in the rate of growth of U.S. beer consumption in the 1980s compared to the 1960s and 1970s (Modern Brewery Age, March 1989).

Since the late-1960s, the U.K. brewing industry has been dominated by six firms, Bass, Allied Lyons, Whitbread, Scottish/Newcastle, Courage and Grand Metropolitan, whose combined market share is 76 percent (Monopolies and Mergers Commission, 1989). Again setting this in the context of demand for beer, U.K. consumption rates as a whole have been declining/stagnating in the 1980s (Monopolies and Mergers Commission, 1989). However, within this static de-

Table 1

Examples of International Food Product Licenses

Licensor/Product	Licensee
Arla, Sweden	
"L+L Dairy Spread"	Morinaga, Japan
Cadbury, U.K.	
"Cadbury Dairy Milk"	Hershey, U.S.
"Cadbury Fruit and Nut"	Hershey, U.S.
"Caramello"	Hershey, U.S.
"Cadbury Creme Eggs"	Hershey, U.S.
"Roast Almond"	Hershey, U.S.
CPC, U.S.	
"Knorr"	Ajinmoto, Japan
Morinaga, Japan	
"Bifidus Yogurt"	St. Hubert S.A., France
	Sudmilch AG, Germany
"Morinaga Infant Formula"	P.T. Enseval, Indonesia
Phillip Morris/Kraft, U.S.	
"Kraft Margarine"	Epic Oil Mills, South Africa
"Kraft Salad Dressing"	Epic Oil Mills, South Africa
Phillip Morris/Jacob Suchard, Switzerland/U.S.	
"Sugus"	Nestlé Produtos Alimentaros, Portugal
	Beacon Sweets and Chocolates, South Africa
	P.T. Super Worldwide Foodstuffs, Indonesia
	Sanborn Hermanos, S.A., Mexico
"Toblerone"	Sanborn Hermanos, S.A., Mexico
"Suchard"	Sanborn Hermanos, S.A., Mexico
	Tong Yang Confectionery, Korea
	Nestlé Produtos Alimentaros, Portugal
"Milka"	Sanborn Hermanos, S.A., Mexico
"Van Houten"	Chocolate Products Manufacturing, Malaysia
	General Food Industries, Indonesia
	Sunshine Allied Investments, Singapore
Nestlé-Rowntree, Switzerland/U.K.	
"Kit-Kat"	Hershey, U.S.
Unilever, Netherlands/U.K.	
"Lipton Tea"	Morinaga, Japan
"Rolos"	Hershey, U.S.

Table 2
Examples of International Brewing Licenses

Licensor/Product	Licensee
Anheuser-Busch	
"Budweiser"	Labatt, Canada
	United Breweries, Denmark
	Guiness, Ireland
	Suntory, Japan
	Oriental Brewery, Korea
	Grand Metropolitan, U.K.
"Bud Light"	Labatt, Canada
Bond, Australia	
"Castlemaine XXXX"	Allied Lyons, U.K.
"Swan Premium"	Allied Lyons, U.K.
Brasserie Artois	
"Stella Artois"	Whitbread, U.K.
	Molson, Canada
BSN, France	
"Kronenbourg"	Courage, U.K.
Adolph Coors	
"Coors"	Molson, Canada
Cerveceria Modelo, Mexico	
"Corona"	Molson, Canada
Elders, Australia	
"Fosters"	Beamish and Crawford, Ireland
	Pripps, Sweden
Guiness, Ireland	
"Guiness Stout"	Elders, Australia
Haute Brasserie, France	
"Killian's Red"	Adolph Coors, U.S.
Heineken, Holland[1]	
"Heineken"/"Amstel"	Whitbread, U.K.
	Kirin, Japan
	Frydenlund Ringes Bryggerier, Norway
	A.B. Wårby Bryggerier, Sweden
Kirin, Japan	
"Kirin"	Molson, Canada
	Sam Miguel, Hong Kong
Labatt, Canada	
"Labatt"	Vaux Brewery, U.K.
Löwenbrau, Germany	
"Löwenbrau Pils"	Allied Lyons, U.K.
	Molson, Canada
	Miller, U.S.
	Sam Miguel, Hong Kong
"Löwenbrau Strong"	Allied Lyons, U.K.
"Löwenbrau Special Export"	Allied Lyons, U.K.
Miller, U.S.	
"High Life"	Molson, Canada
"Miller Lite"	Molson, Canada
	Courage, U.K.
United Breweries, Denmark	
"Carlsberg"	Photos Photiades, Cyprus
	Tou, Norway
	Suntory, Japan
"Tuborg"	Frydenlund Ringes Bryggerier, Norway
	Köbányai Sörgyar, Hungary
	Podravka, Yugoslavia
	Unicer, Portugal

1. Heineken's licenses to firms in developing countries are not listed here.

mand there has been an important structural change: at the start of the 1970s, U.K. beer consumption was dominated by traditional ale products, which are often locally brewed and marketed. Since then there has been a marked shift to the consumption of lager[1], a type of beer similar to that consumed in the United States, which tends to be brewed and marketed nationally by the major U.K. brewers. Consumption of lager increased from about 6 percent of total beer consumption in 1970 to 44 percent in 1987 (Monopolies and Mergers Commission, 1989), and since 1970, 340 different lager brands have been introduced into the market (Financial Times, January 1990).

With respect to technology, brewing is a long established technique in both countries and there is evidence of economies of scale in beer production (see Elzinga, 1977 and Cockerill, 1984 for evidence on the United States and United Kingdom, respectively). There is also evidence that U.S. plants tend to be both larger and more efficiently utilized than those in the United Kingdom (see Cockerill, 1984). The critical point about the technology, though, is that whilst it is not particularly sophisticated, different brands of beer are produced, or at least perceived to be produced to different "recipes", e.g. "Budweiser" is "beech-wood aged", "Strohs" is "fire-brewed" and "Miller Genuine Draft" is "cold-filtered".

Given this background, it is important to note that the structural shift in demand for beer in the United Kingdom has coincided with the large U.K. firms acquiring licenses to produce and market foreign lager brands. For example, Whitbread brew "Heineken" (Dutch) and "Stella Artois" (Belgian), whilst Courage, prior to their acquisition by Elders, brewed "Fosters" (Australian) under license, and now they brew "Miller Lite" under license. The license to brew "Budweiser" is owned by Grand Metropolitan. It would seem therefore, at least by implication, that some firms find it more profitable to acquire new brands through licensing and may have done so in response to their competitors' strategies.

However, this would explain only one side of any licensing equilibrium. In this respect two additional aspects of the structure of the U.K. brewing sector need to be noted: first, not only do the leading brewers own many brands, they also spend large sums on brand promotion, for example in 1989, Whitbread spent £11 million (= $17.5 million) on advertising "Heineken" alone (Monopolies and Mergers Commission, 1989). This suggests a strong degree of pre-commitment on the part of incumbent firms, which is clearly visible to potential entrants. Second, the leading U.K. brewers, unlike their U.S. counterparts, are highly vertically integrated into beer retailing. The top six firms own over 50 percent of the licensed "pub" outlets, which are tied to selling their owners' products. They also own a number of the "off-license" retail outlets.[2] Consequently, firms entering the U.K. market would have problems securing distribution. Therefore, it would appear that direct entry, except by acquisition, would be difficult for U.S. firms and as a result they are attempting to extract rents from imperfectly competitive U.K. brewers by means of brand licensing.

2. Motives for Product Licensing

In light of the above discussion, it is useful to consider brand licensing in a simple theoretical framework. The following equilibria are modelled in the context of a simple entry game where product licensing enters explicitly into the strategy space of both a potential licensor and licensee. Rather than focussing on the proofs in the model,[3] only the main results are outlined here.

We assume a two-firm situation where firm A, a monopoly in its own market selling a branded product, may wish to license that product overseas. The license is essentially the right to produce the branded product, for which the licensor has property rights. Firm B, the potential licensee, is also a monopoly in its own market selling a branded product that is differentiated from that of firm A. B's costs are assumed to fall, due to economies of scope, if it adds a second product to its portfolio. The *extensive* form of the game is shown in Figure 1. The game is *sequential* in that firms A and B take turns to play, initially it is treated as a "*one-shot*" game where firms have *complete* information about the structure of payoffs. The latter two assumptions are relaxed shortly.

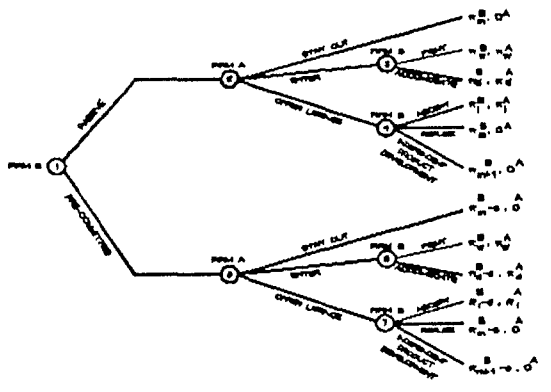
Equilibrium 1

Starting at node 2 of the game, suppose the following condition holds:

$$(1) \qquad \pi^B > \pi^B_d > 0 > \pi^B_w$$

The outcome of the entry/no entry sub-game is well-known (see Dixit, 1982); fighting entry by firm A is not a *credible* threat by firm B as the profits from sharing the market in a *Nash equilibrium*, π^B_d, are greater than those from fighting, π^B_w. Hence the *perfect equilibrium* (see Selten, 1975) is that of entry by firm A and accommodation by firm B.

Figure 1 Entry/Licensing Game



Given fighting by the incumbent can be ruled out, it is straightforward to identify the circumstances under which licensing will be an equilibrium set of actions for both firms. Focussing on node 4 of the game, the condition for firm B to accept the offer of a license is:

$$(2) \qquad \pi_l > \pi_{+1} > \pi > \pi$$

i.e. it is more profitable for the incumbent firm to accept a license, π^B_l, than either developing its own product, π^B_{m+1}, acting as a monopolist, or sharing the market. If condition 2 holds, then offering a license will be an equilibrium strategy for firm A if the following holds:

$$(3) \qquad \pi^A_l > \pi^A$$

where π^A_l are the licensing profits earned by firm A. Assuming (3) holds, (2) must hold, otherwise firm A will simply not offer the license and will enter the market. Although this is a strong condition for a licensing equilibrium, joint production economies for firm B may well make licensing a profitable alternative to entry for firm A.

Equilibrium 2

Critical to the above equilibrium is the move sequence in the game, i.e. firm A has *first-mover* advantage. However, it is possible to allow firm B such an advantage in the sense that it can make irrevocable *prior commitments* incurring a sunk cost c. In the case of branded products, Salop (1979) suggests that advertising is an example of such a commitment. If such a commitment exists, then firm B can credibly threaten to fight, hence entry at node 5 is no longer rational for firm A. So focussing on node 7 of the game, licensing will be a rational strategy for firms A and B if the following conditions hold:

$$(4) \qquad (\pi_l - c) > (\pi_{+1} - c) > (\pi - c)$$

(5) $$\pi_l^A > 0$$

Hence the motivation for licensing is clear: the licensor, firm A, aims to extract rents from an imperfectly competitive market overseas that it is unable to enter directly, whilst the licensee, firm B, aims to increase monopoly profits via a less costly route than independent product development.

Given these two equilibria, it is interesting to see how they change when repetition of the game and incomplete information are allowed for. In terms of repetition, the critical distinction is between *infinite* and *finite* repetitions of the game. In the case of infinite repetition, it is possible for B to fight early on and then enjoy monopoly profits in perpetuity. Hence a licensing equilibrium would emerge if (4) and (5) hold. In the case of finite repetition, because firm B has no incentive to fight in the last period, by backwards induction it has no incentive to fight in any period.[4] Therefore, in this case, a licensing equilibrium will only emerge if (2) and (3) hold.

In the case of repetition and incomplete information, some more complex licensing equilibria emerge. In particular, if firm A is unsure whether firm B is passive or pre-committed, there is an incentive for an uncommitted firm B to fight entry in order to appear committed and also accept a license in order to deter entry. Therefore using the concept of *sequential equilibrium* (see Kreps and Wilson, 1982), it is possible to generate an equilibrium where firm A initially enters, faces an aggressive response from firm B, exits the market and then offers a license to firm B which is accepted. Hence uncertainty about the incumbent firm's behavior may generate a licensing equilibrium.

3. Summary

In summary, this paper has suggested that the licensing of branded food and related products may become an increasingly important feature of international transactions in the food industry. Specifically, in focussing on the characteristics of licensing in the brewing industry, some initial analysis indicates that effectively barricaded entry into the U.K. market and the expense of independent product development has led leading U.S. firms to license their brands to U.K. brewers, the aim being to capture rents in the expanding U.K. lager market.

Currently, the economic theory of licensing deals predominantly with the transfer of process technology rather than branded products. Therefore, given the observations on food brand licensing, a conceptual model of a product licensing equilibrium has been presented in order to provide an analytical background to more rigorous empirical work. This analysis suggests that if licensing is considered as an alternative strategy to entry in a simple game-theoretic structure, then in the simplest type of model, licensing is aimed at extracting rents from imperfectly competitive overseas markets.

In a more complex model, strategic interaction amongst incumbent firms and imperfect information about their payoffs may also be important factors in the decision to license products internationally. For example, incumbent firms may use licensing as a delaying tactic against future entry and entrant firms may regard it as a means of revealing information about incumbent firms. Such strategic behavior may also have an impact on the bargaining process over terms in an agreement. An incumbent firm that successfully deters entry has an incentive to bargain for a license with a long time-horizon in order to delay future entry, whilst an unsuccessful entrant will require a license to provide returns over a short time period.

Clearly more research needs to be conducted in this area both in developing the theory and in establishing the quantitative importance of licensing and its determinants. Also, other licensing issues not addressed in this paper include the notion of an optimal licensing contract, the process of bargaining, the content of brand licensing agreements, and the life-span of licenses.

Endnotes

[1] Lager is brewed with a top-fermenting yeast whilst bitter, a traditional-style beer in the UK, is brewed using bottom-fermenting yeast.

[2] Stores where sales are for off-premises consumption.

[3] See Sheldon and Henderson (1990) for full proofs.

[4] This is known as the "chain-store" paradox.

References

Cockerill, T. A. J. (1984) "The UK Brewing Industry" in *Structure and Performance of Industries* edited by T. T. Jones and T. A. J. Cockerill, Oxford: Phillip Allan.

Connor, J. M., Rogers, R. T., Marion, B. W. and Mueller, W. F. (1985) *The Food Manufacturing Industries: Structure, Strategies, Performance, and Policies*, Mass: Lexington.

Dixit, A. (1982) "Recent Developments in Oligopoly Theory," *American Economic Review-Papers and Proceedings*, 72, 12-17.

Elzinga, K. (1977) "The Beer Industry" in *The Structure of American Industry*, edited by W. Adams (5th edition), New York: Macmillan.

Financial Times (December 7, 1989) "Whitbread Re-Focusses Its Range".

Financial Times (January 11, 1990) "Lager Market Still Frothy".

Kreps, D. and Wilson, R. (1982) "Reputation and Imperfect Information" *Journal of Economic Theory*, 27, 253-279.

Modern Brewery Age (March 1989) *1988 Statistical Study*.

Monopolies and Mergers Commission (1989) *The Supply of Beer: A Report on the Supply of Beer for Retail Sale in the United Kingdom*, House of Commons Papers, Cm651, London: HMSO.

Salop, S. C. (1979) "Strategic Entry Deterrence" *American Economic Review-Papers and Proceedings*, 69, 335-338.

Sheldon, I. M. and Henderson, D. R. (1990) "Motives for the International Licensing of Branded Food and Related Products" *Organization and Performance of World Food Systems*: NC-194, Occasional Paper, July 1990, OP-15.

Selten, R. (1975) "Reexamination of the Perfectness Concept for Equilibrium Points in Extensive Games" *International Journal of Game Theory*, 4, 470-486.

Tirole, J. (1989) *The Theory of Industrial Organization*, Cambridge MA: MIT Press.