Economic Integration Effects on Market Structure

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1. Introduction

The way economists think about international trade and the gains of economic integration has significantly changed during the last two decades. The concept of comparative advantage, the beautiful and deep insight of David Ricardo, has not lost its theoretical relevance, and many analyses are still devoted to the way countries can exploit their differences by specializing and exchanging, and to the gains related to this inter-national and inter-industrial trade. However, several authors have come to focus on the international intra-industry trade (whose importance appears to be overwhelming in the case of developed countries), and on the role of the economies of scale in explaining it. There are at least two reasons for this shift: first, the nowadays (and aforementioned) relevance of the intra-industry trade (for instance inside the European Union (EU)); second, the fact that some relatively recent advances in economic theory (and in particular in Industrial Organization) has eventually provided economists with the analytical tools to cope with the inherent complexities of the increasing returns economics.

The story of the developing of the so-called "New Theory of International Trade" is a fascinating one, and it is (hopefully) not over yet. However, it is fair to say that a cornerstone was the introduction into International Economics of the Chamberlinian model of differentiated products and increasing returns to scale, which had recently received sound microeconomics foundations. This made possible and meaningful the study of the opening of trade between two "similar" and previously closed economies, and raised new interesting questions about the potential gains from trade and economic integration. While the "Chamberlinian Approach" is not the only one which has been used to study the

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1 See Krugman (1995).
3 The reference is respectively to the works by Krugman (1979) and Dixit and Stiglitz (1977).
4 For example: what does determine the international pattern of specialisation if resources and preferences are uniformly distributed? Is there a role for "first mover" effects and path dependency? Is free trade always the best policy?
several aspects of international trade, models of this kind proved able to provide a set of by now well-established results, and appear representative of the "New Theory". In this paper we focus on a version of such a model, and derive its main implications for the impact of integration on the market structure. Our goal is to lie down the point of view of the received economic theory about the main (stylized) effects of economic integration on a single industry. Simple as they turn out to be, we believe that its predictions can be usefully compared to the one stressed by other approaches, for instance to those considered by the business and management scholars. We hope therefore to contribute to the discussion among researches on what should be expected from the forthcoming completion of the EU internal market.

The paper is organized as follows: in section 2 we present the stylized model we want to consider. Section 3 summarizes its main implications. Section 4 introduces the possibility of firms cooperation (collusion). Section 5 contains a few final comments. The Appendix deals with some technicalities.

2. A brief look at the model

In this section we sketch the main components of a Chamberlinian model which follows the lines indicated by Krugman (1979) and (1980) in his two by now classical papers. That is, we consider an industry which is potentially composed by a large number $N$ of distinct brands, each of them produced by a single firm whose output is denoted by $X_i$ (here "large" means that $N > n$, where $n$ is the number of operating firms) and whose price is $p_i$. Each firm has the same total cost function given by:

$$C(X_i) = F + cX_i,$$

(1)

where $F$ is the amount of fixed costs, and $c$ is marginal cost. That is, firms are identical and there are increasing returns to scale (internal economies of scale).

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5 See e.g. Motta (1990).
It is assumed that consumers have "a taste for variety": namely, they like all brands and their tastes over the various brands are symmetric. In particular, we assume that there are $L$ (identical) consumers concerned with the industry output (i.e. $X_i = Lx_i$), and that each of them has preferences which can be represented by the following (sub-) utility function:

$$U = -\frac{1}{\alpha} \sum_{i=1}^{N} e^{-\alpha x_i} = \frac{1}{\alpha} \left( n + 1 - N - \sum_{i=1}^{N} e^{-\alpha x_i} \right),$$  \hspace{1cm} (2)$$

where $x_i$ is brand $i$ individual (per capita) consumption, and $\alpha > 0$. Note that utility is increasing in the number of purchased brands (i.e. $\partial U / \partial n > 0$). The utility function (2) satisfies the assumptions by Krugman (1990), p. 12: in particular, it is additively separable and, in an industry equilibrium (which implies $p_i = p$, and therefore $x_i = x$, $i = 1, n$), the (Allen-partial) elasticity of substitution between any of the brands ($\sigma = -1 / \alpha x$) is increasing in per capita consumption (decreasing in the price level $p$): see (A.6) in the Appendix\textsuperscript{6}. Finally, for the sake of simplicity, we assume that consumers spend a fixed amount $\gamma$ of their income on the industry output\textsuperscript{7}.

Given the symmetry of our model, in any industry equilibrium it must be that $p_i = p$ and $x_i = x$, $i = 1, n$ (for economic feasibility, it must also be that $Y = Lx > F$, where $Y$ is aggregate expenditure). To characterize the equilibrium industry configuration, in this paper we consider two alternative modes of competition: the case of monopolistic competition and the oligopoly equilibrium.

\textsuperscript{6} This property gives rise to more pleasant results than the simpler assumption of a constant elasticity of substitution: see Krugman (1990), p. 18 and p. 27. However, the assumption of an elasticity of substitution decreasing in consumption is not, a priori, less plausible, and therefore this case should be investigated as well: the problem is that it gives rise to the possibility of multiple equilibria.

\textsuperscript{7} In our partial equilibrium analysis, this is equivalent to assuming that each consumer uses a two-stage budgeting procedure in allocating his income (i.e., his preferences satisfy some separability assumptions), and that at the higher level the "aggregate" utility function has a Cobb-Douglas form: see e.g. Beath and Katsoulacos (1991), chapter 3.
A. Monopolistic competition

We start by assuming that there are no barriers to entry, and that the equilibrium number of firms in operation is so large that each firm is of negligible size and can ignore the effect of its actions on the others. This assumption, as it is well known, characterizes the Chamberlinian model of monopolistic competition (or "large" group equilibrium: see e.g. Beath and Katsoulacos (1991), pp. 42-43). As it is shown in the Appendix, in this case the industry equilibrium is determined by the following three conditions:

\[ p = \frac{c}{1 - \alpha}, \]
\[ p = c + \frac{F}{L_x}, \]
\[ p = \frac{\gamma}{n_x}. \]

Equation (3) is the profit-maximizing condition that marginal revenue equals marginal cost for each operating firm. Notice that, due to the assumption of an increasing elasticity of substitution between any of the brands, the mark-up \( p / c < 1 \) is an increasing function of the per capita consumption \( x \). (4) is the zero-profit condition which must hold in a free-entry industry equilibrium. Equation (5) is simply the budget (accounting) condition that aggregate revenue equals expenditure: i.e., \( npX = Y \). As it is shown in the Appendix, and it is explicit in equation (3), to get a consistent model (to satisfy the conditions for profit maximization, but without loss of generality) we restrict ourselves to the case where \( x < 1/a \). In such a case the schedules (3)-(5) are illustrated in Figure 1.

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8 Implicitly, this requires that the fixed cost \( F \) is "small" with respect to the aggregate expenditure \( Y \).

9 \( X = Y/np \) can be thought of as Chamberlin's "DD" curve: i.e., the demand curve facing each firm when all firms change their prices simultaneously (see Beath and Katsoulacos (1991), p. 50).
Figure 1: The monopolistic competition equilibrium

Note that, from Figure 1, an increase in $L$ (the number of consumers), which shifts left the curve numbered four, implies a decrease in the equilibrium values $p^*$ and $x^*$, and an increase in the number of operating firms. By equation (4) we also see that the equilibrium output $X^* = Lx^*$ of each firm must also increase, as it should perhaps be expected. Therefore each consumer would benefit by an increase in the industry "market size" for two reasons: because it decreases the industry price and because it increases the number of available brands. These effects, of course, are due to the presence of increasing returns to scale, and to the assumption of free entry.

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10 As it is standard in literature, we are ignoring here the so-called "integer problem", namely, the fact that a free-entry zero-profit equilibrium may not be consistent with an integer number of firms; see e.g. Beath and Katsoulacos (1991), p. 35.
B. Oligopoly equilibrium

However, in assessing the impact of market integration, one can dispose of the free-entry assumption, at the cost of taking as exogenously determined the initial number of operating firms. In fact, in next section we will show that even if the industry entry is not free (e.g. because the fixed cost size is large enough to make the economies of scale act as an entry barrier) the effect of the opening of international trade is not qualitatively different. To build the background for this result, in this section we consider the Nash equilibrium of an oligopoly version of our model. In the Appendix it is shown that in this case the industry equilibrium, given the number of firms, is characterized by the profit-maximizing condition:

\[ p = \frac{c(n-1+\alpha x)}{(n-1)(1-\alpha x)} \]  

(6)

together with equation (5). Note that the firms number enters equation (6): this is due to the fact that each firm takes into account the impact of its action on the whole industry, whose configuration is determined by the number of operating firms. In particular, note that \( \frac{dp}{dn} = -\alpha x / [(1-\alpha x)(n-1)^2] < 0 \): i.e., an increase in the number of firms has (perhaps obviously) a "pro-competitive" effect. This is so because when the brands number increases, the absolute value of each firm demand elasticity raises too (see (A.11) in the Appendix). Also notice that, once again, the mark-up \( p/c - 1 \) is an increasing function of \( x \). The equilibrium is illustrated in Figure 2.

From Figure 2, an increase in the number of consumers does not modify the equilibrium industry price \( p^* \), nor the individual consumption \( x^* \), and thus it would only increase the output \( X^* = Lx^* \) of each firm and of course its profits.
3. The effects of economic integration

A. Monopolistic competition

As indicated by Krugman (1979), and as far as the monopolistic competition model goes, the opening of international (intra-industry) trade between two similar economies can be summarized by saying that it is as if each country had experienced an increase in the number of consumers. Let us consider such an opening of trade. For the sake of simplicity, we assume that there are zero transportation costs, and that the two closed industries were identical. These assumptions immediately imply that the number of consumers doubles. Thus, the results of the previous analysis show that both the number of brands and the output of each firm raise, while price and per capita consumption of each brand decrease. Overall, the consumer surplus increases with respect to the case of autarky, and consumers get all the welfare gains from the opening of international trade (with monopolistic competition each firm earns zero profits). This is, of course, a re-statement\(^{11}\) of the celebrated result by Krugman (1979).

\(^{11}\) Krugman (1979) uses a general equilibrium model with one good and one input (labour).
In addition, we can also show that the ratio \( \frac{L}{n^*} \) increases: i.e., the brands number does not double. In fact, since by using (4) and (5) we get:

\[
\frac{L}{n^*} = \frac{cX^* + F}{y},
\]

an increase of the output \( X^* \) implies an increase in \( \frac{L}{n^*} \). This means that, even if larger, the integrated industry cannot accommodate the same total number of firms as the two isolated ones. Thus, this model predicts that the economic integration will force some firms to leave the market. Since, in equilibrium, profits of the still operating firms remain zero, this implies that economic integration is hardly "good news" for the industry producers as a whole.

B. Oligopoly equilibrium

In this sub-section we show that even if the integrating industry were an oligopoly the impact of economic integration would not be different from what we saw above. Suppose first that the total number of firms does not change. In this case, an increase in the number of brands (firms double) decreases the price \( p^* \). This effect of economic integration can be seen in Figure 2, since both curves shift down. Moreover, by using (5) and (6), it is shown in the Appendix that \( \frac{\partial x^*}{\partial n} < 0 \): this means that the opening of international trade reduces each brand per capita consumption, very much as in the case of monopolistic competition. However, since by (5) the individual expenditure in each brand, \( p^* x^* \), must reduce to a half (and since \( p^* \) reduces too), \( x^* \) does not halve. Thus \( X^* = Lx^* \) increases, once again as in the monopolistic competition case. Finally, notice that the profits earned by each firm, \( \pi^* = (p^* - c)x^* - F \), must decrease, since the revenue per firm \( y/n \) is constant while each firm total cost \( C(x^*) = F + cX^* \) increases.

Of course, it might be that the profit reduction forces some firm to leave the industry in order to avoid a negative return. In this case the number of operating firms increases but does not double, \( p^* \) and \( x^* \) decrease, and a zero-profit equilibrium get established. Also in this case, by (5), \( p^* x^* \) must reduce, but this
time it does not halve. Again, by using (4) one can see that this implies that the output $x^*$ of each firm increases\textsuperscript{12}. Thus, even in an oligopoly equilibrium\textsuperscript{13}, economic integration is a good piece of news for the consumers while it is certainly not so for the producers as a whole (very much as in the monopolistic competition case).

4. On the possibility of firms cooperation

The story told by our stylized model is extremely simple: since there are economies of scales in production, there are gains from the opening of international trade (through an increase in the firms size). Moreover, the end of autarky increases the competitive pressure and, even under imperfect competition, consumers appropriate the whole increase in welfare, while profits tend to decrease and some firms have to leave the market. Of course one might wonder whether the worsening of firms perspectives (the shock due to the end of autarky) may change the mode of their competition. This amounts to ask whether (in the oligopoly version of our model) firms may then find a way to pursue "co-operative strategies" to avoid the aforementioned unpleasant results. Of course, in our simple setting, "strategic cooperation" ought to mean some sort of tacit collusion, at the consumers' expense. Indeed, Chamberlin himself conjectured that the firms in an industry might be able to charge the monopoly price, even without an explicit agreement among them\textsuperscript{14}. In the jargon of modern economic theory, this is equivalent to conjecturing the existence of a Nash equilibrium which sustains a more "collaborative" mode of firm competition than the one we have considered (i.e., an higher level of profits).

\textsuperscript{12} To see this, note that (indicating the equilibrium variables of the integrated market with a tilde), the zero-profit property implies that \( y^*x^* = c x^* + r \), while for the isolated industries \( y^*x^* > c x^* + F \). But, since \( F > 0 \), by subtracting the former condition from the latter we get \( o > (y^* - y^*') > (y^* - F) \).

\textsuperscript{13} One can easily show that the following proposition applies to the case of a free-entry (that is a zero-profit) oligopoly equilibrium as well.

\textsuperscript{14} Here the reference is to the so-called Chamberlinian "small" group equilibrium: see e.g. Tirole (1988), pp. 239-240, and Beath and Katsoulacos (1991), p. 43.
However, in our static (one-shot) setting, there is a unique Nash equilibrium, and to get a form of firms cooperation we would need to consider a full-fledged dynamic model of repeated price interaction. In such a richer context, as it is well-known, firms could enforce several types of Chamberlinian tacit collusion, for example by the threat of retaliation (i.e., by using strategies which "reward" cooperation and "punish" deviations): see e.g. Tirole (1988), chapter 6. To construct a consistent dynamic version of the previous model is beyond the goal of this paper: here we limit ourselves to a few general considerations concerning a possible "supergame" extension of it, and the likely effect of economic integration. According to the supergame methodology, if firms repeatedly interact, and if, ceteris paribus, they are "patient enough" (i.e., if their intertemporal discount factor is sufficiently high), prices higher than the one given by (6) (and even the "monopoly price"\textsuperscript{15}) can be sustained as a Nash equilibrium. In particular, a given "collusive" price $\bar{p}$ is sustainable in equilibrium if the discount factor $\delta$ of each firm is such that:

$$\delta \geq \frac{\pi(\bar{p}) - \pi(p)}{\pi(\bar{p}) - \pi} = \delta^*(\bar{p}),$$  \hspace{1cm} (8)

where $\pi(\bar{p})$ is the (per-period, collusive) equilibrium profit of each firm.\textsuperscript{16} In (8), $\pi$ is the profit which corresponds to a period of (maximal) punishment which would follow a deviation from collusive behaviour, and it can be safely normalized to zero (a firm can always exit the market), while $\pi(\bar{p})$ is the one-shot profit each firm would get from deviating and undercutting its price (note that it depends on the collusive price). Thus, the value of $\delta^*(\bar{p})$ summarizes the requirements for a sustainable collusion on $\bar{p}$.

Indeed, equation (8) allows the formalization of some aspects of the conventional wisdom on collusion (which goes back at least to the works of Chamberlin and

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\textsuperscript{15} In our model, due to the simplifying assumption of a fixed expenditure $y$, the monopoly price is not well-defined since the "collusive" demand curve $x = T (\pi \bar{p})$ has a unity price elasticity.

\textsuperscript{16} Formally, (8) applies to the case of an infinitely repeated price interaction: see Tirole (1988), paragraph 6.3.
Bain). For instance, according to it market dilution and increasing returns to scale hinder collusion, because they make undercutting more profitable. This is formalized in (8) through the value of $\delta^*$, which is obviously an increasing function of the number of firms, and depends positively on the degree of returns to scale\textsuperscript{17}. In other words, market concentration and decreasing returns to scale, by reducing the size of the discount factor required to sustain collusion, make it more likely. What does (8) tell us about the effect of economic integration? In our model the opening of international trade doubles both firms and consumers, and thus it raises the value of the discount factor required to implement any collusive price. In fact, while $\pi(\bar{p})$ is obviously unchanged, whatever $\bar{p}$ be, $\pi(\bar{p})$ and then $\delta(\bar{p})$ are raised by the increase in the amount of consumers, and by the effect of the economies of scale. Thus, this suggests that economic integration might well benefit consumers also by making price collusion among firms more difficult\textsuperscript{18}.

5. Conclusions

In this paper we have used a Chamberlinian model of an industry, built along the lines indicated by the so-called "New Theory of International Trade", to investigate the main implications of the opening of trade between two previously closed economies. In short, our results stress that economic integration improves consumers welfare, and worsens the firms perspectives. In particular, international trade has an unambiguous "pro-competitive" effect. Consequently, profits reduce and/or some firms have to exit the market (though the "surviving" ones increase their size), and collusion among producers becomes more difficult. Moreover, these results accord closely with the widespread opinion among

\textsuperscript{17} Consider for example a homogenous-good industry with $n$ identical firms which all charge the monopoly price $\bar{p}$. Then with constant average costs one gets $\pi(\bar{p}) = a(c)$ and therefore $\delta = 1 - 1/n$, while with decreasing average costs to sustain collusion the discount factor must be even higher ($\pi(\bar{p}) > a(c)$ and $\delta < 1 - 1/n$); see Tirolo (1988), pp. 247-248.

\textsuperscript{18} According to the conventional wisdom on collusion, another direct way the opening of international trade can affect the possibility of firms collaboration might be by increasing the degree of industry heterogeneity: again see Tirolo (1988), p. 242.
theoretical economists that an increase in the market size should put more competitive pressure on firms, and that in turn this should increase the general industry efficiency. Roughly, they seem also to correspond to the hopes of many about the positive effects of the internal EU market completion, and even to the movement toward concentration and mergers that the latter appears to have encouraged\textsuperscript{19}.

However, while we think it does constitute a useful benchmark, our stylized model is certainly both too simple and too limited to fully predict the ultimate effect of the European economic integration, and we do not pretend it should be taken as a unique guideline. In particular, our partial (one-industry) equilibrium analysis cannot substitute for a more general one. For example, our clear-cut prediction of the producers (as a whole) situation worsening may be challenged by the consideration that economic integration may also change the factor market conditions, perhaps lowering the production costs\textsuperscript{20}. Analogously, while in our model cooperation among firms can only mean some sort of price collusion at the expense of consumers, in a richer context (think for instance of vertical relationships) it might serve efficiency, and even be in the consumers' interest; moreover, as regard that case, we have little basis to forecast the effect of economic integration\textsuperscript{21}.

But perhaps the main warning on a straightforward application of our model comes from the striking difference between its predictions on the worsening of firms perspectives and the ones put forward by the managerial and business literature on the creation of the European unified market. For example, one cannot read the stimulating book by Urban and Vendemini (1992) without

\textsuperscript{19} See e.g. Urban and Vendemini (1992), chapter 1.

\textsuperscript{20} It should be mentioned here that a challenge to this prediction might also come from the traditional "comparative advantages" approach to international trade, which implies that firms which survive to economic integration (inside the industry in which their economy specialises) improve: see e.g. Krugman and Obstfeld (1994), chapter 5.

\textsuperscript{21} However, if their perspectives do worsen, one should expect that firms cooperation becomes more difficult, since the value of having a reputation for collaborative behaviour decreases: see e.g. Milgrom and Roberts (1992), chapter 8.
being struck by their feeling that the European economic integration constitutes a huge opportunity for enterprises. And this is confirmed by the public declarations of many opinion leaders and businessmen who, presumably, explicitly think in terms of profits! Now, part of the explanation of such a difference comes from the fact that, from one point of view, the use of the Chamberlinian approach to discuss this particular topic (the firms perspectives in the unified Europe) is a bit unfair. As we have indicated, this particular model was developed in order to explain the actual pattern of international trade, and it has been successful in answering specific questions in international economics (see footnote 4). But, for example, to explain the optimism of a particular manager on economic integration may require that firms asymmetries and differences in efficiency are taken into account (i.e., it might be that a firm expects to gain from economic integration at the expense of other (less efficient) firms rather than of consumers, or even through an improved position in the external (to the integrated market) competition). Our symmetric model is certainly not well-equipped for this goal. In other words, economic theorists certainly know that market competition has many more aspects than those captured by the simplest of their models, and that more competitors can also means more opportunities of mutually beneficial "trade". That is, they know that firms do not only compete but also "complement" each other: see e.g. Nalebuff and Brandenburger (1996), chapters 1 and 2. However, part of the indicated difference between what we may call "the point of view of economists" and the management and business scholars' expectations remains puzzling, and deserves more attention. We hope that this paper can serve to illustrate such a difference, and that it can stimulate a debate on it.

6. Appendix

This section presents some analytical results on the model we use in this paper. To start with, we wish to show that the utility function in (2) implies that in an industry equilibrium \( (p_i = p, \text{and } x_i = x_j, i, j = 1, n) \) the Allen-partial elasticity of substitution between any of the goods \( (\sigma_{i,j}, i, j = 1, n) \) are equal to \(-1/\alpha x\). To prove this, consider the following first-order conditions of utility maximization:
\[ \frac{\partial U}{\partial x_i} = e^{-\alpha x_i} = \lambda p_i, \quad i = 1, n, \]  
(A.1)

where the positive Lagrange multiplier \( \lambda \) measures the marginal utility of income. From (A.1), one immediately get the familiar condition that the marginal rate of substitution between any two brands equals their relative price:

\[ e^{-\sigma(x_i - x_j)} = \frac{p_i}{p_j}, \quad i = 1, n, \]  
(A.2)

and, after some computation, the following individual demand functions:

\[ x_i(p_1, \ldots, p_n, y) = \frac{1}{\alpha} \left[ \lambda y - \sum_{j=1}^{n} p_j \ln \frac{p_i}{p_j} \right], \quad i = 1, n \]  
(A.3)

(note that, from (A.3), in an industry equilibrium \( x_j = y' (\lambda y) = x \)). Analogously, one can use (A.1) to derive the following "Hicks-compensated" demand functions:

\[ \bar{x}_i(p_1, \ldots, p_n, u) = \frac{1}{\alpha} \left[ \ln \sum_{j=1}^{n} p_j - \ln p_i - \ln(n + 1 - N - u) \right], \quad i = 1, n, \]  
(A.4)

where \( u \) is the utility level, and in turn the expenditure function:

\[ E(p_1, \ldots, p_n, u) = \sum_{j=1}^{n} p_j \bar{x}_j = \frac{1}{\alpha} \sum_{j=1}^{n} p_i \left[ \ln \sum_{j=1}^{n} p_j - \ln p_i - \ln(n + 1 - N - u) \right]. \]  
(A.5)

Eventually, one can compute (see e.g. Takayama (1986), pp. 144-145) from (A.4) and (A.5) that in an industry equilibrium:

\[ \sigma_{ij} = \frac{E}{\bar{x}_i \bar{x}_j} \frac{\partial \bar{x}_i}{\partial \alpha} = 1 = \sigma, \quad i, j = 1, n. \]  
(A.6)

We now turn to the derivation of conditions (3)-(5). Consider back (A.1): it implies that:

\[ x_i = -\frac{1}{\alpha} \left[ \ln \lambda + \ln p_i \right], \quad i = 1, n. \]  
(A.7)

The monopolistic competition assumption of a large number of firms with negligible size can be turned into the fact that each firm pricing policy has a null effect on the marginal utility of income (see e.g. Krugman (1990), pp. 13-14).
This means that one can obtain the elasticity of the demand facing each firm directly from (A.7). Namely:

\[ \varepsilon_i = \frac{\partial x_i}{\partial p_i} \frac{p_i}{x_i} = \frac{-1}{\alpha x_i} \quad i = 1, n. \]  

(A.8)

Notice that, as noted by Krugman (1990, p.12-14, \( \varepsilon_i = x_i (\partial U / \partial x_i) / (\partial^2 U / \partial x_i^2) \)), due to the additivity of the utility function (2). Moreover, in an industry equilibrium, \( \varepsilon = \sigma \). Consider now the profit maximization problem of each firm. Since firm profits are given by \( \pi_i = (p_i - c) x_i - F_i \), it is easily verified that the first-order condition requires:

\[ p_i = \frac{\lvert \varepsilon_i \rvert}{\lvert \varepsilon_i \rvert - 1} c = \frac{c}{1 - \alpha x_i}, \]  

(A.9)

with \( \lvert \varepsilon_i \rvert > 1 \). This happens if and only if \( 1 > \alpha x_i \), and we restrict our attention to this case (there is no loss of generality, since we can "exploit" the degree of freedom offered by \( \alpha \) to accommodate any level of \( x \))\(^{22} \). This explains condition (3) (note that the mark-up is equal to \( \lvert \varepsilon_i \rvert / (1 - \lvert \varepsilon_i \rvert) \), and thus it is increasing in \( x_i \) under our assumptions). Condition (4) is simply the zero-profit (free-entry) condition \( \pi_i = 0 \). Finally, (5) simply states the budget condition \( \sum_{i=1}^{n} p_i x_i = \gamma \) for an industry equilibrium.

To establish (6), one needs to compute the "true" demand elasticity from (A.3).

This gives:

\[ \varepsilon_i = \frac{p_i - \sum_{j=1}^{n} p_j}{\alpha y - \sum_{j=1}^{n} \ln \frac{p_i}{p_j} \sum_{j=1}^{n} p_j} = \frac{p_i}{n \ln \frac{p_i}{p_j} \sum_{j=1}^{n} p_j}, \quad i = 1, n. \]  

(A.10)

which reduces to:

\[ \varepsilon = \frac{n - 1 + \alpha x}{\alpha n x} \]  

(A.11)

\(^{22} \) The second-order condition is satisfied if \( \alpha x_i < 2 \).
in an industry equilibrium. Note that \( \varepsilon > -1/(\alpha x) \) (and \( 1 > \alpha x \)) if \( 1 > \alpha x \). Moreover, \( \partial \varepsilon / \partial n < 0 \). From the first equality in (A.9) one eventually gets (6).

As the last step, let us prove that (5) and (6) imply that \( \partial \varepsilon / \partial n < 0 \). Together, they give:

\[
\frac{nx^e c (n-1+ax^e) - (n-1)(1-ax^e) y}{ne (n-1+ax^e) + nx^e c + \alpha (n-1) y} = 0, \tag{A.12}
\]

and thus, by differentiating:

\[
\frac{\partial x^e}{\partial n} = \frac{x^e c (n-1+ax^e) + nx^e c - (1-ax^e) y}{ne (n-1+ax^e) + nx^e c + \alpha (n-1) y}. \tag{A.13}
\]

From (A.13), \( \text{sign}\{\partial x^e / \partial n\} = \text{sign}\{y - x^e c (n-1+ax^e) - nx^e c\} \), and some additional computations (by using again (5) and (6)) show that \( \text{sign}\{\partial x^e / \partial n\} = \text{sign}\{f(n) = n^2 - 2n + 1 - \alpha x\} \), which is positive since \( f(n) \) is so for \( n \geq 2 \) and \( 1 > \alpha x \).
Résumé

Effets de l'intégration économique sur la structure des marchés

Ce chapitre analyse les effets de l'intégration économique sur la structure de marché et donc les gains potentiels des consommateurs et des producteurs, en utilisant un modèle inspiré d'Edward Chamberlin (Harvard). Le cadre est celui - très réaliste - d'une concurrence imparfaite, plus précisément celui d'une industrie avec produit différencié. Le marché reste-t-il dès lors une source d'information ? La question est pertinente dans le contexte d'une intégration économique telle qu'elle est vécue par l'Union Européenne où s'expriment de nombreuses situations de concurrence monopolistique, d'oligopole, de collusion coopérative. L'ouverture intensifiée au commerce international, la présence de rendements d'échelle croissants, l'augmentation des variétés produites, la baisse des prix sont des facteurs qui fragilisent les entreprises par la réduction des profits, voire la contrainte de sortie du marché. La conduite des entreprises dans un contexte de comportements flous des acteurs est rendue plus difficile que ne le suggère les modèles d'analyse théoriques, et que contestent les managers ou les entrepreneurs. Les choix décisionnels restent à gérer en information imparfaite croissante compte tenu de la complexité des jeux.
Zusammenfassung

Auswirkungen der wirtschaftlichen Integration auf die Struktur der Märkte

References


