Beyond Excess Competition: A New Theory of Implicit Mercantilism

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ABSTRACT:

Industrial Organization's familiar Chamberlinean tangency equilibrium has been characterized as generating "excess capacity" in the product-industry, and the behavior of individual firms, therefore, is often described as "excess competition." Adopting this terminology, excess competition in the presence of mergers and international price discrepancies, is often characteristic of developing economies like Japan was in the last-half century. Although such phenomena might seem unconnected, we show how a simple Cournot oligopoly model can give rise to them all at once. Moreover, we show that industries of a mercantile economy assumed to face a competitive world market, can generate more than the ordinary "excess" entry of Chamberlin, going beyond that familiar benchmark and characterized by an *off*-tangency equilibrium. We name this feature "*super*-excess" entry, and we show that it eliminates ordinary "excess capacity," and that it generates economic efficiency compatible with welfare maximization.

Keywords: implicit mercantilism, Cournot unlimited entry, excess completion, super-excess competition* Collaboration is under way with Martin McGuire (UCI).

Introduction.

McGuire-Ohta (MO, 2005) shows how a developing economy could evolve to produce "implicit mercantilism." Free unlimited entry, when combined with competitive behavior in developed countries, generates distinct stages of mercantilism hitherto unrecognized in the literature. As the production costs and techniques of the mercantile society converge to world standards, its citizens will first lose from this progress, but later to gain. Both effects are due to certain relationships between home prices and world prices, identified by MO (2005).

Modern endogenous dumping can thus yield super-excess competition, yet no excess capacity, and hence can benefit all. To reiterate suppose that the so-called excess competition and excess capacity are mutually defined and identified by the Chamberlinean tangency point

(Ohta, 1977). Then, modern oligopolistic dumping can restore efficiency, not by limiting entry, but instead by allowing unlimited *super*-excess entry, which will end up endogenously in *off*-Chamberlinean tangency equilibrium. The upshot benefits all with productive efficiency restored and welfare maximized.

Section 1 reviews alternative definitions/theories of ‘excess competition.’ As a reference departure point for a *desirable* ‘excess competition,’ Section 2 presents a basic model of successive monopolies as a departure point for Section 3. It discusses what Wako-Ohta (2015) calls excess competition under ‘vertical relations’ and also a ‘win-win-win’ game. But it falls short of genuine perfect competition throughout all the vertically related markets considered. For this particular reason Section 4 revisits McGuire-Ohta (2005) as a theory of endogenous mercantilism that yields perfect competition outcmes.

Section 1. Alternative Definitions/Theories of ‘Excess Competition’

The first, classic definition of excess competition is given as a state of equilibrium under Chamberlinean monopolistic competition. This state is given by, identified at, the familiar Chamberlinean tangency equilibrium point (cf. Ohta, 1977).

The second definition involves oligopolistic rivalry rather than Chamberlinean monopolistic competition. Moreover, it also involves a disequilibrium state of cutthroat excess competition such as *classic* Bowley duopoly (cf. Wako-Ohta, 2015).

The classic Bowley duopoly or any other oligopolistic competition models are usually predicated upon *horizontally* related industries. A more recent definition of excess competition, by contrast, involves industries that are *vertically related*. Such a third, ‘vertically related’ industries model is proposed by Wako-Ohta (2015).

Related to this third definition and theory of ‘excess competition under vertical relations’ (WO), however, is a departure reference point model of ‘successive monopolies’ *a la* Greenhut and Ohta (GO, 1976). We therefore present in the next section such a reference point model of successive monopolies, following GO,

Section 2. The Successive-Monopoly Model as a Depar ture Point Analysis

Consider vertically related industries that consist of n = 2 or more markets, but here assumed n = 2 for simplicity. Call them a retail market downstream and a wholesale market upstream, respectively. The retail market demand for a product Q is assumed as a function of price p, i.e., $Q = f(p)$, or its inverse function $f^1(p)$, called (a monopolist’s) average revenue AR as follows.

(2-1) AR: $p = f^1(Q^R) = 1 - Q^R$

where p is the retail price, or (gross) average revenue accrued to the monopolist who sells at the retail market downstream. Here the monopolist's AR is defined as a linear function of Q^R, the product carried from the wholesale market upstream.

Consider now the retailer's *net* average revenue: $p^R \equiv p - p^W$, net of purchase cost p^W from the market upstream where he behaves as a price taker. This combined with (2-1) above gives the retailer's net average revenue AR^R as a function of Q^R.

$$(2\text{-}2)^R \qquad \text{net-AR}^R\text{: } p^R = (1-p^W) - Q^R.$$

This net average revenue, net of p^W, for the retailer in turn yields his *net* marginal revenue net-MR^R (net of purchase costs):

$$(2\text{-}3)^R \qquad \text{net-MR}^R = (1-p^W) - 2Q^R.$$

Equating this net MR^R to MC=0 for maximization of profit (or net revenue) requires net-MR^R=0, which yields his optimal sales quantity Q^{R*} to be purchased at the market upstream, in turn, at the final market downstream for sale:

$$(2\text{-}4)^R \qquad Q^{R*} = (1-p^W)/2.$$

Note that this $(2\text{-}4)^R$ reveals to the wholesaler upstream how much quantity he can sell to the retailer from the market downstream once he decides on his wholesale price. In other words, any p^W he decides on will determine his sales quantity Q^{R*} that he should produce. Thus, rewriting $(2\text{-}3)^R$ yields the upstream wholesaler's average revenue AR^W in terms of $Q^*(=Q^{W*})$ produced for sale Q^{R*} at the final retail market.

Inasmuch as the wholesaler upstream is a monopolist, his profit maximization condition (FOC: MR=MC) is readily derived from $(2\text{-}3)^W$ above as $(2\text{-}4)^W$ below:

$$(2\text{-}4)^W \qquad MR^W (Q^*) = 1 - 4\, Q^* = MC,$$

where Q^* is the optimal quantity that the wholesaler sells to the retailer. Thus, if the wholesaler's MC is assumed to be zero, then $Q^* = (Q^{W*} = Q^{R*}) = 1/4$.[1]

Given this Q^* produced, the wholesaler sells it $Q^*(=Q^{W*})$ at the wholesale market to the retailer at $p^{W*}=1/2$ (*via* $(2\text{-}3)^W$). The retailer who purchases $Q^{R*}(=Q^{W*})$ at $p^{W*}=1/2$, then resells it at the final retail market at $p^{R*}=3/4$ (*via* $(2\text{-}1)^R$), which is given by equating the retailer's MR^R to his/her MC^R $(=p^{W*})$. Thus,

$$(2\text{-}5) \quad MR^R = 1 - 2Q^{R*} = MC^R\ (=p^{W*}) = 1/2$$

which yields the equilibrium solution to the vertically related industry with two independent

[1] Note here that even though the wholesaler's MC^W may be assumed zero for simplicity, the retailer's MC^R cannot since $p^W > 0$.

firms presiding over two markets, upstream and downstream, respectively:

(2-6) Q^{*} $(=Q^{R*}=Q^{W*})$ =1/4,

(2-7) p^{W*}=1/2, and

(2-8) $p^{R*}(=1-Q^{R*})$ =3/4.

Each successive monopolist as a seller, either upstream or downstream, is required to behave as a competitive buyer.[2] That is, the same economic agent behaves as a monopolist seller, but at the same moment behaves as a competitive buyer, at each and every market point successively related upward and/or downward.

This in a nutshell is a crucial necessary condition for a successive monopoly to be defined *successfully*. Despite its seeming success (in theory at least) the 'successive monopoly' model was challenged by GO (1976). The upshot was a counter-proposal model of vertical merger of successive monopolists as a Pareto-improving outcome.

But more realistic vertical relations may involve oligopolistic rivalry in downstream retail markets that are vertically related to and regulated by a more monopolistic wholesale industry upstream. This is an alternative postulate proposed by WO (2015) that pertains to bridge the successive monopolies model and its counterpart model of vertically related markets, in which only a market upstream is monopolized, but the one downstream is not. Section 3 reviews it and shows that the Bowley excess competition under vertical relations is *equivalent* to the GO vertical merger.

However, no matter how excessive the downstream competition, the monopolist upstream may deter competitive entry therein by indulging in 'rent-seeking competition' (Ekelund and Tollison, 1981). This may not only discourage unlimited entry upstream, but also waste scarce resources until pure monopoly profit evaporates. Efficiency loss and related welfare loss may accordingly be inescapable anyway.

Thus, despite the efficiency equivalent outcome of *either* the GO vertical merger *or* the Bowley horizontal excess competition under vertical relations, the efficiency loss from pure monopoly remains to be inescapable, such a recent argument as 'in defense of monopoly' (McKenzie) aside. Even if technological efficiency is attained under vertically related Bowley duopoly, efficiency loss is unavoidable unless free entry is guaranteed at any and every market point. But skipping to review the related WO, we next get to Section 4.

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2 Thus, for a final downstream seller to behave as a monopolist at the same moment that an upstream seller also behaves as a monopolist against the buyer from the downstream market that he/she monopolizes, the monopolistic seller downstream must also behave as a competitive buyer upstream.

Section 4. Super-Excess Competition Model: MO Revisited

Assumptions and Notation

We begin by assuming that a portion of the domestic market is insulated from certain foreign goods. Despite the insulation, domestic producers, we assume, to have evolved to a point of effectively competing foreign producers. Domestic demand for this good, Q, is fully met from home production. This home supply is provided under Cournot oligopoly among home producers. The number of firms is endogenous; market entry by home producers eliminates oligopoly profits. Thus the time frame of our comparative static analysis must be of such duration as to allow adjustment in the number of firms, or price quantity pressures from incipient adjustments in numbers to take effect.

If domestic firms are globally competitive, they can market their product at a profit abroad as well. Based on this intuition we will postulate that the neo-mercantilist state's producers have achieved various degrees of cost parity with foreign competitors. The rest of the world market is competitive and price-taking, so domestic mercantilist producers do not influence world prices. Thus, the home country produces a commodity Q, and sells there at a constant world price, p_W. High distribution costs at home completely exclude foreign supplies of Q. Although we assume asymmetry between home and foreign suppliers, oligopoly within the neo-mercantile sector, by contrast, is symmetric. There are n domestic firms each producing q ($= Q/n$) under symmetric oligopoly. Each firm sells q_H at home at the one price p_H and q_E abroad ($q_E \geq 0$) at price p_W while producing $q = q_H + q_E$. Throughout this paper we use specific functional forms of costs and demand to derive/illustrate these effects. Home demand (p_H), revenue (TR), cost (TC, AC, MC), production (q), and profit (π) conditions are given by equations (4-1), (4-2), (4-3), (4-4), and (4-5). The parameter A is market reservation price, and b (> 0) is a parameter reflecting the size of the market.

(4-1) $p_H = A - bnq_H$,

(4-2) $\mathrm{TR}(q_H, q_E; A, b, n, p_W) = p_W q_E + p_H q_H$

(4-3) $\mathrm{TC}(q; F, \alpha) = F + \alpha q^2$, $\mathrm{AC} = F/q + \alpha q$, $\mathrm{MC} = 2\alpha q$,

(4-4) $q = q_H + q_E$,

(4-5) $\pi(q_H, q_E; A, b, n, F, \alpha, p_W) = \mathrm{TR}(q_H, q_E; A, b, n, p_W) - \mathrm{TC}(q; F, \alpha)$

Mercantile Equilibrium Conditions

In our asymmetric oligopoly equilibrium with p_W assumed given, each firm maximizes profit, setting p_W, MC, and MR all equal to yield:

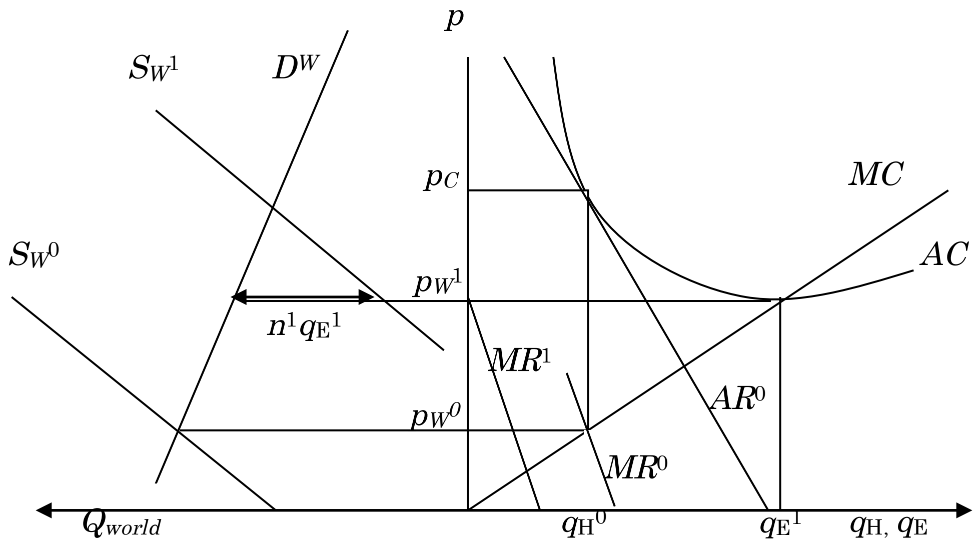
(4-6) $\partial p/\partial q_E = 0$: $p_W = 2\alpha q$,

(4-7) $\partial p/\partial q_H = 0$: $A - bnq_H - bq_H = p_H - bq_H = 2\alpha q$.

The system of 7 equations above includes eight unknown (endogenous) variables: p_H, q_H, q_E, q, π, TR, TC, and n. Thus, if n is given (and small enough to make $\pi > 0$), all the other endogenous variables will be determined. However, free entry n increases until π diminishes and approaches zero:

(4-8) $\pi = 0$.

This is when what we call super-excess competitive equilibrium is reached and the rest of endogenous variables above are also solved, with their selected relations illustrated diagrammatically below.



Cournot Off-Tangency Equilibrium with Export vs. Tangency Equilibrium with No Export: Matured Stage of Endogenous Mercantilism (MO, *RIE*, 2005)

Super-excess entry beyond Cournot tangency equilibrium can thus restore productive efficiency inasmuch as aggregate output for both export and domestic supply, but individual firm's increased output will be almost entirely allocated to export and the rest still remaining to domestic supply.

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