IMPLICIT MERCANTILISM, OLIGOPOLY, AND TRADE

Martin C. McGuire*and Hiroshi Ohta**

++

* Dept. of Economics, Univ. of CA-Irvine, Ca 92697. ** Dept. of International Economics, Aoyama Gakuin University, Tokyo, 150. The authors have benefited from discussions with Amihai Glazer, and the late Martin Bronfenbrenner. Earlier versions were presented at the Western Economic Association Meetings, San Diego, 1999, at Georgetown University, November 1999, and at UC-Irvine May 1999.

++

ABSTRACT

We demonstrate how uncoordinated local oligopoly in some developing economies may evolve to produce what we call "implicit mercantilism" by examining its performance with respect to foreign trade. Domestic oligopoly generates several distinct stages of trade mercantilism hitherto unrecognized in the literature. Each stage has its own pattern of interaction with a competitive trading world. As the production costs and techniques of the mercantile society converge to world standards, its citizens first will lose from this progress only later to gain. Both effects are due to certain particular relationships between home prices and world prices. The analysis is particularly relevant to the structure of Asian economies, and to policy debates about their reform.

Key Words: Mercantilism, Foreign trade, Dumping, Oligopoly, Cournot free entry, Strategic trade.

JEL Classification: F12, F13, D71, D72, D78.

Correspondence to Martin C. McGuire
Dept. of Economics
University of California-Irvine
Irvine, CA, 92697

WORKING DRAFT APRIL 2, 2002

IMPLICIT MERCANTILISM, OLIGOPOLY, AND TRADE

As the global economy has become more integrated over the past generation, a growing share of world trade has occurred between the liberal trading nations of the West and more state guided Asian economies, creating at interface between them a continuing source of friction. The modern implicit-mercantile[i] states---China, Korea, and Japan especially, plus others in East Asia---continue to be targets of ongoing political pressure to open up. Among their more or less open competitive trading partners tension cycles between advocacy of tough negotiation and counsel of patience (Ethier and Horn, 1996). [ii]

There is a large literature on institutional structure and trade performance (notably Hillman, 1989), as well as a literature concerning specifically the structure and performance of Asian neo-mercantile states.[iii] Yet neither offers an adequate theory to integrate their mercantilism with their trading behavior. To help fill this gap, and help in assessment of the histories and prospects of these countries, this paper proposes a new model of what we name endogenous and implicit mercantilism. Our proposal we believe applies primarily to the economies of Asia. These are states still emerging from isolation where domestic industry had/has been sheltered by barriers sometimes formal other times informal and often founded on cultural practices and especially reflected in their distribution systems (Chu, 2002; Landa, 1994; Ohta 1997). Yet despite the formal and informal protection they enjoyed they have progressively come abreast of best world production practice, (so it would be incorrect to think they have slouched and featherbedded within a cocoon of protection). Contrary to *a priori* expectation, they have used implicit and explicit protection to catch up and sometimes surpass competitive partners.

Monopoly Mercantilism: The Need for a Revision

Coincident with the upsurge neo-mercantile states of Asia, study of mercantilism has advanced over recent decades, (McCusker, 2001). We believe that to include the implicit or endogenous mechanisms operative in these countries a refinement of the old model of trade mercantilism is needed.

First, formal modeling of monopoly mercantilism has yielded an understanding of its internal domestic structure as grounded in individual gains from rent seeking in the "supply and demand for monopoly rights through the machinery of the state" (Ekelund and Tollison 1981, 1997 p. 5). On the international front such unity of purpose is reflected in the assumption of a deliberate state trading monopoly with discriminatory international pricing power[iv]. Supplanting earlier

historiographic accounts (Viner 1948, Heckscher 1955), this work assumes conscious pursuit of domestic mercantile goals by the State, although as in recent work by Epstein and Nitzan (2002) the purity of the modern State's mercantile purpose may to a degree be moderated by public welfare objectives. Here the assumption of purposeful mercantilism needs revision.

Second, the groundbreaking extensions of oligopoly theory to trade among countries by Brander and Krugman (1983), Krugman (1984), Brander and Spencer (1984), generally study symmetric or reciprocal oligopoly. Most recently this includes work such as Ruffin's (2001) relating oligopoly features of international trade to its income redistribution consequences within the trading countries. But neither of these addresses what we see as a crucial dimension when applied to the once and still emerging Asian mercantile nations, namely culturally based barriers there and a resulting East-West asymmetry.

That is, as a stylized representation of modern trade mercantilism in Asia, both purposeful monopoly and symmetric oligopoly models raise questions. Local leaders in so-called mercantile states scoff at the monopoly[v] depiction and typically refer to cultural factors or traditional ethnic values as the source of their uniqueness. Recent papers of Chu (2002), Katayama and Ursprung (2000) emphasize the role of culture --- economic and political --- in the performance of institutions such as Japanese Keiretsu. Consistent with the relevance of culture, the foundation of our explanation is the internal distribution system in these neo-mercantile states, which we think isolates and sustains an asymmetric oligopoly.

Predicated on such a stylized description of the real world, this paper invokes no coordinated intention to produce a mercantile result and no overt damage need be noticeable. Our model connects with other new institutional literature on the cultural foundations of Asian trading as in Knack and Keefer (1995), or Rodrik (1998).[vi] This institutional literature, however, has little to say to link the informal distribution mercantilism of the more traditional Asian economies with their foreign-trade practices. To supply this link, we propose a model of asymmetric oligopoly, with a capacity endogenously to induce trade-mercantilism.

A catalyst for our model is the analysis of strategic oligopolistic trade by Brander and Krugman (1983), Krugman (1984), Brander and Spencer (1984), empirically extended to historic mercantile trade by Irwin (1991. Here we extend their analysis to how trade will be carried out between two asymmetric systems, one competitive and consumeristic and the other oligopolistic, neo-mercantile. Our model will identify three stylized stages between the domestic configuration of the neo-mercantile society and its international trading incentives. Replacing monolithic monopoly with an endogenous oligopoly model will imply a natural progression in the stages of a mercantile society’s trading incentives. Specifically we will demonstrate how our modification of classical dumping generates as a natural consequence three stages of endogenous

oligopoly-mercantilism. This will be “dumping” based not on undercutting foreign suppliers, but rather solely on exploiting the home captive economy.[vii]

In doing this we uncover a connection between the welfare of the neo-mercantile society, the aforementioned price discriminatory "dumping," and the stage of integration between the mercantilistic and laissez faire economies which we believe has never yet been identified. Our concern with internal welfare resonates with the new work (as in Ruffin, 2001) concerning the general equilibrium effect of bilateral oligopoly trade on internal income distributions (extending Stolper and Samuelson, 1941). But our analysis differs in its concern with asymmetric mercantilism on one side and more competitive laissez faire trade on the other. This we claim is more representative of how current processes of globalization affect the benefits of trade *within* neo-mercantile systems taken as a whole.

Thus, in building a stylized model of Asian trade-mercantilism we will ask, “How is the welfare of a mercantile society influenced by the relative competitiveness of its economy as against that of its consumeristic laissez-faire trading competitors?” Remarkably, as we demonstrate, depending on a cross over point derived below *the two will be positively correlated or inversely related depending on the stage of the mercantile society’s integration into the world economy*. An oligopolistic neo-mercantile economy is at a significant cost/technology disadvantage vis-à-vis the larger world when first it is seeking markets for its exports. In these early phases our neo-mercantile country will “pay” for this access with higher **domestic** prices (and the greater the access the greater the "payment") thus penalizing its domestic consumers. In this stage, as the home country becomes more efficient, home prices in the mercantile sector go up and consumers suffer. But then as the cost disadvantage vis-à-vis world producers lessens still further, consumers in more developed mercantile economies benefit from **further** integration. In this latter configuration, higher world prices for the mercantile country's exports (or lowered domestic costs of production of those goods) actually lower domestic prices for consumption of the same identical goods.[viii] Our model applies, we believe, to China, Korea, and many other societies as well as Japan. These are strongly integrated into the international trading system yet enveloped by political and commercial cultures in a neo-mercantile cocoon. These are the long-standing cultural attitudes and practices, which support the keiretsu system (chaebol, zaibatsu, Chinese equivalent). With Olson (1982) we think of this organization as typical of countries, which were not taken over during the colonial period, such that indigenous rent seeking structures were not wiped out in the upheavals of colonialism and liberation.

Primitive Trade-Mercantilism: A Stylized Model

To begin with a narrative description prior to a more formal model, consider a pre-mercantile society, which is actually

isolated from foreign imports. This can arise spontaneously from exclusionary cultures and customs in the distribution sectors. Or isolation may be effected by spatial oligopoly and successive monopoly in the distribution system (Ohta, 1997). Or government or special interests may posses enough control over a country's commerce to deliberately exclude imports, at least enough to support sustained differences between international and domestic prices for identical commodities. Whatever the etiology imagine that a country has evolved into a pattern of layered monopoly or oligopoly once fairly approximated by the actual structure in Japan, Korea and other developing Asian countries. Here leaving aside doctrinal and political justifications, we can think of such a stylized organization as "primitive" or "minimal" pre-mercantilism that at first merely curtails or banishes imports. This certainly seems to have been the case historically.

But would such import isolation be the whole of an idealized pre-mercantilism? We think not. Here a dynamic rendition of "import protection as export promotion" (Krugman, 1984) suggests itself forming the basis of our model. Now, domestic producers would notice a great difference between the cost of landed (excluded) imports and the final prices that home produced substitutes would bring from consumers. For our purposes we assume that this occurs in certain major sectors of economy which we call the "mercantile sectors." (We will not be concerned with other "non-mercantile sectors"[ix].) With their advantages in distribution access and cost, home producers may have variable costs of production significantly above foreign substitutes and still offer home consumers an incentive to substitute home products for the high priced foreign goods if they are available at all. Next assume that domestic producers (with time and learning) continue to achieve lower variable costs so that they come close to rival foreign sources in their inherent cost/technique of production. Now the protected home markets will evolve to provide a base for ***export*** of these goods whose importation is only precluded by their exorbitant costs of distribution. Endogenous import protection based on culturally derived distribution structures has spawned export promotion. It is the comparative statics of the several stages of this process that we now will analyze more formally on the assumption that domestic producers are oligopolists. As we will see, assuming that these producers at first cannot match foreign suppliers for their efficiency but that over time they catch up, implies three distinct developmental stages in the relation between the mercantile society and the global economy. We have named these, "primitive," "early-start-up," and "mature-established" mercantilism, each having its own distinct connection between consumer welfare, world-free-market price, and home-neo-mercantile price.

The Neo-Mercantile State in a Competitive World Economy

Assumptions and Notation

We want to formalize the stylized facts above in the simplest way possible, in a fashion susceptible to partial equilibrium

analysis. We begin assuming that a portion of the domestic market --- producing goods collectively lumped together and called "Q" --- is insulated from imports by spatial or nested monopolies in distribution, in effect protected completely from certain foreign goods. Despite the insulation domestic producers are assumed to have evolved to a point of being moderately close to competitive with foreign producers. Domestic demand for this good, Q, except possibly for a quota, is fully met from home production.[x] We suppose as our stylized primitive mercantilism, that this supply is provided under conditions of Nash-Cournot oligopoly[xi] among home producers. Crucially, for our account 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 in a market, or price quantity pressures from incipient adjustments in numbers to take effect.

If they are anywhere near close enough to being globally competitive --- specifically unless home marginal cost is everywhere above the world price --- domestic firms could 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. We also will assume the rest of the world market is competitive and price taking, so domestic mercantilist producers do not influence world prices. To allow partial equilibrium analysis we also suppose (1) that the world prices of any goods that our stylized mercantile state does import are fixed and (2) that all domestic industries other than those producing Q in the mercantile sector, are competitive. More precisely, the home country produces a homogeneous commodity "Q", which is also produced abroad and sells there (neglecting transport costs) at a constant world price, "p_w". High distribution costs at home, rooted in language, custom, and culture and possibly sustained with government regulation, in effect, completely exclude foreign suppliers of good Q. Although there is a crucial asymmetry between home and foreign suppliers, by contrast we assume symmetric oligopoly within the neo-mercantile sector. There are n identical domestic firms each producing q (= Q/n) under symmetric oligopoly.[xii] 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 $q = q_H + q_E$. Therefore total revenue of each firm is TR $= p_W q_E + p_H q_H$.

Home society's demand curve is linear such that $p_H = A - bQ_H$, where A is market reservation price and b (> 0) a parameter reflecting the size of the market. Total cost is assumed to be quadratic.[xiii] That is, TC = $F + \alpha q^2$, where F is fixed cost, and α (> 0) is a parameter to show scale economies. This gives MC = $2\alpha q$, and AC = $F/q + \alpha q$ which is U-shaped, and profits $\pi(q_H, q_E) = p_W q_E + p_H q_H - (F + \alpha q^2)$.

The standard Chamberlin oligopoly solution is pictured in Figures 1 and 2, the individual firm's domestic demand position being illustrated in Figure 1. Each oligopoly firm perceives a domestic marginal revenue curve constructed by

assuming that all n–1 identical rivals each maintain q_H at an unchanging level. (In equilibrium, both q_H and n will be determined endogenously). Therefore, as above the perceived marginal revenue curve of each oligopolist is MR = $A - (n - 1)bq_H^* - 2bq_H$. The asterisk indicates each firm's assumption that others' q_H^* supply is fixed. Accordingly, $(n - 1)q_H^*$ gives the assumed constant supply of each of (n–1) rivals, and $- 2bq_H$ gives the reduction in the individual firm's revenue caused by own supply q_H. (This is measured from $A - (n - 1)bq_H^*$ on society's demand curve, also shown in Figure 1.) As $(n - 1)q_H^*$ increases, the representative firm's domestic demand and marginal revenue curves --- consistent with the Nash-Cournot assumption --- shift parallel to the left. In symmetric equilibrium $q_H = q_H^* = Q/n$ is the same for all firms; therefore, realized *ex post* marginal revenue can be written MR = $A - (n + 1)bq_H$.

[Figures 1 and 2 here]

Mercantile Equilibrium Conditions
Assuming Marginal Cost Parity
With Competitive World Producers

In our asymmetric oligopoly equilibrium with p_W assumed given, each firm maximizes profit, setting p_W = MC = MR to yield eqs. (1),(2) and the free entry assumption gives (3) below.

$$\pi_E = \partial\pi / \partial q_E = 0: \quad p_W = 2\alpha q \tag{1}$$

$$\pi_H = \partial\pi / \partial q_H = 0: \quad A - bnq_H - bq_H = p_H - bq_H = p_H - bq_H = 2\alpha q \tag{2}$$

$$\pi = 0: \quad q_H(A - bnq_H) + p_W q_E = F + \alpha q^2 \tag{3}$$

New identical firms enter or exit the mercantile sector and the value of "n" adjusts until each firm's profit maximizing revenues just cover its total costs.[xiv] Figure 2 pictures this conventional Chamberlin tangency outcome in the absence of exports.

But when profit maximization includes positive exports, although the market equilibrium resembles the conventional picture, there is a crucial difference. The tangency point between the individual firm's demand and its AC curves no longer corresponds to zero profits. If each firm's ability to export at world prices yields a profit on foreign sales, then further entry will continue until this profit, too, is competed away. Figure 3 pictures an example of such a positive export, zero profit equilibrium for one firm. No tangency here.

[Figure 3 Here]

Equilibrium with positive exports, zero profits, and Cournot free entry is internally consistent only over a limited range of costs. Thus, for example, assume specifically that domestic producers in the mercantile sector have achieved "marginal cost parity" with foreign suppliers, but not "average cost parity". Then the opportunity to sell on foreign markets at world prices

will indeed generate a profit for the home oligopolist, and will indeed induce greater free entry. Central to our idea of implicit mercantilism, this range of "marginal cost parity" defines the domain of the implicit mercantile state. "Marginal cost parity" exists when MC of individual domestic firms in the mercantile sector is less than world price for some values of q while at the same time AC is greater than world price. "Average cost parity" exists when home AC < p_W for some values of q.

Limits on the Range of Asymmetrical Mercantile Equilibrium

To obtain equilibrium we solve equations (1-3) to derive $p_H = f(p_W, A, b, F,..)$, $q_H = g(p_W, A, b, F,...)$, and $n = h(p_W, A, b, F,...)$. Because of the individual firm's demand constraint, i.e. because of $p_H = A - nbq_H$, only any two of these expressions are independent; the third can be derived from the other two. Then combining (1) and (2) yields (4),

$$p_H = p_W + bq_H \tag{4}$$

and including $\pi = 0$ from (3) gives (5) for q_H.

$$q_H = [(F/b)(p_W^2/4b\alpha)]^{1/2} \tag{5}$$

This is the representative firm's domestic sales, q_H, as a function of the world price p_W.

Domain over Which
Implicit Trade Mercantilism is Viable

The first implication of this analysis and one crucial to our model of trade mercantilism follows from (5). Figure 4 shows that this relation applies only over a particular range of world prices relative to home production costs, as given by (6). For our illustrations we consider various values of world prices, assuming that representative home production costs remain unchanged. But this is really a proxy for changes in home production costs assuming world prices constant. Home production costs in the mercantile sector normally evolve as the mercantile economy becomes more integrated or globalized into the world economy, and we show this by shifting world prices up and down rather than home production costs down and up.

$$2\{\alpha F/[1+(b/\alpha)]\}^{1/2} < p_W < 2(\alpha F)^{1/2} \tag{6}$$

Within the range identified by (6) with p_W < AC, "dumping" is feasible, profitable (in the short run or *ex ante*) and is central to the economic structure of the neo-mercantile state. Within this range, goods for export are provided at lower price than the domestic price for identical goods (although not lower than world price in the sense of undercutting that price).[xv] Outside this domain below its lower bound, world price is so low[xvi] that domestic firms have not evolved to MC-parity and,

therefore, have no incentive to export at all; instead they specialize in supplying only the captive domestic market. We call this "primitive mercantilism." This produces a Cournot-Chamberlin equilibrium of tangency between AC and market demand (as in Figure 2 and also shown again in Figure 4). At the other extreme of (6), where world price exceeds the minimum value of the representative firm's AC curve, Cournot oligopoly disintegrates and so does the applicability of this model. Thus (6) identifies a range of marginal costs relative to world price, which defines endogenous trade mercantilism. Over this range the representative mercantile firm is partially competitive with world producers insofar as its marginal costs fall below international competitive average cost; but it is not fully competitive in that within this range it cannot cover average costs from competing with foreign suppliers. We say that over this range the mercantile state has achieved "marginal cost parity" but not "average cost parity." Figure 4 illustrates these ranges.

[Figure 4 Here]

Now for the second crucial inference that is central to our model of implicit neo-mercantilism: the domain of world prices and the corresponding spread of domestic average costs of production naturally separate into two sets; we will designate these two as "start-up mercantilism" and "mature mercantilism."

Domestic Price Compared to World Price

The Crossover Point Dividing
Mature from Start-up Mercantilism

Within the bounds of (6), combining (4) and (5) yields (7) below

$$p_H = p_W + \{b[F(p_W^2/4\alpha)]\}^{1/2} \qquad (7)$$

This shows equilibrium home price p_H as a function of world price p_W. Again, the maximum of p_W (relevant to our model) corresponds to the minimum of AC. As p_W approaches $p_W^{max} = AC^{min}$, p_H approaches p_W, individual firm supply to home markets q_H approaches zero as in (5), and the number of firms, n, increases without limit, approaching a competitive structure.[xvii] That is, as p_W approaches, total supply to domestic consumers, nq_H, satisfies demand at $p_H = p_W = AC$. On the other hand, at the other end of the range defined by (6) the minimum value of p_W yields a tangency equilibrium and exports of zero.

Crucially also, equation (7) shows (given c, b and F), domestic price p_H to be a strictly concave function of p_W; its second partial derivative with respect to p_W is negative over the assumed domain and has a single peak at $p_W = p_W^*$ defined below as (8). This peak defines the watershed cross over point between start-up and mature mercantilism.[xviii]

$$p_W^* = [4\alpha F/(1+b/4\alpha)]^{1/2} < (4\alpha F)^{1/2} \qquad (8)$$

Comparing this result with (6), implies that the value p_W* (which maximizes p_H) is strictly smaller than the maximum of p_W (i.e., p_W^{max}). Substituting p_W* from (8) back in (7) yields the highest possible domestic price p_H^{max} shown by (9).

$$p_H^{max} = [(4\alpha F+b)F]^{1/2} > (4\alpha F)^{1/2}, \text{ for any } \alpha, F > 0 \quad (9)$$

Thus p_H^{max} is strictly higher than the home price p_H that obtains when world price equals $p_W^{max} = AC^{min} = (4\alpha F)^{1/2}$. We can now use this outcome to establish our claim of two distinct phases of mercantilism: "start-up" and "mature". Within these two realms, on either side of this p_H^{max}, the response of home equilibrium price within the mercantile economy to changes in world price, or in the cost efficiency of domestic production, are opposite to each other.

The Domain of

Mature Mercantilism

Equations (7-8) combined entail a strict relation that obtains for p_W* < p_W < p_W^{max}: the lower p_W, the higher is domestic price p_H over the relevant domain as given by (10), and shown in Figure 5.

$$[4\alpha F/(1+b/4\alpha)]^{1/2} < p_W < (4\alpha F)^{1/2} \quad (10)$$

Over this domain --- beyond the allowable domain for eq. (6) --- domestic price p_H decreases as the world price p_W increases, and *vice versa*. In other words, as world price shifts up relative to domestic AC, or as AC shifts down, the equilibrium price paid by domestic consumers in this domain declines and they benefit. This is characteristic of mercantile societies as they mature and draw abreast of best world production technique oligopolistic competition benefits their citizens by lowering domestic price.

Note that the parameter *b* captures the effect of domestic population or market size; the larger the absolute value of *b*, or the steeper the market demand curve, the smaller is the market. And the larger *b*, the smaller is the lower bound of p_W given by (10) and the higher is the maximum domestic price p_H^{max} given by (9). More generally, eq. (7) shows that for larger values of *b* (which means smaller population ceteris paribus), the equilibrium value of domestic p_H at any allowable level of p_W is higher. This establishes the following propositions for a mercantile society with a technology and cost structure close to world standards, that is for "mature mercantilism," with $p_W^{max} > p_W > p_W$* .

Proposition 1: Over the specified domain of mature mercantilism the home price is inversely related to the world price. If world price declines (increases), home price increases (declines).

Proposition 2: The smaller the size of the domestic market, the smaller the lower bound of world price in (10) and *ceteris paribus* the greater the range of world prices which yields this inverse impact upon the home price.

That is, the greater the *b*, the lower the critical world price level p_W* = $\{4\alpha F/[1+(b/4\alpha)]\}^{1/2}$. Note that this p_W*

defines the entry point of mature mercantilism. See Figure 6 and appendix table II.[xix]

The Domain of

Start-Up Mercantilism

Consider now the case in which the world price is below its critical level p_W*. Then as world price increases, exports increase in response, and domestic price also rises with world price. In this domain if world price shifts up or domestic AC shifts down, domestic consumers in the mercantile society lose. The domain for this to obtain is given by $p_W^{\min} < p_W < p_W^*$. Eq (11) shows this.

$$2[\alpha F/(1+b/\alpha)]^{1/2} < p_W \quad < \quad [4\alpha F/(1+b/4\alpha)]^{1/2} \tag{11}$$

Within this domain a lower population size as reflected in higher values of b will lower the entry point of start-up mercantilism; that is an increase in b lowers $2[\alpha F/(1+b/\alpha)]^{1/2}$. Within this domain the mercantile society's consumers are worse off as a result of its integration with a laissez faire world.

Comparative Statics for the neo-Mercantile Economy

Figure 5 summarizes the structure of the mercantile economy and how foreign trade affects its citizenry, showing the three stages of mercantilism. Start with p_W at the high of $p_W^{\max} = AC^{\min}$ and allow world price to decline. Then total production --- determined where p_W = MC --- declines following MC; domestic price p_H initially goes up along the "domestic price locus" (or DPL-curve) at the stage of mature mercantilism. Eventually, when p_W reaches the critical cross over value of p_W*, p_H reaches a maximum at $p_H^{\max}$ and then starts to go down entering the realm of start-up mercantilism.[xx] The value of p_H begins to decline for reductions in p_W below the critical level of $p_W^* = p_W(p_H^{\max})$ and continues to decline until p_H reaches p_H^C, and p_W has reached $p_W^{\min}$ supporting a domestic Chamberlin tangency equilibrium. At this point domestic cost conditions are so unfavorable compared to world prices that start-up mercantilism is just marginally viable. Below it the variable costs to firms which meet domestic demand in a Cournot equilibrium are so great that sales on world markets will not cover even these marginal costs.[xxi]

[Figure 5 Here]

From this equilibrium as a reference point, now consider backward reasoning. Let the world price rise, equivalent to a decline in AC. Then, for given AR-curve, the firm's profit must increase with positive exports. But positive profit will induce new entry, shifting AR leftward and eliminating profit at the new equilibrium. If world price keeps increasing, so

does the number of firms, additional entry shifting the firm's AR parallel leftward until AR_{min} obtains.[xxii] When world price approaches p_W^{max}, the firm's output approaches $(F/\alpha)^{1/2} = q^{-1}(AC^{min})$ all of which is exported in the limit, and domestic sales of the individual firm approaches zero. Now the individual firm's perceived AR curve shifts so far to the left that its perceived reservation price approaches world price p_W^{max}. (The number of firms increases without limit as p_W^{max} is approached, each individually providing less and less to the home market but in the aggregate supplying sufficient to meet home demand as price decreases along the market demand curve). What happens if world price increases beyond the assumed domain, if $p_W > AC^{min}$? Our model of oligopoly mercantilism no longer applies; the country becomes a fully competitive supplier of Q to world markets.

Figure 5 also shows how home consumers will or will not benefit from "dumping" depending on the value of world prices within the domain of (6). In a comparative static sense, world consumers benefit from mercantile "dumping", in that the aggregate increase in world supply which this "dumping" brings about lowers world prices (although each individual firm in the home country ignores this effect).[xxiii] But "dumping" benefits home consumers in the mercantile economy only when the world price is high enough such that

$$(4\alpha F)^{1/2} > p_W > (4\alpha F/\eta)^{1/2}: \eta = (\alpha + b)/\alpha\,(3 + 4\alpha/b)^2 \qquad (12)$$

In this region home price with "dumping" is strictly below the autarchic -tangency price: $p_H < p_H^C$. On the other hand dumping harms the home consumers when

$$(4\alpha F/\eta)^{1/2} > p_W > \{4\alpha F/[1+(b/\alpha)]\}^{1/2} \qquad (13)$$

In this region, $p_H > p_H^C$, home price with "dumping" strictly exceeds the Chamberlin-tangency price.

[Figure 6 Here]

Figure 6 summarizes these effects. It pictures the relationship between p_W and p_H using the curve labeled DPL ($p_H = p_W + \{b[F - (p_W^2/4\,\alpha)]\}^{1/2}$) with the defining ranges of p_W marked off on the abscissa as I, II, III and IV. It shows how in region I domestic price has constant value p_H^C for low world prices. In region II, domestic price begins to increase with p_W and continues until it has reached a maximum of p_H^{max}.[xxiv] Past this maximum, in region III, p_H declines with further increases in p_W, although remaining above the tangency-autarky price. Finally for world prices still higher in region IV, the domestic price actually falls below p_H^C more and more below as world price increases up to p_w^{max}. Beyond this "maximum" value of world price, our model of Cournot-Mercantilism no longer applies.

Although the particular outcomes presented depend on the specific linearity assumptions in the model, the calculations suggest how the modern mercantilist state may find itself in a local optimum trap. Within the range of less

integrated or “Start-up Mercantilism” consumers we expect to resist integration. For the rent seeking structure proposed here assigns a role of buffer to the local consumer. If world prices are very low compared to domestic cost structure, “dumping” in world trade diverts product abroad. This raises domestic prices to make up for the fact that each firm’s fixed costs are spread over a smaller domestic sales base and only a small share of those fixed costs are covered by overseas sales. Thus in the early stages in economic integration of the mercantile sector one expects domestic consumers in mercantile states to oppose the change. But after the domestic cost structure is sufficiently close to world price --- or world prices sufficiently high --- the consumer in the mercantilist society *actually benefits from sales of exports below domestic AC*. For then foreign sales covers more and more of fixed costs. Absorption of excess profit by new entrants increases domestic sales and, therefore, reduces domestic prices to the benefit of the domestic consumer.

Conclusions

Recent decades have seen emergence of the modern mercantile states as major players in the global economy states that have become objects of continued political pressure to open up. Thus a need for better understanding has grown of how these countries interface with the international system. In the shadow of this necessity our model suggests how domestic oligopoly can lead to endogenous mercantilism reflecting or based on traditional networks of trust, or supported by traditional distribution mechanisms, which tend to isolate a society from overseas competition. Combining oligopoly mercantilism with opportunity to trade illuminates the effects of trade on the incentives and welfare within a mercantile society. To effect this insight we have introduced the notions of “marginal cost parity” contrasting it with “average cost parity,” as concepts to define three stages of mercantilism: “primitive,” “start-up” and “mature.” These three stages emerge from an analysis free entry and Cournot competition within a mercantile state as it realizes opportunities to export.

These stages are important for two reasons. First they define the incentives mercantile countries have to remain closed or to open up their political economic structures. They delineate when the net benefits to the citizens favors abandonment of the mercantile system vs. maintaining old patterns. Thus they provide some suggestion of likely drift of internal political pressure. “Primitive” mercantilism with a totally non-competitive cost structure has no incentive at all to open up. “Start-up“ mercantilism on the other hand has reached the early stages of “marginal cost parity“ with the outside world, and is characterized by a *conflict between its producing and consuming sectors*. Producers benefit from selling abroad in these early stages of economic integration, but the more they can sell to foreigners, the greater the price they must charge at home for the very same good, and so home consumers lose. As the cost disadvantage of the mercantile economy declines and its industries approach “average cost parity“ with best competitive practices abroad, we call the

society a “Mature” mercantile state. And for this configuration, the closer mercantile costs approach international prices, *the better for both mercantile producers and domestic consumers*. Thus the effect of international opening on domestic prices and welfare follows a determinate trajectory as world prices increase (or home average cost curves shift downward). Domestic prices will increase at first, then reach a maximum, and finally decline. In short, taking a mercantile country international is essentially an investment by the citizenry and by its leaders. There is a hump to be got over, and the early stages are likely to be painful for domestic consumers in the mercantile society.

Second these cost parity stages are important as they bear directly on the hardline/forbearance policy dichotomy (Ethier and Horn, 1996). This debate is more than simply about inducing mercantile states to increase imports, but rather to restructure their entire economies. Consider the effect of a tariff by the “laissez-faire“ trading partners, levied possibly in response to their hardliner’s demands for trade instruments to offset price discriminating policies of the mercantile structures. If it has any effect, the tariff by lowering demand will lower the price at which the mercantile state can export. What long-term impact does this have on the mercantile state? The answer: it depends on the stage of mercantilism. A decline in p_W under start-up mercantilism benefits the citizens although it harms the producers, and therefore, it is an ambiguous instrument. But a decline in p_W under mature mercantilism harms everyone in the mercantile economy. Of course, such hard line action may well not be decisive. But it surely is relevant, and it raises the important question of where along the spectrum between isolation and complete laissez faire integration a country with mercantile tendencies may be located at any particular point in time. Moreover the same principles apply to scrutiny of the softliner’s counsel. If a country finds itself in the start-up stage of mercantilism, then encouragement and patience from the rest of the world may be justified, provided it causes the mercantile state to cross over into the mature stage.

In any event the long run, bottom line implications of this analysis must be optimistic, as technology spreads and our mercantile economy draws abreast of the competitive world, both producer and consumer pressures suggest a withering away of mercantilism as we have pictured it.

Appendix I: Derivation of Domestic Price Locus as Function of World Price

This appendix shows the general relationship between world price, p_W, and domestic price, p_H, to be concave as pictured in Figure 4. Moreover, $p_H = g(p_W)$ reaches a maximum (p_H^{max}) just at the point when the representative firm divides its sales equally between home and export markets. Remarkably, this identifying characteristic of p_H^{max} depends in no way on the underlying demand and cost functions, other than the ordinary expectations that $f' < 0$ (downward sloping demand curve), and $C'' > 0$ (increasing marginal cost curve).

To demonstrate we begin with the first order conditions for a maximum. All notation corresponds with the text, except for C (Total Cost), C', and C'', and $f(Q_H) = p_H(Q_H)$, $f' = df/dQ_H$.

$$C'(q_H+q_E) = p_W \quad \text{A1}$$

$$f(Q_H) + f'(Q_H)q_H = p_W \quad \text{A2}$$

$$f(Q_H)q_H - C'(q_H+q_E) = p_W q_E \quad \text{A3}$$

$$Q_H - nq_H = 0 \quad \text{A4}$$

Total differentiation of the first order system gives Table I below.

Table I: Differentiation of First Order Conditions

Differential	dQ_H	dq_H	dn	dq_E	dp_w	Eqn
Coefficients	0	C''	0	C''	1	A1
	$f' + q_H f''$	f'	0	0	1	A2
	$q_H f'$	$f - C'$	0	$p_W - C'$	$-q_E$	A3
	1	$-n$	$-q_H$	0	0	A4

The sign of $dp_H/dp_W = -\text{sign}\, dQ_H/dp_W$. And dQ_H/dp_W follows from the total differentiation as:

$$\frac{dQ_H}{dp_W} = \frac{\begin{vmatrix} 1 & C'' & C'' \\ 1 & f' & 0 \\ -q_E & f - C' & 0 \end{vmatrix}}{\begin{vmatrix} 0 & C'' & C'' \\ f' + q_H f'' & f' & 0 \\ q_H f' & f - C & 0 \end{vmatrix}}$$

The denominator is negative by second-order conditions, so that the sign of dp_H/dp_W has the same value as the numerator.

$$C''[(f - C') + f'q_E] = C''[(f - p_W) + f'q_E] = C''[f'(q_E - q_H)]$$

Thus when p_W is small such that the mercantile state is isolated, and unable to compete in international markets (has not achieved even MC parity), q_E is zero and the above expression is positive - - - assuming $C" > 0$ and $f' < 0$ - - - and an increase in p_W raises p_H. When p_W reaches a level such that $q_E = q_H$ the marginal effect of p_W on p_H has vanished, and for still higher values of p_W so that $q_E > q_H$, the expression is negative and the value of p_H declines with rising world price p_W. Thus, the shape of the function $p_H = \phi(p_W)$ drawn in Figure 5 and 6 does not depend on our specific assumptions as to cost and demand curves. Any cost function with increasing marginal cost, and demand with negative slope will produce the concave shape, and the specific equality in division between domestic and export supply as the crucial point at which the consumers in a mercantile society begin to benefit from economic integration.

Table II below assembles these effects showing calculations for the impact of an increase in world price on domestic price, consumer surplus, quantities produced and consumed in the mercantile state and number of firms (details available on request).

TABLE II
Affect of an Increase in World Price p_W
Upon Selected Variables in Each Partitioned Domain

Domain in Fig. 6		Values of p_W	Change Effected by $\Delta p_W > 0$					
			Δp_H	ΔCS	Δq_X	Δq_H	ΔQ_H	Δn
I	**Primitive Mercantilism**	$p_w < \sqrt{4\alpha F/[1+(b/\alpha)]}$	**0**	**0**	**0**	**0**	**0**	**0**
II	**Start-up *Mercantilism***	$\sqrt{4\alpha F/[1+(b/\alpha)]} < p_w < \sqrt{4\alpha F/[1+(b/4\alpha)]}$	+	–	+	–	–	+
III	***Mature* Mercantilism-1**	$\sqrt{4\alpha F/[1+(b/4\alpha)]} < p_w < [(4\alpha+3)/b]\sqrt{4\alpha F/[1+(b/\alpha)]}$	–	+	+	–	+	+
IV	***Mature* Mercantilism-2**	$[(4\alpha+3)/b]\sqrt{4\alpha F/[1+(b/\alpha)]} < p_w < \sqrt{4\alpha F}$	–	+	+	–	+	**0**

Appendix II: A Successive Monopolies Foundation of Endogenous Mercantilism

Following Greenhut and Ohta (1979) consider a successive monopolies model of import distribution. As in the text assume a linear Marshallian final demand for imports, Q_H.

$$p_H = A - bQ_H \tag{n1}$$

We will use this model as an instance of the endogenous establishment of rent seeking mercantilism. Of course we expect reality to be more messy and ragged than the neat hierarchy we develop here. The individual layers of rent garnishing and rent absorbing distribution could derive from government import quotas, licensing, or other revenue collection or rent creating and transfer mechanisms, but conscious or conspiratorial action of government is not necessary. Instead the primitive mercantilism which the successive monopolies model generates may be quite organic/endogenous requiring no centralized political guidance.

For simplicity, neglect all variable costs of distribution incurred at every stage, from the final down-stream distributor (indexed as "*n*" up to the original importer indexed as "1"). Then equation (n2) gives the final distributor's marginal revenue, MR_n.

$$MR_n = A - 2bQ_H \tag{n2}$$

The penultimate distributor (n–1) perceives MR_{n-1} as his demand curve, so that $MR_{n-1} = A - 2^2 bQ_H$. Under successive monopoly with n stages of costless distribution, therefore, the initial importer's (indexed as "1") derived marginal revenue, MR_1 becomes:

$$MR_1 = A - 2^n bQ_H \tag{n3}$$

Now assume the importer's landed unit cost of Q_H fixed at p_w; then profit maximization requires this derived marginal revenue to be equated to p_w. This is shown in (n4):

$$p_w = A - 2^n bQ_H \tag{n4}$$

where the demand parameter A is the final market's reservation price and n is the number of independent distributors, each of whom behaves as a monopolistic seller and a competitive buyer. Thus, under the n-stage successive monopoly, using $p_w = MR_1$ from (4) yields both equilibrium imports $Q_H = (A - p_w)/ 2^n b$, $p_W < A$, and final domestic market price $p_H^* = A - [(A - p_w)/2^n]$.

The ratio of p_H^* to p_w exceeds unity when $n = 1$ provided the parameter A exceeds p_w. It becomes greater for higher ratios of A/p_w, and is increasing in n. Thus entry of more distributors exacerbates international price disparities.

Thus, for example, a $10 item abroad can easily sell for $100 at home if reservation price A = $106 and n = 4. Just four dealers can push it up ten times the foreign price.

Now imagine that a country has evolved into such a pattern of successive distribution monopolies, no doubt more ragged and spatially dependent than the simplified version presented here. These price-enhancing and demand-depressing effects of a multi-layered domestic distribution structure reveal the underlying mercantile tendency to maximize the balance of payments by minimizing imports. More workers than needed are allocated to superfluous stages of distribution raising the domestic market costs of imported goods, and generating structural protection. Thus this model of endogenous rent seeking thus incorporates the idea that rents are dissipated and real resources are wasted. We might think of such an organization of trade as “primitive” or “minimal” mercantilism that at first merely curtails imports rather than stimulating exports and is in fact compatible with autarky.

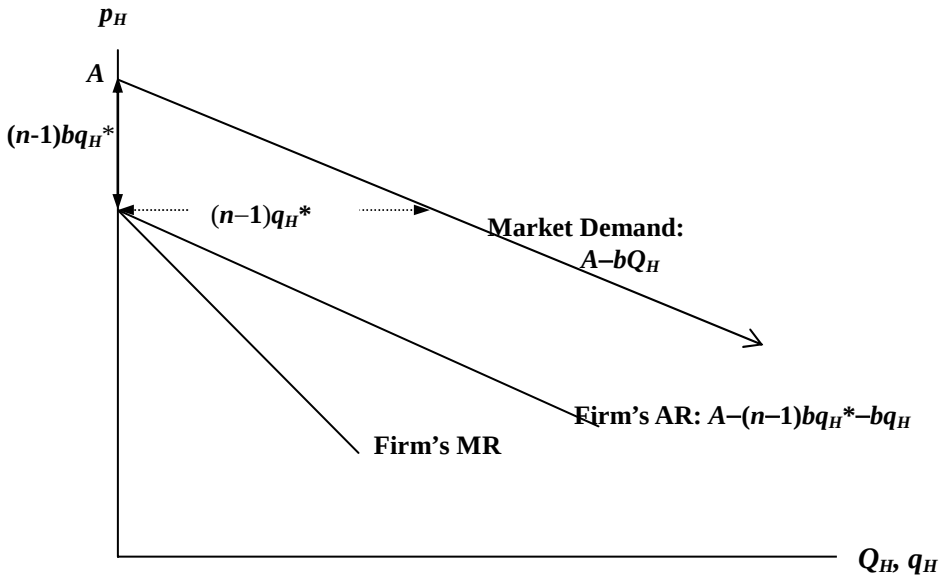


Figure 1. Market Demand and Individual Firm AR Under Cournot Oligopoly

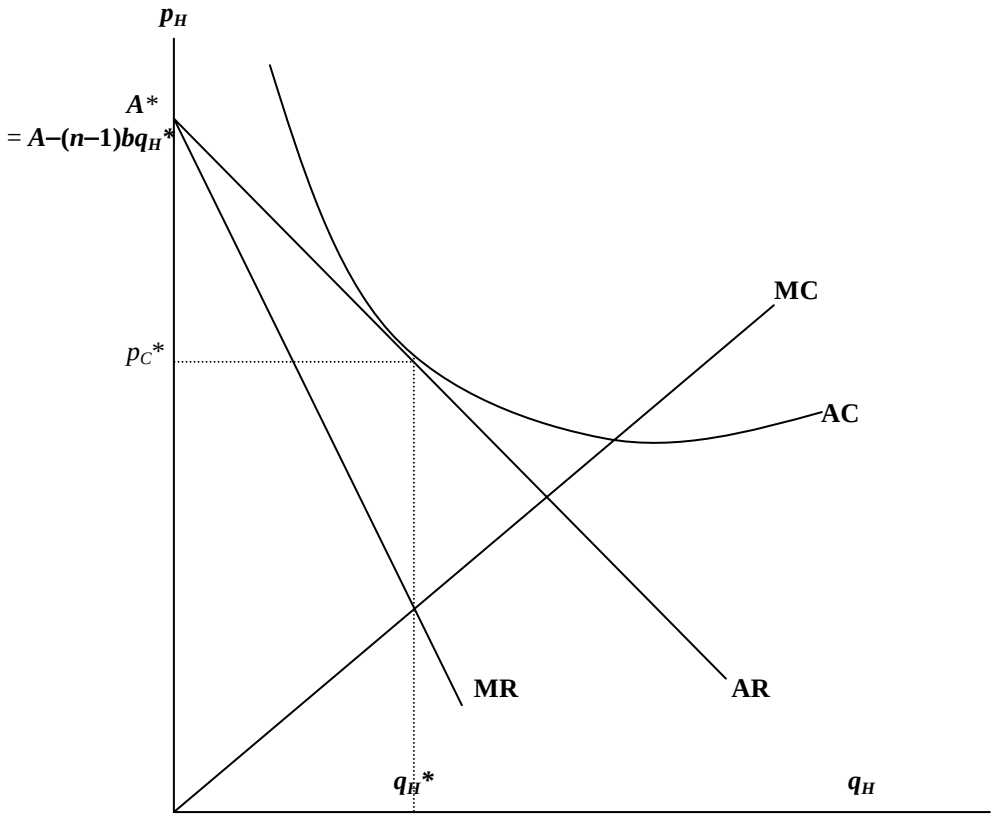


Figure 2. Zero Profit Equilibrium of the Individual Firm In the Absence of Exports

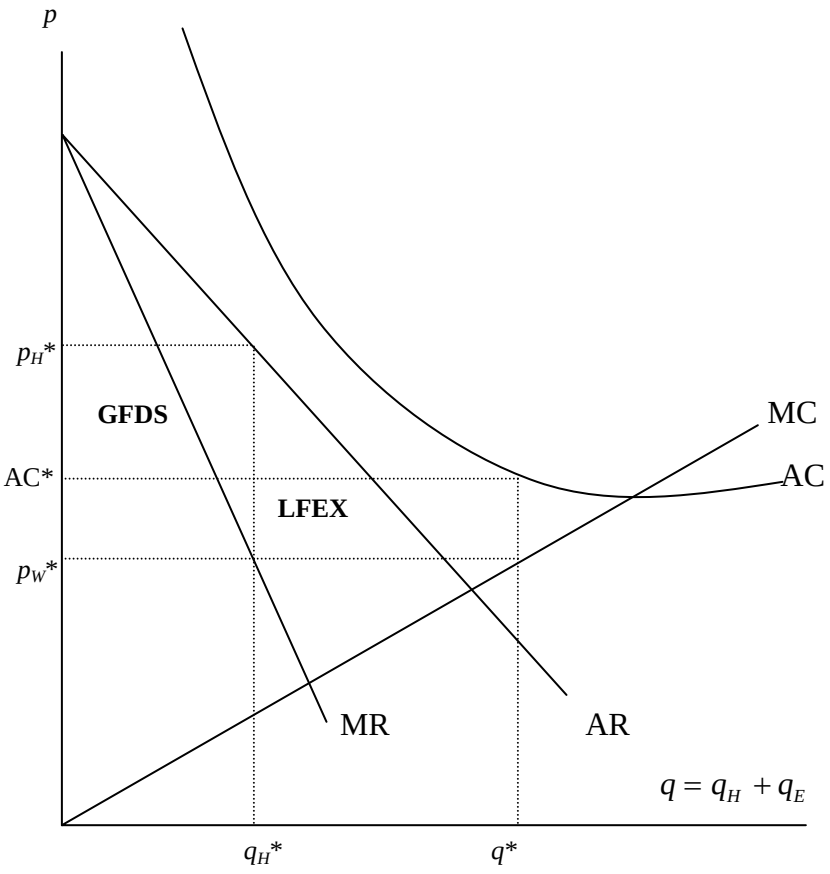


Figure 3. Zero Profit Oligopoly When Home Market Is Isolated And Exports Sell at World Price p_w *

The number of firms adjusts so that individual firm profit is maximized where p_w,* = MC = MR and losses from exports (area **LFEX**) are offset by gains from domestic sales (area **GFDS**), so that total profits are zero.

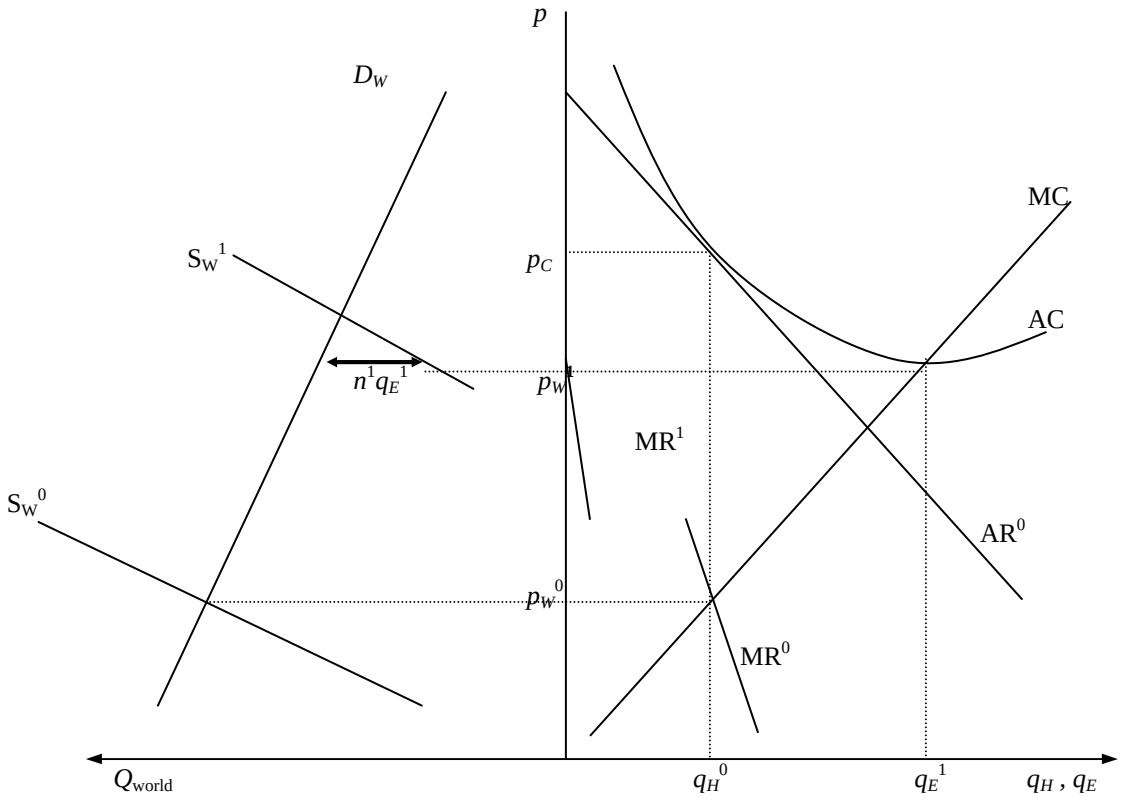
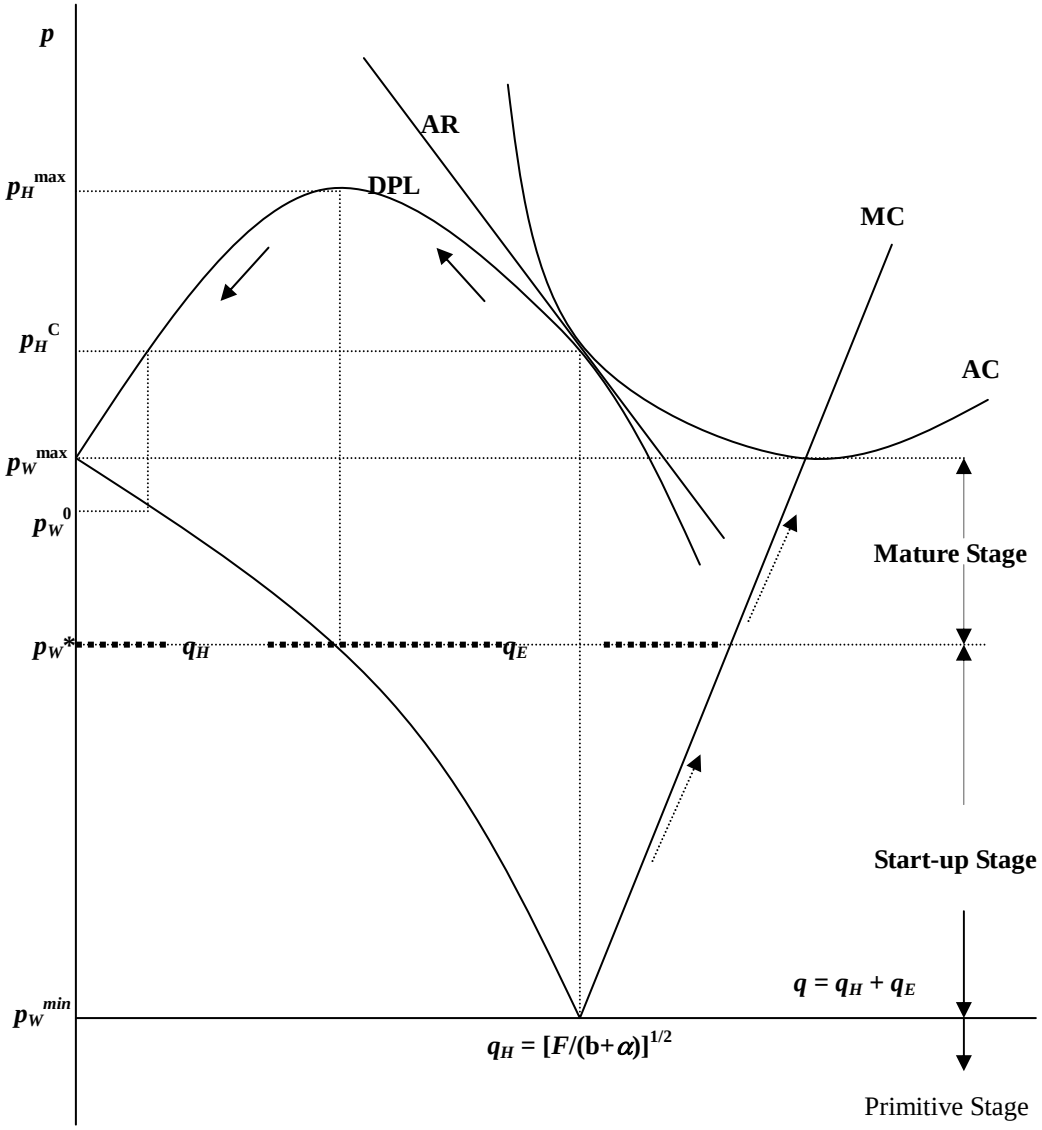


Figure 4. Relative Cost Competitiveness and The Stages of Oligopoly Mercantilism

When world costs are relatively very low (or domestic costs relatively high) as with Rest of World Supply S_W^0 and corresponding p_W^0, a mercantile country supplies only its home market, maximizing profit where $p_W^0 = MR^0$, and providing q_H^0 at price p_C.

When Rest of World costs are higher (or domestic costs lower) as with Rest of World Supply S_W^1 and corresponding p_W^1, mercantile country supplies both home and foreign markets, maximizing profit where $p_W^1 = MC = AC$, each of n^1 firms providing q_E^1 at price p_W^1. Here the number of firms $n_1$is assumed to be large enough to meet excess world demand (= $n^1q_E^1$) at p_W^1.

Figure 5.
How the Firm's Output, Home Supply, and Exports
Change Along with Domestic Price as World Price Changes



$$p_H^{\max} = \sqrt{(4\alpha + b)F} > \sqrt{4\alpha F} \quad \forall \quad b, \alpha, F > 0; \qquad p_H^C = (2\alpha + b)\sqrt{F/(\alpha + b)}$$

$$p_W^{\max} = AC^{\min} = \sqrt{4\alpha F}; \qquad p_W^0 = (4\alpha + 3)\sqrt{4\alpha F/(1 + b/\alpha)}/b$$

$$p_W{}^* = \sqrt{4\alpha F/[1 + (b/4\alpha)]}; \qquad p_W^{\min} = 2\sqrt{\alpha F/(1 + b/\alpha)}$$

$$DPL \equiv p_H = p_W + \sqrt{b[F - (p_W^2/4\alpha)]}; \qquad \mathrm{AR} = A - (n-1)bq_H$$

$$MC = 2\alpha q; \qquad AC = F/q + \alpha q$$

As p_W increases, the firm's total output moves along MC as shown by the dotted arrows and domestic price p_H changes as shown by the solid arrows along DPL.

p_H

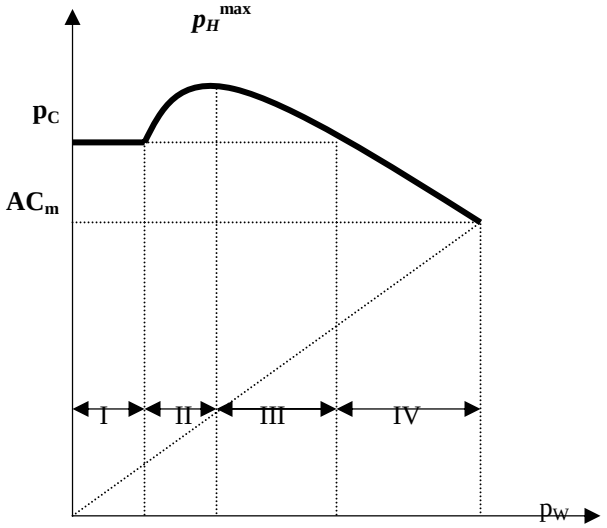


Figure 6. Stages of Integration of Mercantile Economy

I: Primitive Mercantilism
No integration, world price very much below high domestic price.

II: Start-up Mercantilism
Domestic price ($p_H = p_C > p_W$) increase with world price.

III: Mature Mercantilism-1
Domestic price declines as world price increases, but $p_H > p_C > p_W$.

IV: Mature Mercantilism-2
Domestic price declines further below p_C, approaching p_W as world price increases.

---

[i] Mercantilism has been defined as "a set of policies, regulations, and laws, developed over the 16th through 18th centuries to support the rising nations states of Atlantic Europe by subordinating private economic behavior to national purposes." (McCusker, 2000). Relative to this definition of mercantilism, we label the modern mercantilism of Asian economies, "implicit."

[ii] That the popular press thinks mercantilism alive and well is demonstrable. For example, see J. Lim, "Mercantilism in the Land of the Rising Sun," *Laissez Fair City Times* 5:28, July 9, 2001

[iii] Recent contributions include Piggott and Woodward (1999) and the paper therein by and Dhar and Panagariya (1999).

[iv] Here, analyses of Rieber (1981, 1982) spell out the required international trade theory. In a 2x2x2 Heckscher-Ohlin analysis he shows how a home monopoly selling to competitive world markets will determine world prices, home prices, home factor and consumer incomes, home welfare and monopoly profits, comparing the results between simple and discriminating monopoly.

[v] Ethier (1982a) argues, monopoly originated, price discrimination based dumping is rarely reported in real world trade disputes, belonging rather to the inter World War period. Instead, actual observed dumping is only identified when it involves overt *damage* to the industries with which it competes. In these cases it may originates in cyclic capacity excess due to stickiness of factor allocations and uncertainty about demand, rather than price discriminating maximization of profits.

[vi] And it resonates with the frequent pronouncement of political leaders there asserting that Asian economic organization and trade practice reflects Asian values, and should not be tested on any western litmus.

[vii] Differing from Ethier's, this dumping by the mercantile state need *not* cause harm to others and, therefore, may not be a cause for legal action, and may not even be noticed.

[viii] Thus, our analysis will show *how consumers in the modern neo-mercantile state can actually enjoy lower domestic prices of their export products when the world prices of those exportables rise*. With oligopolistic free entry, a lasting appreciation in the Yen, for example, can either *increase or decrease* domestic prices of Japanese exportables *within Japan* even though it lowers the Yen prices of these very same goods in export markets! (Of course dollar prices of Japan's export goods increase at least in part with the Yen's appreciation).

The recognized failure of exporters to "pass through" the entirety of exchange rate changes, even long lasting ones, into foreign currency prices of their products continues to puzzle economists (Knetter, 1997). Since it is the great Asian mercantile states to which this applies, our model will suggest a structure to explain the diverse and seemingly erratic observations.

[ix] This allows us to assume some sectors remain frozen in a sort of pre-mercantile isolation, and others evolve more competitively.

[x] The issues of active government optimization in a multi-stage-game trading world are not addressed. Rather these stylized facts are prelude to a comparative static analysis. Coexistence of imports distributed by successive monopolies and oligopoly domestic production is not analyzed here, although the model could be extended to illuminate the border between imports and home supply when distribution costs only discourage imports rather than eliminate them.

[xi]As is well known, Cournot behavior and Bertrand behavior are intrinsically at odds with each other. A 'homogeneous' good model of oligopoly requires Cournot behavior for stable equilibrium, albeit Bertrand behavior can be incorporated into a model of 'heterogeneous' (differentiated) goods and firms behaving as Bertrand sellers for different prices (as, e.g., in Greenhut and Ohta (1975).) Extending our present inquiry along the lines of Bertrand behavior may be an attractive venture, though at the risk of rendering analysis intractable.

[xii] Here and throughout this paper we ignore integer issues or whole number issues in the equilibrium value of n. That is, we assume n can take on non-integer values.

[xiii]Returns to scale, therefore, are traditional intra-firm effects, what Ethier (1982b) terms "national" and are recognized by individual firms. Throughout this paper we use specific functional forms of costs and demand to derive/illustrate these effects. We have assumed linear demand and quadratic cost structures, but the generic qualitative conclusions reached do not depend on the particular forms assumed.

[xiv] Increases in the number of firms lead to prices that approximate competitive prices whether the increases in n are due to satisfy added demand, or because average cost minimizing scale of production decreases (See Tirole, 1988).

[xv] Thus this is neither a conventional-classic model of dumping, nor a more modern model along the lines of Ethier (1982a).

[xvi] When p_W reaches its lowest value of $p_W^{min} = 2[\alpha F/(1 + b/\alpha)]^{1/2}$, each firm produces $q_H = [F/(b + \alpha)]^{1/2}$ for the domestic market. At this point MR = MC, and $q_E = 0$ for each firm. Denote the domestic price that obtains at this Cournot outcome as p_H^C. Then we have $p_H^C = (2\alpha + b)[F/(\alpha + b)]^{1/2}$. This domestic price obtains not only at the Cournot equilibrium when p_W has reached p_W^{min}, but also at $p_W = [(4\alpha + 3)/b]\{4\alpha F/[1+(b/\alpha)]^{1/2}$. Any p_W value above this larger one yields a domestic price strictly lower than the Cournot-Chamberlin price. See the Table for details.

[xvii] From equilibrium conditions, the number of firms, n, and the number at an isolated, zero-export equilibrium n_C are derived as: $n=[A-p_W]/[b\{F-(p_W^2/4\alpha)\}]^{1/2}-1$: $n_C = (A/b)[((b+\alpha)F)]^{1/2}-(2\alpha/b)-1$.

[xviii] Taking the first derivative of (7) with respect to p_W and equating the result to zero yields the p_W that maximizes p_H as in (8). As shown in the Appendix, the concavity of $p_H = g(p_W)$ and interior position of the peak p_W* is a general property of this model, not peculiar to our linear/quadratic specification of demand/cost. Remarkably, at p_W* irrespective of its cost and demand curves, the profit maximizing production and sales of the representative firm is divided equally between exports and home sales, so that $q_E = q_H$. For our linear-quadratic specification $q_E = q_H =[F/(4\alpha + b)]^{1/2}$.

[xix] Although $dp_H/dp_W < 0$ throughout the domain of mature mercantilism, over a part of that domain domestic price is actually higher than it would be under zero export primitive mercantilism, i.e. $p_H > p_H^C$. For some purposes this part of the domain might be separately identified. But we have continued with the same label for both parts.

[xx] The arrows along MC and DPL, indicate directions of movement of the firm's equilibrium as world price p_W increases, starting from its minimum $p_W^{min}=2[\alpha F/(1+b/\alpha)]^{1/2}$. For any allowable value of p_W the firm's total output is divided into two parts, exports and domestic supply. The downward sloping concave curve shows how total output of the firm is so divided for any value of p_W. This curve is the locus of intersections between p_W and $MR_i = MR_i[\{n(p_W) - 1\}, q_H(p_W)]$, where MR_i is the marginal revenue function of the representative firm given that the number and sales of other firms are at their equilibrium values (which themselves depend on p_W).

[xxi] Note that the second order condition is guaranteed (MR downward sloping and MC upward) along with FOC. If the world price happens to be lower than $p_W^{min}=2[\alpha F/(1+b/\alpha)]^{1/2}$, domestic firms have no incentives to sell their products abroad. They will simply supply the domestic market, remaining at the Chamberlin tangency point on AC.

[xxii] Note also from (7) that equilibrium p_H does not depend on the reservation price A; only the slope of the home demand curve counts. The Cournot-Chamberlin tangency equilibrium depends only on the slope of AR and of AC.

[xxiii] In a world of factor allocation stickiness and demand uncertainties world producers suffer damage from dumping. Merger of this feature of dumping with oligopoly mercantilism as conceived here awaits future research.

[xxiv] The value of p_H^{max} in our linear-quadratic specification is $p_H^{max} = [F(4\alpha + b)]^{1/2}$.