JOURNAL OF ECONOMIC DEVELOPMENT
Volume 12, Number 1, June 1987

On Import Substitution, Quality Uncertainty and Development Policy*

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This paper relates the consumer bias towards foreign goods in the developing countries to the quality reputation of locally produced goods. It argues that consumers may be perceived to be discriminating if there is uncertainty about the quality of the locally produced goods. Such consumer uncertainty frustrates investment in high quality production. Given the uncertainty about quality, protection is not effective for promoting the production of high quality goods. However, interest and credit policies may be used to encourage investment in high quality production. Also it is argued that given quality uncertainty, export-oriented industrialization has advantages over import-substitution strategies.

I. Introduction

The "craze for foreign goods" (Bardham and Kletzer) or "snob value" appeal of foreign goods (Robinson) has been a major problem for industrialists and policy makers in the developing countries. This craze is shown by the consumer tendency to choose expensive imported goods over cheaper local varieties of comparable quality. This behaviour is attributed to the demonstration effect of foreign consumption patterns, the colonized mentality of developing country consumers (Smithies; Freedman; Mannoni;

* I received comments from C. Obidegwu and W.F. Steel. Ms. S. Fallon assisted with the typing.
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however, that export-oriented industrialization has advantages over import-substitution industrial strategies. This is consistent with emerging views on export-oriented development strategies which have been more successful in achieving industrial expansion and competition in world markets (Balassa; Evans and Alizadeh; Krueger).

II. Analytical Framework

A. The Market

Examples of quality uncertainty have been noted in many developing countries (Akerlof; Bardham and Kletzer; Robinson). Consider, for illustration, the textile market (mainly cotton) in African countries comprising locally produced and imported textiles mainly from Java, India, Taiwan, China, Indonesia, United Kingdom and Holland. Consumers value quality which includes, among other things, fast colours and resistance to shrink and wrinkle, and they can distinguish between locally made and imported textiles.

Locally made textiles vary widely in quality because of the inexperience of the local manufacturers, though some of the local textiles are of the same high quality as the imported ones. Consumers cannot distinguish the high quality local textiles because the local manufactures are new in the market. Quality information can be learned only from purchase experience. All sellers, on the other hand, are fully informed about quality. Warranties do not exist, or are ineffective because of rural-urban population movement, and the costs in time and transportation of making claims.

In symbolic terms, the imported textile is Tm, the high quality local textile is Th, the low quality textile is Tb, and Td is all locally made textiles (Tb + Th). The respective prices are P^m, P^h, P^b and P^d, where P^d is the average price of Td. If q is a quality index[1], and $q^d(P)$ is the average quality of Td (equation 8), then in

[1] We assume one quality grade for Tm and two quality grades for Td for simplicity. It makes no difference to assume that some imported textiles are of low quality as long as consumers can identify such low quality before purchase.

$$(4)\quad EV\ (Tm) = t \cdot R \cdot q^m - P^m$$

Depending on the initial gap between $q^d(P)$ and q^m, imported goods would still sell at a premium above locally produced high quality goods.

A consumer willing to buy Td must shift from Tm. From (3) such a shift would require:

$$(5)\quad R(q^d(P) - q^m) \geqslant (P^d - P^m)$$

Each side of (5) is a negative value so that the price gain from the consumer shift to Td, $(P^m - P^d)$, outweighs the value of utility loss from the shift, $R(q^m - q^d(P))$. From (5), $R \geqslant (P^d - P^m)/(q^d(P) - q^m)$. From the integral F(R) of the density function f(R), we derive the demand function $D(P^d)$ for Td with the relevant portion:

$$(6a)\quad D(P^d) = (F(W) - F((P^d - P^m)/(q^d(P) - q^m)))$$

If for mathematical simplicity, f(R) assumes a uniform distribution f(R) = Q, then from (6a):

$$(6b)\quad D(P^d) = (W - ((P^d - P^m)/(q^d(P) - q^m)))Q$$

Variations of (6b) have been used by Leland (1979), Hey and McKenna, and Bond.

In (6a) and (6b) the demand for Td has a negative slope, and depends on supply through the effect of average quality ($q^d(P)$ in equation (8)). Increases in $P^d(P^m)$, will be accompanied by a decrease (increase) in the demand for Td. Any increases in average quality $q^d(P)$ will also lead to an increase in the average price P^d. Equation (6b) is illustrated in figure 1, and $D(P^h)$ and $D(P^b)$ based on the form of equation 6b are also shown for comparison. The curves $S(P^h)$ and $S(P^b)$ in Figure 1 represent potential supply at fixed quality with $S(P^h)$ above $S(P^b)$ to represent higher production costs.

B. Equilibrium

In the conventional perfectly competitive sense, there would be one market equilibrium for Th (and Tm) at the price A, and another equilibrium for Tb at a lower price G in Figure 1. But this conventional solution is not feasible in the absence of full and costless information. Since (a) consumers cannot differentiate Tb from Th before purchase, and (b) low quality producers stand to gain from misrepresenting quality, we have heterogeneous supply S(P) for Td comprising low quality and high quality goods as shown by FGTD in figure 1b.

$$(7a)\quad S(P) = S(P^h) + S(P^b) \qquad P \geqslant P^h$$

$$(7b)\quad S(P) = S(P^b) \qquad P^b \leqslant P < P^h$$

If K $(0 \leqslant K < 1)$ is the ratio $S(P^h)/S(P)$ then average quality $q^d(P)$ is:

$$(8a)\quad q^d(P) = (K\ q^h + (1-K)\ q^b) \qquad P \geqslant P^h$$

$$(8b)\quad q^d(P) = q^b \qquad P^b \leqslant P < P^h$$

Differentiating $K = S(P^h)/S(P)$ totally and substituting from (7a):

$$(8c)\quad dK/dP = (S_{Ph} \cdot S(P^b) - S_{Pb} \cdot S(P^h))/(S(P))^2$$

Since q^h and q^b are fixed, average quality increases with K. Also since Th is more expensive to produce, then at the same prices $(P > 0)$ for Th and Tb, $S(P^h)$ is below $S(P^b)$. With the slopes $S_{Ph} > 0$, $S_{Pb} > 0$, average quality will vary directly with price if $S_{Ph} \geqslant S_{Pb}$ so that $dK/dP > 0$.

The initial equilibrium resulting from quality uncertainty is shown by the intersection of the heterogeneous supply curve FGTD and market demand $D(P^d)$ at E and price M. The price M will not be sustained in the long run because at E, the quality of Th exceeds the average quality of Td, and the Th producer would want a higher price. But a higher price for Td would turn consumers towards Tm. Without a higher price than $\bar{M}$, the production of

Short-run equilibrium for Td under quality uncertainty occurs at $P^2 = MC^h = MC^b$ in Figure 2 where the Th firm loses $(P^v - P^2)$ and the Tb firm makes a windfall $(P^2 - P^c)$. Since $q^h = q^m$, the high quality producer's expected price is P^m $(=P^4)$. Without the expectation of a premium price, there is no incentive to produce the more costly Th. But this expectation will not be realized unless the consumers can identify the quality of Th before purchase[3]. Supposing consumer learning about quality takes one year after which the Th firm earns the premium price P^4, then if r is the interest rate, and C(Th) is the total cost, the present value of net expected earnings from high quality production is:

$$(9)\quad L_h = (P^d \cdot \text{Th} - C(\text{Th})) + (P^m \cdot \text{Th} - C(\text{Th}))/r$$

In (9) the first term on the right hand side is the initial loss, and the last term is the discounted valued of the premium earnings following consumer knowledge about the quality of Th. similarly for the Th producer:

$$(10)\quad L_b = (P^d \cdot \text{Tb} - C(\text{Tb})) + (P^b \cdot \text{Tb} - C(\text{Tb}))/r$$

In the case of equation (10), where low quality attracts no premium, the last term on the right hand side is zero once consumers are able to distinguish between Th and Tb, leading to the equilibrium price P^3.

Defining $L = L_h - L_b$, the viability of investment in high quality production depends on $L > 0$. In turn, $L > 0$ depends on $L_h > 0$, and $L_h > L_b$ where $L_b > 0$ from the initial windfall $(P^2 - P^c)$. From (9) $L_h > 0$ requires a premium price (e.g. P^4) higher than the average cost of Th[4]. Such a premium price would persist in the long-run for firms which (a) produce high quality goods, and (b) are able to inform consumers to identify the quality (Shapiro).

Also L and L_h depend on the length of the consumer learning period and the interest rate r. Consumer learning about the quali-

[3] If consumer learning is ruled out than Th will not be produced (Akerlof).

[4] If $P^m = AC^h$, Th (and Tm for that matter) will not be produced, since consumers do not attach a premium to quality (Shapiro). Government intervention to sustain the production of Th in this case will have to be permanent.

would be (P^1-P^2). The subsidy and certification costs constitute public investment in information about quality. From (9) since the firm is not bearing the initial losses, then a premium price is not necessary for sustaining the production of Th when the subsidy is eventually phased out.

Government certification has two major problems. First the public institution must have credibility. It must certify high quality for consumers to find the information useful. Secondly to encourage high quality production, only the high quality firms should be certified and subsidized. This requires a lot of information, honesty, technical expertise, and administrative functions beyond the capacity of most government institutions.

The analysis confirms the central importance of interest rates and capital markets in promoting industrial growth. Imperfect capital markets added to political instability tend to limit investment:

> because of the social and economic instability, the lack of knowledge and other imperfections that combine to make relatively high risks and uncertainties,.... the rates of discount on the present value of future incomes are such that economic horizons are shorter (Adekunle).

Though credit and interest rate policies may be used to encourage longer term horizon in economic decision making, such policies have to be considered in a broad macroeconomic framework involving issues of inflation, financial repression and the investment atmosphere.[5]

Other studies have argued for protection especially for infant industries, if capital markets are imperfect and there are prospects for producer "Learning by Doing" (Arrow), or if consumers are uncertain about the quality of imports (Bond), or for political reasons. The analysis in the previous section, however, suggests that given consumer uncertainty about the quality of locally produced goods, protection is not effective for promoting the production of high quality goods. With the fundamental information

[5] On the issue of financial repression and capital markets, see Cole; McKinnon; Gurley and Shaw; Leff; Levy, Jr.; Adekunle; Vogel and Buser.

List of Symbols

a	= Symbol of valuation of quality
AC^b	= Average cost of low quality goods
AC^h	= Average cost of high quality goods
C^m	= Certification cost of high quality goods
$D(P^b)$	= Demand for low quality goods
$D(P^d)$	= Demand for locally produced goods
$D(P^h)$	= Demand for high quality goods
EV	= Expected net benefit operator
K	= Proportion of high quality goods
L	= $L_h - L_b$
L_b	= Discounted profits from low quality goods
L_h	= Discounted profits from high quality goods
MC^b	= Marginal cost of low quality goods
MC^h	= Marginal cost for high quality goods
P^b	= Price of low quality goods
P^c	= Price value
P^d	= Average price for locally produced goods
P^h	= Price of high quality goods
P^m	= Price of imported good
P^v	= Price value
P^1	= Value for P^h
P^2	= Value for P^d
P^3	= Value for P^b
P^4	= Value for P^m
q	= Quality index
q^b	= Low quality indicator for local goods
$q^d(P)$	= Average quality indicator for local goods
q^h	= High quality indicator for local goods
q^m	= Quality of imported goods
R	= Consumer taste valuation variable
S(P)	= Supply of locally made goods
$S(P^b)$	= Supply of low quality locally made goods
$S(P^h)$	= Supply of high quality local goods
Tb	= Low quality local goods
Td	= Locally made goods
Th	= High quality local goods
Tm	= Imported goods
W	= Maximum consumer valuation for quality

Lange, O., *Political Economy,* 1, Pergamon Press, 1963, 157-169.

Leff, N.H., "Capital Markets in the Less Developed Countries: The Group Principles," McKinnon, R.I., ed., *Money and Finance in Economic Growth and Development,* Marc Dekker Inc., 1976.

Leland, H., "Quality Choice and Competition," *American Economic Review,* 67, 1977, 127-136.

_____, "Quacks, Lemons and Licensing: A Theory of Minimum Quality Standards," *Journal of Political Economy,* 87, Dec. 1979, 1328-1346.

Levy, Jr. and J. Marion, "Some Social Obstacles to Capital Formation in 'Under-developed Areas,' " *Capital Formation and Economic Growth,* National Bureau of Economic Research, Princeton University Press, 1955, 397-440.

Lucas, R.E.B., *Lecture Notes in International Trade: Infant Industry Protection,* Economics Department, Boston University, 1980.

Mannoni, D.O., *Prospero and Caliban: The Psychology of Colonization,* Praeger, New York, 1964, 40.

Manove, M., Lecture Notes in Advanced Microeconomics, Economics Department, Boston University, 1980.

McKinnon, R.I., *Money and Capital in Economics Development,* The Brookings Institution, 1973, 5-41.

Myrdal, G., *Economic Theory and Underdeveloped Regions,* Harper, New York, 1957, 100.

Robinson, J., *Aspects of Development and Underdevelopment,* Cambridge University Press, 1979, 113-115.

Schmitz, H., "Industrialization Strategies in Less Developed Countries: Some Lessons of Historical Experience," *Journal of Development Studies,* 21, Oct. 1984, 1-21.

Shapiro, C., "Premiums for High Quality Products as Returns to Reputations," *Quarterly Journal of Economics,* 98, Nov. 1983, 661-679.

Smithies, A., "Rising Expectations and Economic Development," *Economic Journal,* 81, June 1961, 255-272.

Vogel, C.R. and S.A. Buser, "Inflation, Financial Repression and Capital Formation in Latin America," McKinnon, R.I., ed., *Money and Finance in Economic Growth and Development,* Marc Dekker Inc., 1976.

Wilson, C., "The Nature of Equilibrium in Markets with Adverse Selection," *Bell Journal of Economics,* 11, Spring 1980, 108-130.

Ysen-Boras, E., "The Colonial Personality: Franz Fanon's Concept of the Psychology of People Living under Socio-Political Conditions of Colonialism," Ph.D. Dissertation, Wright Institute, University of California, Berkeley, 1985.