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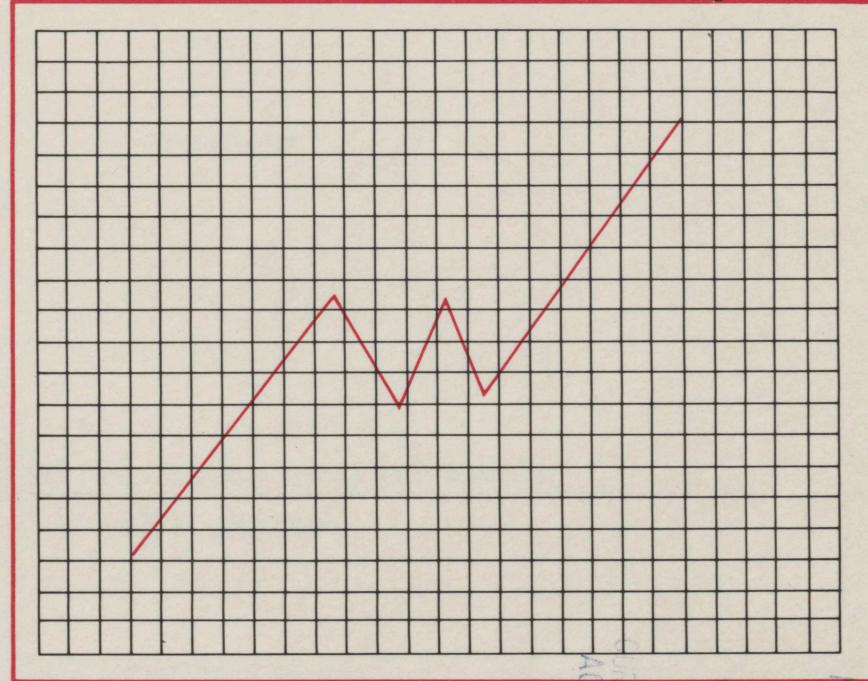
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# THE COST-COMPETITIVENESS OF MAJOR EXPORTING COUNTRIES OF MAIZE, WHEAT AND SOYBEANS II: LANDED COSTS AND EFFECTS OF EXCHANGE RATES

by G.F. ORTMANN and N. RASK\*

## ABSTRACT

Landed costs of a commodity include production costs and domestic marketing costs (f.o.b. costs) and international freight charges. Production costs are the main component of landed costs and are a major reason for cost advantages (or disadvantages) among exporting countries.

F.o.b. costs at real exchange rates averaged over seven years (1980-86) were compared with f.o.b. costs at mid-1986 exchange rates. Results show that the ranking of most countries did not change markedly, except in the case of wheat.

## INTRODUCTION

A country's competitiveness or ability to achieve a market share in world markets is a pertinent issue in international trade. Governments have instituted various policy measures to enhance their country's competitive position in world trade, for example, by subsidising exports.

The landed costs of maize, wheat and soybeans of major exporting countries at two destinations, namely Rotterdam and Japan, are investigated in this article. Landed costs include free on board (f.o.b.) costs (i.e. production costs plus domestic marketing costs) and international freight charges. This study recognises that a country's f.o.b. costs for a commodity are influenced, sometimes substantially, by that country's agricultural and non-agricultural policies.

This study is an extension of the article by Ortmann and Rask (1988) which dealt with the cost-competitiveness, in terms of f.o.b. costs, of four middle-income countries (Argentina, Brazil, South Africa and Thailand) and five high-income countries (the United States (U.S.), Canada, Australia, the United Kingdom (U.K.) and France) in respect of maize, wheat and soybeans. Each country is a major producer and exporter of at least one of the three commodities studied. The effects of varying exchange rates on the rankings of countries in terms of f.o.b. costs are also considered.

## RESEARCH PROCEDURE

Three types of costs are involved in getting agricultural commodities to final external markets, namely farm production costs, domestic marketing costs (from farm gate onto a ship) and international freight or shipping costs (from exporting port, f.o.b., to importing port). Farm production and marketing costs (termed f.o.b. costs) of maize, wheat and soybeans for major exporting countries were presented by Ortmann and Rask (1988) in this Journal.

International freight charges form an important component of the landed cost of commodities in world markets. Ocean freight rates fluctuate widely and, as McLennan (1987: 41) has pointed out, export competitiveness is affected not only by the level of rates but also by ability to manage freight rate volatility.

Because of the numerous possible export destinations, and to facilitate comparisons among countries, two major export destinations were considered, namely Rotterdam and Japan. Although Europe is an important wheat exporter, Rotterdam was taken as a destination since the distance, and hence freight charges, from this region to the Black Sea (U.S.S.R.) would be roughly the same for all exporters.

Freight charges for most countries were obtained from data published by the Food and Agriculture Organisation of the United Nations (1985: 23). Estimates were made for countries for which data were not available, after consulting with experts. Freight rates are depressed at present, and since excess shipping capacity is not expected to decrease until 1990 (McLennan, 1987: 42), the latest data available (for 1984/85) were used.

## LANDED COSTS

Total landed costs of maize, wheat and soybeans at Rotterdam and Japan for various exporting countries are summarised in Table 1. Mid-1986 exchange rates were used (see Ortmann and Rask, 1988).

Of the countries considered, Argentina had the lowest landed cost for maize at Rotterdam (\$120 per ton), and Thailand had the lowest landed cost at Japan (\$113 per ton). The major reason for Argentina's and Thailand's cost advantage is low production costs and correspondingly low f.o.b. costs (Ortmann and Rask, 1988). It is noteworthy that two

\*University of Natal and Ohio State University, respectively. G.F. Ortmann acknowledges financial assistance from the Human Sciences Research Council (HSRC) and the Ohio Agricultural Research and Development Centre (OARDC) at Ohio State University. Opinions expressed are those of the authors and do not necessarily reflect those of the HSRC or the OARDC.

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TABLE 1 - Total landed costs of maize, wheat and soybeans at Rotterdam and Japan for various exporting countries, U.S. dollars per metric ton (mid-1986 price level and exchange rate)\*

Particulars	F.o.b. cost	Freight rates to		Landed costs at	
		Rotter- dam	Japan	Rotter- dam	Japan
		\$U.S./t			
<b>Maize</b>					
Argentina	101,71	18,50	32,39	120,21	134,10
Brazil	151,10	16,50	34,20	167,60	185,30
South Africa	126,33	19,40	30,80	145,73	157,13
Thailand	101,26	20,00**	12,00**	121,26	113,26
United States	121,84	12,62	26,00	134,46	147,84
France	192,86	2,00**	29,90	194,86	222,76
<b>Wheat</b>					
Argentina	96,55	18,50	32,39	115,05	128,94
South Africa	146,97	19,40	30,80	166,37	177,77
United States	163,41	12,62	26,00	176,03	189,41
Canada	155,21	10,71	19,35	165,92	174,56
Australia	129,32	25,33	19,08	154,65	148,40
United Kingdom	141,26	4,00**	31,00	145,26	172,26
France	163,81	2,00**	29,90	165,81	193,71
<b>Soybeans</b>					
Argentina	162,69	18,50	32,39	181,19	195,08
Brazil	199,17	16,50	34,20	215,67	233,37
United States	204,79	12,62	26,00	217,41	230,79

\*Land rents not included

\*\*Estimates

Sources: 1) Ortmann and Rask (1988)

2) Food and Agriculture Organization of the United Nations (1985:23)

middle-income countries are able to supply maize at the lowest cost.

The U.S. had the third lowest landed cost for maize at both destinations. South Africa's landed costs of \$146 at Rotterdam and \$157 at Japan are lower than the figures for Brazil and France. South Africa is a relatively small exporter of maize and it may have a cost advantage in selling maize to Southern African countries owing to its close proximity to them.

France is the most important maize producer in the European Economic Community (E.E.C.) and its exports averaged 4.3 million tons per annum over the period 1982 to 1984 (Ortmann and Rask, 1988). France's relatively high landed costs, even at Rotterdam, are due to high production costs per ton (Stanton, 1986: 70-73). Its exports are probably limited to the protected, deficit E.E.C. market.

Brazil has high landed costs at both Rotterdam and Japan. Although Brazil is only a small and occasional exporter of maize, it is the world's third largest maize producer and a rapidly growing maize consumer. Its future as an exporter will depend on major cost reductions through yield-increasing technology. If this does not occur then Brazil will become a major maize market.

With regard to wheat, Argentina had the lowest

landed costs at both Rotterdam and Japan, owing mainly to low production costs (Ortmann and Rask, 1988). However, Argentina's share of the world wheat market over the period 1982 to 1984 was only 6.4% (*ibid.*).

Australia is also a low-cost producer of wheat and has the second lowest landed cost at Japan; the U.K. has a freight cost advantage to Rotterdam. France is a high-cost producer and landed costs, even at Rotterdam, are high as a result. Canada shows lower landed costs than the U.S. at both destinations because of lower f.o.b. and freight costs. South Africa's landed costs of wheat are similar to Canada's. Lower f.o.b. costs are offset by higher freight charges. Although the U.S. dominated the world wheat market for a long time (a world market share of 38% over the period 1982 to 1984) it now appears to have a cost disadvantage in the production and exporting of wheat.

As far as soybeans are concerned, Argentina has a cost advantage in soybean production and exports relative to Brazil and the U.S. Although the U.S. has lower freight costs to both Rotterdam and Japan, these are more than offset by lower f.o.b. costs in Argentina. The landed costs of soybeans at both destinations are similar for Brazil and the United States. Argentina and Brazil have relatively high marketing costs owing to poor infrastructure.

Although the U.S. has been dominating the world soybean market, Brazil, and more recently Argentina, are increasing in importance. Brazil in particular has considerable potential for increasing its soybean production still further by employing new technology and because of its substantial land resources. Furthermore, since Brazil has a cost disadvantage in maize and wheat production (Ortmann *et al.*, 1987: 18-21), it will probably continue to be a formidable competitor in soybean markets.

#### EFFECTS OF VARYING EXCHANGE RATES

An attempt has been made to determine the impact of varying exchange rates on the rankings of exporting countries in terms of f.o.b. costs. In Table 2, mid-1986 and seven-year mean real exchange rates are presented. These mean exchange rates incorporate periods of a low-valued dollar (1980) and a high-valued one (1985), and may reflect long-term relationships between the U.S. dollar and other currencies.

The impact of the mean exchange rates on the rankings of countries in terms of f.o.b. costs relative to the rankings during mid-1986 are given in Table 3.

From Table 3 it appears that the ranking of most countries has not changed markedly under the mean exchange rates when compared with the mid-1986 position. For maize, Argentina was ranked first, Thailand second and the U.S. third. For soybeans, the U.S. improved its ranking to second at the expense of Brazil.

For wheat, changes in the relative positions are more marked. The U.S. maintained its sixth ranking

TABLE 2 - Mid-1986 exchange rates and mean real exchange rates for 1980-86\* (Mid-1986 CPI = 100), currency per U.S. dollar

Country	Currency	Exchange rates	
		Mid-1986	1980-86
		Currency/U.S. dollar	
Argentina	australe	0,8889	0,8477
Australia	dollar	1,5132	1,2531
Brazil	cruzado	13,8400	11,9033
Canada	dollar	1,3852	1,3292
France	franc	7,0280	7,4503
South Africa	rand	2,5381	1,8380
Thailand	baht	26,2825	23,0928
United Kingdom	pound	0,6631	0,6464

\*Real exchange rates per U.S. dollar were calculated as the nominal exchange rate multiplied by the ratio of the U.S. CPI to the relevant country's CPI (mid-1986 = 100)

Source: International Monetary Fund (1986)

TABLE 3 - Production and marketing (f.o.b.) costs of maize, wheat and soybeans in various countries, mid-1986 and 1980-86 mean real exchange rates (mid-1986 CPI = 100)\*

Country	mid-1986		1980-86	
	\$U.S./t	Ranking	\$U.S./t	Ranking
<b>Maize</b>				
Argentina	102	2	107	1
Brazil	151	5	176	5
South Africa	126	4	174	4
Thailand	101	1	115	2
United States	122	3	122	3
France	193	6	182	6
<b>Wheat</b>				
Argentina	97	1	101	1
South Africa	147	4	203	7
United States	163	6	163	6
Canada	155	5	162	5
Australia	129	2	156	4
United Kingdom	141	3	145	2
France	164	7	155	3
<b>Soybeans</b>				
Argentina	163	1	171	1
Brazil	199	2	232	3
United States	205	3	205	2

\*Land rents not included

and Canada its fifth position. The U.K. improved from third to second and France from seventh to third, its f.o.b. cost being similar to Australia's, which lost two positions. South Africa's ranking shifted from fourth to seventh.

Overall, the U.S. appears to be most cost-competitive in respect of maize and may compete with Brazil in respect of soybeans. However, since Brazil has relatively high f.o.b. costs for maize and wheat, it may have a comparative advantage in soybean production.

Research by Haley and Krissoff (1987) indicates that an exchange rate depreciation (appreciation) is not followed by an expansion (contraction) in wheat export volume until 18 months after the initial exchange rate change. The cumulative effect of a 1% depreciation (appreciation) in the value of the dollar is to expand (contract) U.S. wheat exports by 1.9% to 3.0% (mean of 2.4%).

## CONCLUSION

Total landed costs of maize, wheat and soybeans at ports of destination are a useful measure of the cost-competitiveness of exporting countries. Farm production costs are the main component of landed costs and are a major reason for cost (dis)advantages among exporting countries. Argentina (for maize, wheat and soybeans) and Thailand (for maize) have a landed cost advantage due primarily to low farm production costs.

Although the U.S. still dominates the world maize market it has a cost disadvantage in respect of wheat due mainly to high production costs. It may lose more of its share of the wheat market in future to Argentina, Australia, Canada and some E.E.C. countries. Apart from Argentina, competition in the world wheat market is mainly among developed countries at present.

Although the landed costs of soybeans are similar for the U.S. and Brazil, Brazil may have a comparative advantage in soybean production owing to relatively high maize and wheat production costs. The U.S. may gradually lose its dominant share of the world soybean market, primarily to South American countries, mainly Argentina and Brazil.

South Africa's cost-competitive position is generally not favourable. For maize it ranked fourth of the six major exporting countries considered, and for wheat it ranked last in view of the long-term exchange rate. The exchange rate of the rand vis-à-vis the currencies of major exporting and importing countries is an important factor determining cost-competitiveness. South Africa may have a comparative advantage in exporting to Southern African countries owing to its close proximity to them.

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