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Transport Distance and Australian Coal Marketing

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INTRODUCTION

The landed cost of coal to the international customer is a major parameter which determines market competitiveness. Rail, port and shipping charges represent 30 to 50 per cent of landed costs for Australian mines selling to Asia. This proportion is higher for sales to Europe, yet it is in Europe where Australian producers are aiming for increased market share and where they are most vulnerable (Clifford, 1988).

The objective of this study is to examine Australian export coal competitiveness in terms of transport distance. A study in commodity competitiveness can be highly complex; the approach used examines world coking coal and steam coal production and the transport distances between major exporting regions and importing countries. Reference is made to the importance of land transport costs. Models developed are examined in terms of Australia's exports and an overall conclusion is reached that a reduction in rail freight costs would be an effective measure for improving the competitiveness of Australia's coal industry.

It is understood that transport distance is not the sole determinant in what makes a coal type competitively priced. Factors such as labour, fuel, and direct mining costs vary from region to region and change progressively over time. Some aspects of transport costs such as shipping demurrage and cost reductions achieved with economies of scale will also vary. However actual shipping distance from supplier to market will not vary and so this cost factor has been taken as the fundamental parameter upon which to base this competitiveness study. Coal quality will vary from supplier to supplier, and is viewed as an independent competitiveness parameter not in the scope of this paper.

METHODOLOGY

Given the present world coal marketing position, the price that a supplier can expect to receive is based on prices set at annual negotiations between major suppliers and major market consumers around the world. The bottom line is an agreed delivered price for a particular quality of coal, no matter where that coal may originate from in the world. In this way, the actual distance to the market from a supplier will have little significance on the price as the world coal market is truly global. Of course, in the negotiations, a supplier will have an idea of profit tolerance due to shipping costs related to distance, and this is where that distance becomes a significant factor in the competitiveness of a supplier's coal. The relative location of other competitors becomes highly significant, if they can offer a coal type of similar quality, and quantity.

It is not the purpose of this study to integrate other factors of competitiveness into a complete picture, but rather to look at the factor of shipping distance alone; a factor highly relevant to Australia's geographic position. Export advantage is based on the assumption that the shorter trade route has trading preference and the prefered supplier on this basis sells all its coal ahead of the next preferred supplier. Other factors may then negate or enhance the advantages/disadvantages which come to light. A complete picture cannot be fully understood unless the separate components themselves are initially understood.

As an extension to this topic, the issue of rail freight transport charges can be examined given the following. The first assumption made is that actual rail operating charges for a particular unit distance are comparable from country to country, where coal transporting is concerned. This is born out in a study by Koerner (1990) who makes a comparison between Queensland and the United States internal railing rates, and states that there is a potential 70 per cent tax component in Queensland's coal rail charges. Figure 1 illustrates the effect of this tax. If the tax component was taken out, the figures for NSW and Queensland would be more in line with the other countries represented. Though there is no figure given for Eastern Block, or Third World countries, which have a lower cost increment, South Africa acts as a representative example of a country with lower average labour costs and freight charges in line with other countries. The second assumption is that the impact of reducing the tax component on the rail freight of coal can be seen by equating a reduction in rail freight to a corresponding increase in the internal rail distances of competitors. For example, a 50 per cent decrease in Australian rail freight, gives a similar competitive advantage to Australia as a hypothetical doubling of the internal rail distance of all its competitors.

By the use of shipping distances, it is possible to rank exporters by their distance to respective markets. This ordering will then show which suppliers are most competitive in a particular market or region. The rail plus sea distance in kilometres then becomes one approach to establishing an index of competitiveness; the lower the index, the more competitive the supplier. Doubling the internal rail transport distances of Australia's competitors will have the effect of adjusting the competitive ranking of Australia in its favour, and so can indicate if there is sufficient cause for highlighting the effects of a reduction in this form of taxation.

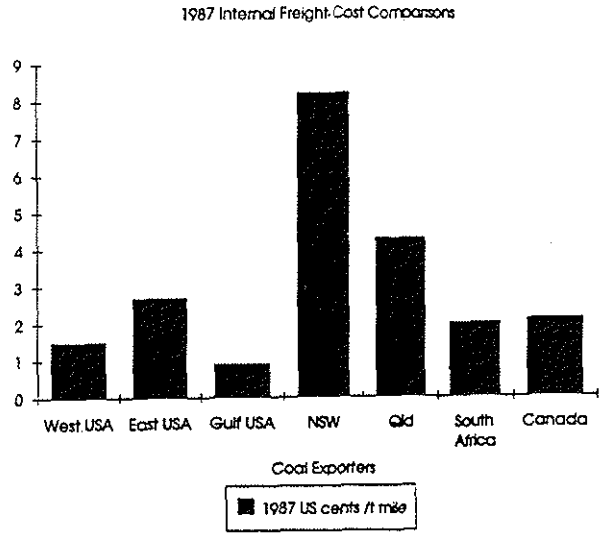

FIG 1

1. Postgraduate student in mining engineering - The University of Queensland.
2. Postgraduate student in mining engineering - The University of Queensland.
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TABLE 1

Major seaborne coal consumer markets.

Region	Country	Representative Port	DWT Limit (tonnes)	Stockpile Capacity (tonnes)	Import Capacity (Mt/a)	Coking Imports 1989 (Mt)	Steam Imports 1989 (Mt)	Coking Imports 1995 (Mt)	Steam Imports 1995 (Mt)
Asian	Hong Kong	Hong Kong	120 000	1 000 000	12.6	-	9.9	-	15.8
	Japan	Fukuyama	300 000	1 000 000	283.9	73.4	31.6	69.5	39.6
	Philippines	Batangas	65 000	2 000 000	4.5	-	1.0	-	3.0
	South Korea	Kwangyang	250 000	1 000 000	63.6	11.7	13.4	15.6	20.9
	Taiwan	Hsinta	130 000	1 000 000	45.6	5.0	12.0	7.1	19.4
	Thailand	Bangkok	100 000	2 000 000	5.6	-	0.4	-	1.2
Indian	India	Tuticorin	30 000	-	7.0	4.3	0.1	8.7	0.3
	Pakistan	Qasim	60 000	450 000	2.8	1.1	-	2.3	-
North & West European	Belgium	Antwerp	150 000	5 000 000	55.5	6.4	6.3	6.0	8.8
	Denmark	Stignaes	180 000	2 000 000	23.3	-	10.7	-	13.2
	Finland	Helsinki	120 000	3 600 000	13.1	0.1	4.5	0.1	5.6
	France	Le Havre	260 000	2 000 000	46.8	7.8	6.3	7.1	7.7
	Germany	Hamburg	150 000	3 000 000	33.9	0.7	5.7	-	8.8
	Nederlands	Rotterdam	360 000	4 000 000	73.5	4.5	9.4	4.2	13.2
	Norway	Brevik	100 000	300 000	2.0	0.1	0.5	0.1	0.6
	Portugal	Sines	75 000	80 000	8.0	0.7	2.9	1.1	3.3
	Sweden	Lulea	200 000	1 000 000	16.9	2.7	1.0	2.3	1.2
	UK	Southampton	350 000	750 000	44.1	7.7	4.4	7.2	9.9
Mediterranean	Egypt	Alexandria	40 000	120 000	1.4	1.1	-	1.1	-
	Greece	Milaki	170 000	70 000	4.9	-	1.2	-	2.4
	Israel	Hadera	65 000	1 100 000	8.6	-	3.7	-	7.4
	Italy	Taranto	300 000	600 000	41.1	7.3	13.1	10.0	19.8
	Spain	Algeciras	200 000	1 000 000	41.6	3.8	6.8	2.7	7.7
	Turkey	Iskenderun	60 000	450 000	21.9	2.6	1.1	2.5	2.2
	Yugoslavia	Rijeka	150 000	300 000	10.8	4.3	-	4.2	-
South America	Brazil	Santos	170 000	1 000 000	25.5	9.9	0.2	15.6	1.1

A third assumption made in this study is that the closer suppliers can have selling preference over those further away purely by their distance advantage, as they are in a better position to be 'price setters' rather than 'price takers'. This is also significant on the market side where a marketer would like to be in a preferential position in times of low supply. This is relevant to Japan in particular, which has a very high demand for seaborne coal imports.

INTERNATIONAL COAL TRADE

The initial step was to identify the major seaborne coal importing and exporting markets. This information was sourced from World Coal Ports (Mannini, 1989), the ACR Coal Marketing Manual 1990 (Anon, 1990b), and Coal Information 1990 (Anon, 1990c). This information appears in Table 1, Table 2 and Table 3.

The Commonwealth of Independant States (CIS) has a port capacity lower than the tonnage exported. The difference is made up by the tonnage moved by overland transport to Western Europe. Table 2 includes average internal freight distances, indicating distance by rail to reach the port. From the source base data already mentioned for this table, weighted averages were made of the various potential rail routes of a particular supplier, in relation to the coal tonnages transported on those routes. Representative coal ports were chosen on the basis of centrality of location, and whether there was shipping distance data for that port, or one in close proximity to it. Coal exported from Venezuela has been combined with Colombia because of the comparatively much lower volume of Venezuelan coal exports, and their proximity to the main Colombian coal fields.

Tables 1 and 3 include projections of imports and exports for 1995, sourced from Coal Information 1990 (Anon, 1990c), Reform of International Coal Protection (Jolly *et al*, 1990), and Platt, (Queensland Coal Board, per comm).

An important step in the study was to determine the shipping distances between the various suppliers and consumers. There is, at times, a choice of routes a supplier could take to reach certain markets, such as via the Cape of Good Hope (Capetown), the Suez Canal, or the Panama Canal. The feasibility of each possible route was examined and an optimum route chosen in each case, on the basis of minimum shipping distance.

It is not the scope of this study to make any comparison between transport costs by different ship sizes, which could then close off certain routes, such as ships greater than 150 000 DWT through Suez, and ships greater than 60 000 DWT through Panama (Lee, 1978). The number of ports which could see major variations in supplier competitive indices by varying ship sizes is limited by the ship size limits of the port. Only 11 of the 27 importers covered in this study can actually handle ships over 150 000 DWT.