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Soaring Oil Prices Will Make The World Rounder

Jeff Rubin and Benjamin Tal

Are higher oil prices about to bring an end to the globalization of the world economy? While the rapid integration of developing countries into an increasingly globalized economy has been attributed almost solely to trade liberalization and the telecom revolution, steadily falling transport costs have been just as important. Falling real transportation costs (in large measure due to plunging real oil prices) as well as falling trade barriers, have spearheaded huge gains in world trade over recent decades (Chart 1).

But the doubling in crude prices over the last year and a half has already raised transport costs to the point where they may soon become a significant barrier to global trade. The $30 per barrel increase in crude prices since late 2003 is equivalent to an average tariff increase of 5 percentage points — more than doubling the current average world tariff rate of 4.5%. At $60 per barrel oil, transport costs outweigh the impact of tariffs for 85% of US trading partners and for the vast majority of commodities (Chart 2). The tariff equivalent impact of $100 per barrel oil would be tantamount to an almost tripling of current tariff rates and a de facto elimination of the entire cumulative tariff reduction of the past 45 years.

Energy Costs Drive Transport Costs

Transport costs depend critically on fuel costs. That's why past oil shocks lead to an immediate and sharp increase in transport costs, which more than doubled between the two OPEC oil shocks. It would appear that similar

Chart 1
Transport Costs and Tariffs Over Last 45 Years

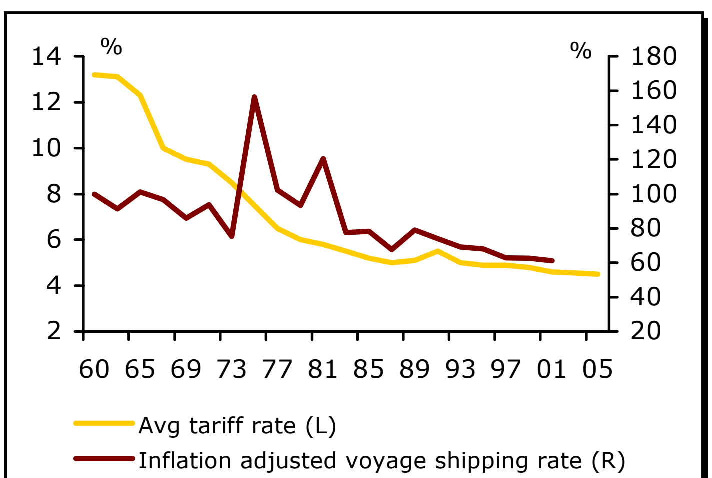


Chart 2
Tariff Equivalent of Transport Costs at $60 Oil vs. US Tariff

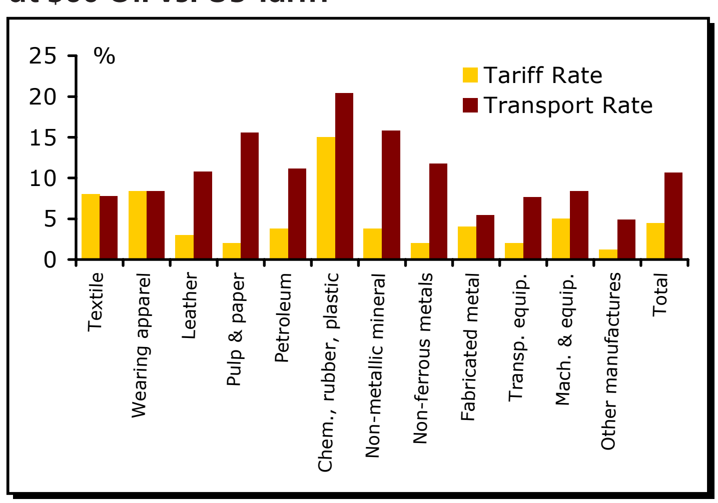


Chart 3
Energy & Transport Costs

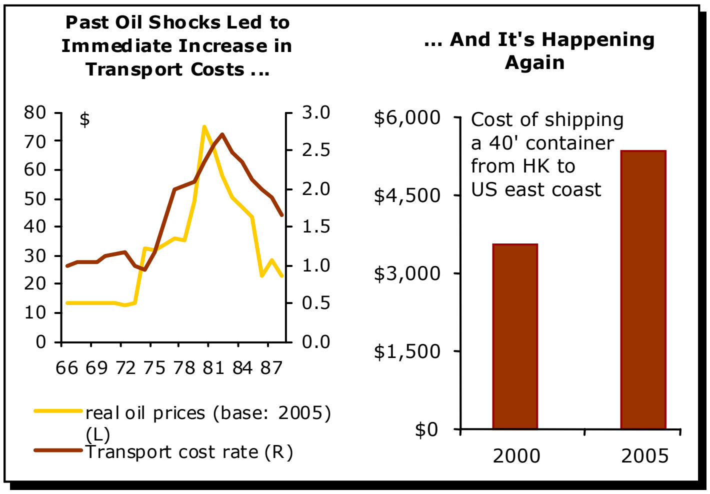
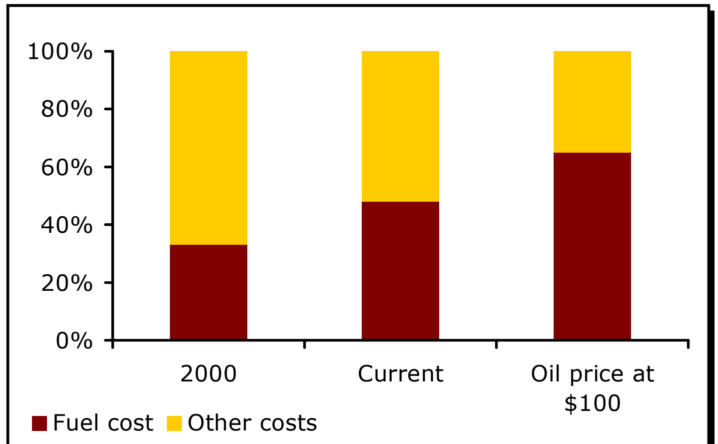


Chart 4
Distribution of Operating Costs of a Typical Container Ship*



** 7 year old diesel ship 200,000 DWT*

adjustments are already under way. On average, a one percent increase in fuel prices leads to a 0.4% increase in total freight rates[1]. Using this rule of thumb, the recent doubling in oil prices from has raised averaged freight rates by almost 40%. Shipping costs from China to the US east coast have already risen by more than 50% (Chart 3).

In the past, soaring freight rates have acted as a material trade drag on global trade. That's because energy costs drive transport costs, and the long-run reduction in the latter has been as powerful a force in support of globalization as has the long-term reduction in trade barriers. A comprehensive World Bank study which examined the link between transport cost and trade in 103 countries found that a doubling in transport cost from its median level can lead to as much as a 50% decline in world trade volumes[2].

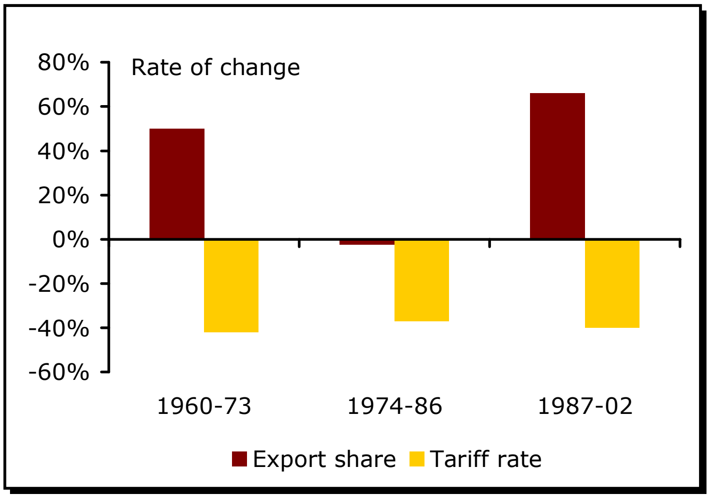
The link between energy costs and transportation prices is both dramatic and pervasive across all major modes of transport. $100 oil prices will not only divert trade but it will also have a profound impact on the transport industry itself. Not all modes of transport are equal when it comes to energy or crude intensity. Air travel is by far the most energy intensive form of transport. It burns four times as much oil to transport a container from China to the US by air as it does by sea. Shipping is by far the most energy efficient form of transport, but even here rising oil prices significantly raise costs. And of course shipping is rarely a stand-alone method of transport. It is usually combined with some form of land transport such as rail or trucks. For example, about 40% of the freight costs of a typical export from China to the US are land costs, since goods must typically be moved to ports in China and from receiving ports in the United States. Considering that the average speed for trucks traveling in Chinese cities is 11 km/hr, higher oil prices may impose a greater cost increase on getting goods to Chinese ports than might be the case for competing suppliers.

Nevertheless even in shipping, the cost increases will be very substantial. A surcharge, called the Bunker Adjustment Factor, is often added on to the basic shipping charge to reflect changes in the price of oil. The recent increase in oil prices over the last three years from $30 to $60 raises the average daily fuel bill for a ship from $9,500 to $19,000 if oil rises to our forecast of $100 per barrel, the daily fuel bill for the average ship will rise to $32,000 (Chart 4).

Transport Costs Drive Trade

Trade liberalization is seen as the big driver of rapidly increasingly global trade, but the largest gains in world trade have occurred during periods of falling or low energy prices, and hence falling or low freight rates. For example, between 1960 to 1973 world exports as a share of world GDP increased by over 50%. Not only was that during a period of large tariff cuts but it was also a period of cheap oil, which in today's prices averaged only $14 per barrel. Similarly, 1986-2002 saw another quantum leap in world trade, spurred not only by a 30% drop in tariffs but by low energy prices where oil averaged only $26 per barrel. In contrast, exports as a share of world GDP came to a complete standstill between the first

Chart 5
World Exports As a Share of GDP



OPEC shock and the aftermath of the second shock despite a 25% reduction in tariffs over the period (Chart 5).

No doubt the 1974 and 1981/82 recessions damped trade during the period, but trade should have rebounded strongly on the back of healthy recoveries from those recessions. In fact, average annual world GDP growth in the 1974-1986 period averaged 3.5%, roughly the same as in the 1986-2002 period when exports grew significantly as a share of the world economy. Trade failed to respond to a pick-up in global growth because transport costs were exploding due to soaring oil prices.

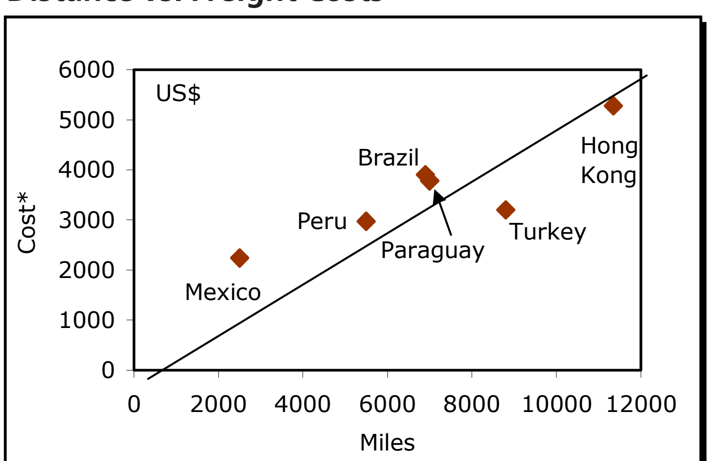
Not only will the rise in energy prices act as a brake on world trade growth, but it should also re-channel trade along regional as opposed to global lines. In a world of $100 per barrel crude prices, distance costs money. The duration of a sea voyage from Hong Kong to New York is three to four weeks. From Mexico, it's less than a week. By truck, a matter of only days. As noted in Chart 6, distance translates directly into costs.

All of a sudden, proximity to major markets becomes far more important in determining comparative advantage. At $30 oil, the cost of shipping a 40-foot container from Hong Kong to New York was about 85% more expensive than the cost of shipping the same container from Mexico City to New York. At $100 oil, transport costs will be 130% more expensive (Chart 7).

Faced with soaring oil prices, importers will look to access goods closer to home and thereby cut transport costs by shortening trip length. That's exactly what happened during the past two OPEC oil shocks. During the low oil price period of 1966-73, the average length of commercial transport rose by 30%. But when faced with exploding oil prices, the average length of commercial transport fell by 30% (Chart 8).

Exactly how much trade is diverted from China to Mexico as a result of soaring transport costs depends ultimately on how important transport costs are in total costs. As a general rule, goods that have a high dollar value to weight ratio have relatively low transport costs, while goods with a low dollar value to weight ratios typically have high transport costs. Focusing on the top 10 goods imported from China and Mexico and calculating the average transport rate for those goods, we can see that the distribution of US imports from China tends to be

Chart 6
Distance vs. Freight Costs



** costs of transferring a 40' container to US East Coast*

Chart 7
Mexico vs. China at Different Oil Prices

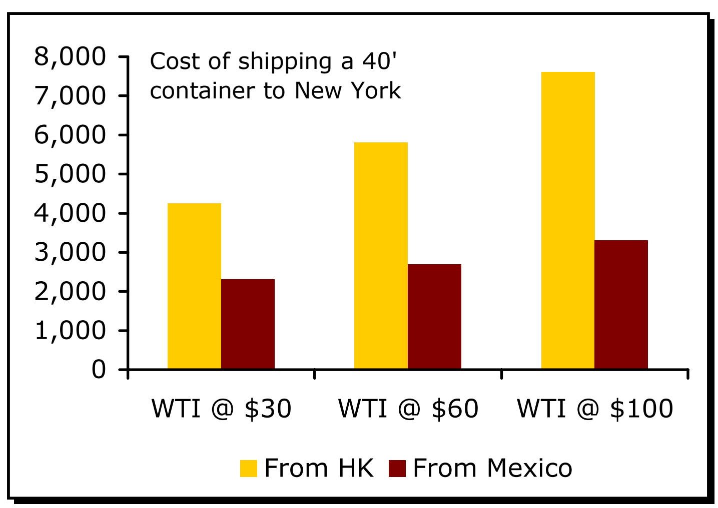
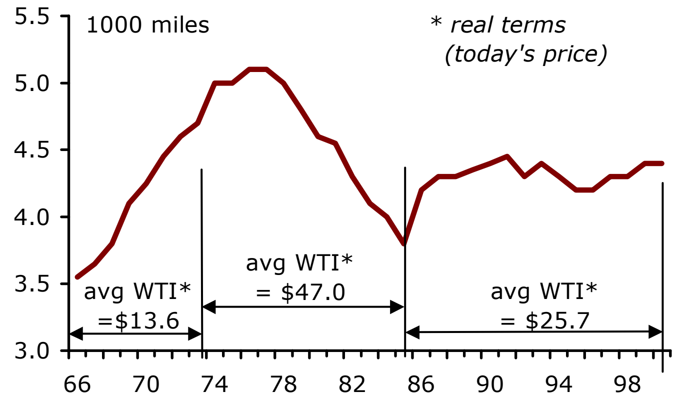


Chart 8

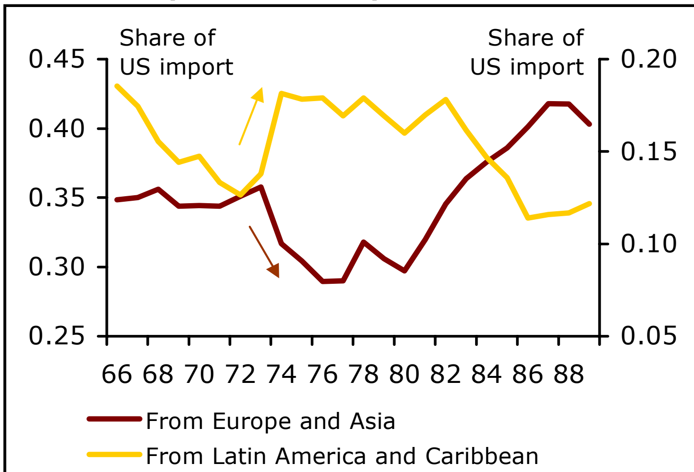
Average Length of Voyage Fluctuates With Energy Prices



Sources: Hammes 2001, CIBCWM

Chart 9

Past Oil Shocks Lead to Redistribution of US Non-petroluem Imports



more transport sensitive than imports from Mexico. China has a number of high freight rate goods among its top ten exports including apparel, furniture, footwear, metal manufactures, textile and industrial machinery. Other than petroleum and apparel, Mexico has none among its top ten exports. The freight-weighted average is almost 30% higher for China's top ten exports than for Mexico's. Whether this re-emerging transportation and freight cost advantage will be sufficient to compensate Mexico for its relatively higher wage rates remains to be seen, but at least in some industries, it could lead to a significant swing in comparative advantage.

A redistribution of US trade from China to Mexico in response to rising oil prices would not be out of line with what occurred back during past OPEC shocks. Between 1973 and 1980, the share of long-distance imports (Asia and Europe) to the US fell from 36% to 30% as the price of oil quadrupled. At the same time, regional trade flows strengthened with the share of imports from Latin America and the Caribbean rising by an exactly offsetting amount (Chart 9).

Notes:

1. *See for example Lundgren, D.G. (1996): "Bulk trade and maritime transport costs: The evolution of global markets" Resources Policy Vol. 22, Nos. 2, pp.5-32*
2. *Limao & Venables: "Infrastructure, Geographical Disadvantage, Transport Costs and Trade" World Bank Economic Review 15 (2001), pp.451-479*