

Should you *swap commodities* with your competitors?

Swapping commodities with other manufacturers instead of shipping internationally can greatly reduce transportation costs and boost profits. Finding the right swap partner will help you avoid the risks that are inherent in these arrangements.

IF YOU'RE UNDER A MANDATE TO MAKE SUBSTANTIAL CUTS IN SUPPLY CHAIN COSTS, you probably have already “picked the low-hanging fruit”—that is, you’ve made the obvious, easy-to-achieve improvements. You probably have optimized delivery to your customers by routing orders through the most efficient network of warehouses. It’s likely that you also are sourcing from highly efficient manufacturing plants around the world. And perhaps you have partnered with ocean carriers and leveraged your shipping volumes to negotiate the best rates in the industry.

In short, you probably have done everything right. Yet your competitor’s supply chain costs may still be significantly lower than yours, putting your business at a serious disadvantage. How can this be? Maybe it’s because your competitor is not making the same kind of shipments you are. In fact, it’s possible that your competitor is not shipping some of the commodities it consumes at all. Instead, it might be swapping them with another company that produces similar or identical products near the point of consumption.

Swapping commodities is not feasible or financially beneficial for every company and industry, but for some it can significantly reduce logistics and transportation costs. The longer the distance you ship and the higher the cost of transportation (both in an absolute sense and relative to the value of the product), the more important it is for you to evaluate the benefits of swapping as a way to reduce supply chain costs and boost profits.

What is swapping?

The practice of swapping commodities and capacity with competitors is not new. Several industries have engaged in sharing and swapping production and capacity for many years.

A real-life example from the chemical industry, where swapping is a common practice, illustrates how this typically works. In the recent past, the Rohm and Haas Company (now part of the Dow Chemical Company) produced all of its acrylic monomer esters at its plant in Deer Park, Texas, USA. The majority of these monomers were consumed internally by its polymer businesses around the world, and only about half were consumed in North America. Atochem (now Arkema) also manufactured these same acrylic esters at its manufacturing sites in France and Italy and supplied them to its polymer plants, including several in North America.

With an import duty on monomers of 6.5 percent in the European Union and 3.7 percent on imports into the United States, and a freight cost of US \$40 to \$60 per metric ton to ship across the Atlantic Ocean, the potential cost savings of a product swap were obvious to both parties. After each company had tested the other’s monomers for use in its polymer operations, the details of a swap agreement were negotiated. This arrangement, under which each company supplied the other’s polymer plants, was in place for a number of years,

[BY ALAN KOSANSKY AND TED SCHAEFER]

until Atochem started its own manufacturing facility in Texas and Rohm and Haas opened a facility in Germany. Rohm and Haas used this same strategy to reduce its cost to supply its plants in Asia by swapping a variety of products with several Japanese producers. Overall cost savings from these agreements reached tens of millions of dollars per year.

Other examples of swapping may be more familiar to you. In the electricity and power industry, for example, producers often distribute electricity to the grid; that power is then delivered to consumers in the most efficient way possible, regardless of which company they buy from. Determining which producer gets paid for what is a separate accounting-reconciliation process.

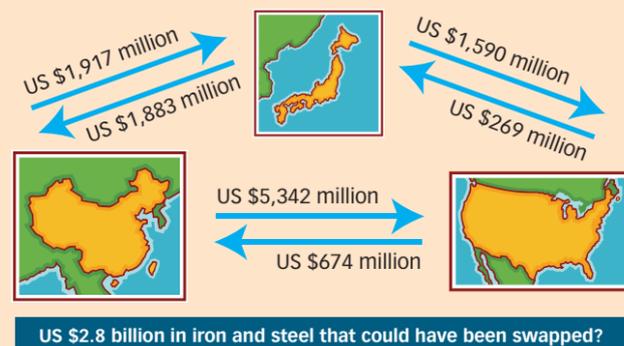
In the oil and gas industry, producers frequently swap gasoline stocks that are positioned near their respective end markets instead of transporting hundreds of thousands of barrels of gasoline through long pipelines. When you purchase gasoline from a particular gas station, it is likely that the base fuel (before additives were added locally) was produced by that station's competitor.

Railroad trackage-rights agreements offer an example of a capacity swap among freight carriers. There is no sense in each railroad laying down its own track at a cost of millions of dollars per mile in areas where the track sees relatively light traffic. Instead, one railroad owns and maintains the track, and others pay a fee to use it. Railroads have been saving their capital dollars in this manner for over 100 years.

Candidate industries for swaps

Outside of chemicals, electricity, oil and gas, and transportation, what other opportunities for swaps might exist today? Based on our research using 2009

[FIGURE 1] TRADE IN BASIC IRON AND STEEL
(Harmonized Tariff Code 73)



[FIGURE 2] TRADE IN PAPER AND PAPERBOARD
(Harmonized Tariff Code 48)



trade statistics from the International Trade Centre (www.intracen.org), a joint agency of the United Nations and the World Trade Organization, we believe that a number of other industries may be candidates for commodity and manufacturing-capacity swaps.

If you have paid attention to international trade news in recent years, then you know that the steel and iron industry's constituents have been arguing about unfair trade practices, including dumping. But set aside those conflicts and accusations, and it becomes apparent that substantial opportunity exists for swapping some iron and steel products. Figure 1 shows the total US \$11.7 billion annual trade among China, Japan, and the United States in basic iron and steel commodities like angle supports, pipes, nails, bolts, and so forth. Given the sophistication of the steel industries in these countries, it's safe to assume that all three are capable of manufacturing any of the products that make up this trade. It is hard to imagine, therefore, that there is any appreciable difference between them. We don't claim to be experts in the international steel industry, but it strikes us that there should be some swap opportunities here.

Similarly, Figure 2 shows nearly US \$1 billion in annual trade between the United States and Japan in paper and paperboard. This includes such products as newsprint, corrugated cardboard boxes, and other basic paper products. Although this trade may include some items (wallpaper, for example) that have significant creative content, there appear to be enough 40-foot ocean containers carrying essentially the same commodity in opposite directions that some swaps would make sense.

We believe that textiles may offer another opportunity for swaps. Figure 3 depicts annual trade flows of roughly US \$1 billion for products such as textile wadding, felt, yarn, and twine. As in the case of paper and paperboard, this category may include one-of-a-kind items that would not be appropriate for swap-

ping, but most have all the hallmarks of basic commodities. Thus there appear to be opportunities to swap materials instead of shipping them.

For the three industries cited above, swapping manufacturing capacity would probably be more feasible than searching for identical products to swap. This type of deal would entail an agreement specifying the amount of manufacturing output to be made available to each swap participant. Manufacturing capacity may be expressed in hours of operation, percentage of annual output, or (for the paper and textile examples) a measurement such as the number of square meters of product.

Benefits on many levels

As we've seen, swapping can make significant inroads into transportation costs. In addition, it can help to reduce your exposure to the kind of price volatility that has plagued shippers over the past year. Anyone who ships ocean containers from Asia to North America knows exactly what we mean. According to data developed by Drewry Shipping

customers to gain leverage in contract negotiations with parcel tanker owners. After gathering the information on potential swaps or purchases, the shipper's logistics group would calculate a total delivered cost (TDC) for each of the company's options, one of which included shipping from the United States to Europe or Asia. Because the total delivered cost for supplying product from the United States was equal to the sum of the manufacturing cost, export terminal costs, ocean freight charges, import terminal costs, import duties, and cost of inventory, the logistics group could calculate a "walk away" price (the maximum price they were willing to pay) to use in the negotiations by comparing the TDC for supplying from the United States to the TDC for the next-best option, and then solving for the ocean freight charges.

The benefits of swapping products and/or manufacturing capacity extend beyond the obvious transportation and logistics cost savings. Swapping can also reduce uncertainty and variability. By avoiding long transportation legs and their associated logistics operations, companies greatly reduce the risk of delivery snags and delays. In fact, minimizing or eliminating transportation almost always allows you to reduce inventory in your system. It also helps you to avoid the difficulties and costs of expediting shipments in order to maintain the level of customer service to which you've committed.

Even if a direct swap with a competitor does not make sense, you may still benefit because preliminary discussions about swapping often help participants identify alternate ways to share and/or acquire capacity. Regional toll manufacturing (in which a specialized producer processes raw materials or semi-finished goods on behalf of another company), contract manufacturing, and third-party purchases for resale to your customers are all ways to source production closer to your customers. Each of these options reduces transportation costs and shortens supply chains. Some might also mitigate your risks more effectively than would a direct swap with a competitor.

Is swapping right for you?

How can you determine whether swapping products, capacity, or both might be right for your company? And what steps can you take to ensure that a swap arrangement will be successful?

One of the realities of swapping is that although there are some opportunities for swapping within a specific region, global businesses that source across regions and operate on multiple continents will be most likely to benefit from production and capacity swaps. For that reason, the following discussion focus-

[FIGURE 3] TRADE IN BASIC TEXTILES
(Harmonized Tariff Code 56)



Consultants and published in *The Journal of Commerce*, from March through July of 2009, the average spot-market rate for shipping a 40-foot container from Hong Kong to Los Angeles—at times less than US \$1,000—made sourcing from Asia very attractive during that period. But then rates began to soar, and by February 2010 they had more than doubled. In situations like this, a company that avoids international shipping by swapping commodities has a distinct advantage.

Swapping also helped one chemical manufacturer negotiate freight rates. The shipper routinely used information it collected during a search for opportunities to swap or purchase material located near its

es on international trade.

The first step in evaluating swap options is to understand the cost impact of your shipping decisions. In addition to the direct transportation costs and variability already discussed, you must fully account for the following costs associated with international shipments:

- *Duties and other import and export costs.* Remember that duties and tariffs can change and are subject to the uncertainties associated with shifting trade relations. Keep in mind that there are many other import and export costs you'll need to take into account, such as documentation, licenses, export taxes, security-inspection delays, and the cost of compliance.

- *Port, terminal, and warehousing costs.* These often-overlooked charges, usually assessed per container or per metric ton, can add up quickly. Be sure to account for the significant differences from country to country.

- *Inventory-related costs.* Many supply chain managers underestimate the impact that schedule variability has on inventory costs. Suppose your shipments arrive on a set weekly or monthly schedule. If some of your containers are delayed at the port of origin, then you risk an inventory shortfall or the expense of expedited freight. Moreover, you may have to deal with delayed containers arriving at the same time as the next shipment. When this happens, you could end up receiving twice as much inventory as your system is designed to handle. In such cases, you may need to lease emergency warehouse space and pay for additional labor to put everything away.

The next step is to determine which manufacturers might be able to deliver the required product to your customers in regions located far from your own manufacturing sites. Who is making the same material in regions you sell into? Are their products very similar or identical to yours? If your customers would substitute your potential swap partners' products for yours for just a small price difference, then you can consider those products to be equivalent and therefore possible swap candidates.

In addition, you should determine whether or not your potential swap partners have the necessary manufacturing capabilities and are willing to do business the same way you do. Can they ramp up or wind down capacity to match your customers' demand patterns? Can they deliver products to your customers with the same level of reliability and service you provide? Will their packaging options and modes of delivery meet your customers' needs?

Swap partners can only fulfill such requirements if they have the necessary production and demand data.

[RULES TO REMEMBER]

In addition to weighing the potential risks of commodity and capacity swaps against the expected savings, it's important to keep a few things front of mind to ensure the swap agreement will serve your business well over the long term.

- **Understand the value of the swap to your business.** This includes knowing when the terms aren't good enough and at what point you should walk away from the proposed deal.

- **Know what the advantages are for your swap partner.** To the degree possible, learn the value of the swap to your partner in terms of transportation cost savings, reduced inventory due to shorter supply chains, and other benefits described in this article. Learn what your partner's risks are and how it plans to mitigate them.

- **Plan ahead.** Consider whether the benefits associated with the swap are likely to change (for better or worse) for you or your partner in the near future. This will help you decide when to re-evaluate and renegotiate the swap. Like all partnerships, swap arrangements need to balance the certainty associated with a firm agreement with the flexibility to change when conditions change.

- **Treat your partner as you would like to be treated.** It's unlikely that you will be able to "win" by getting the better of your partner. Winning means finding a solution that works for both parties. Play fair, or else you will end up hurting your own company.

A critical success factor in the Rohm and Haas/Atochem swap mentioned earlier was the exchange of planning numbers. This allowed each manufacturer to adjust its supply operations to incorporate the amount of monomer that its swap partner would make available on a monthly basis.

Successful swapping also requires partners to give each other priority, even when it may be difficult to do so. The agreements between Rohm and Haas and Atochem benefited both parties because they treated each other fairly and did their best to live up to the supply agreements even when their own manufacturing sites were experiencing problems.

Finally, any product or capacity swap can sustain itself only when both partners benefit from the arrangement. It's important, therefore, to consider not just how the proposed swap will benefit your company but also how you can help your partner.

Consider the potential risks

Changing your business model to include swapping of materials and capacity is not without risk. In fact, it

can be a "double-edged sword," with simultaneous benefits and drawbacks—you have lowered your costs, but your competitor has lowered its costs, too. In addition, although you have simplified your shipping operations, you have complicated your customer service and accounting processes.

As with all business opportunities, it is important to understand the degree of risk, how it might impact you, and how best to mitigate potential risk so you can intelligently assess whether or not to proceed with a swap arrangement. Some questions to consider include:

- Will any of your intellectual property be at risk? Would direct access to your product allow your partner to gain an advantage by reverse-engineering it?

- Could the swap be construed as a violation of antitrust laws? To avoid running afoul of those laws, it is important that both partners continue efforts to gain and maintain market share.

- What are the potential drawbacks of supplying your customers with a competitor's material? Would they consider it to be an about-face after years of hearing that your product is better, or do they understand that they are buying from you not only because of product quality but also because of your pricing and service?

- Will your competitor be able to gather market information that will provide an advantage with your customers that it has not enjoyed in the past?

- When things go wrong, will your swap partner live up to its agreements and appropriately protect your interests?

For example, if there are production outages, will your swap partner fulfill its obligations to you? Or when other, better options materialize, will your business become a low priority?

If you believe that a swap or purchase is risky from a commercial perspective, and the total delivered cost of the swap and/or purchase option is equal to the TDC of an option that does not include the swap and/or purchase, then you may not want to engage in such an agreement.

Why swaps make sense now

Despite all the potential risks, in the right circumstances swapping offers clear benefits. We believe the practice of swapping will continue to grow, thanks to

four developments that will make it more attractive to a wider range of industries and commodities.

First, developing markets are increasingly able to compete on specifications and quality with more established manufacturers. As a result, more companies will be able to find reliable manufacturing alternatives across the globe. This expansion of high-quality manufacturing in developing economies also provides buyers with more options and therefore puts downward pressure on prices—making it critical to cut supply chain costs in order to remain competitive.

Second, manufacturers are increasingly pressured by customers to fulfill orders quickly and be more responsive. Meanwhile, lean manufacturing concepts have driven more supply chains toward just-in-time (JIT) operation. Suppliers must be able to respond quickly, and long transportation times work against them.

Third, consumers and governments are increasingly pressuring companies to reduce their carbon footprint. The United Kingdom's Carbon Trust and other environmental organizations have identified goods transportation as a major contributor of greenhouse gases. Eliminating some long-distance international shipments is a sure way to reduce a company's environmental impact.

And finally, supply chain professionals have made huge strides toward supply chain excellence across many industries and geographies. They have extended supply chain improvements even further through better, smarter relationships among upstream and downstream commercial entities. The next step in the drive toward excellence is to develop better, smarter relationships across extended supply chains—exactly the kind of relationships that can form the basis for swaps.

Ultimately, however, the strongest arguments in favor of swapping commodities and manufacturing will be made on the basis of cost. After all, the lowest-cost shipment is the one you never make. △



DR. ALAN KOSANSKY (AKOSANSKY@PROFITPT.COM) IS PRESIDENT AND TED SCHAEFER (TSCHAEFER@PROFITPT.COM) IS SUPPLY CHAIN PRACTICE LEADER FOR THE CONSULTING FIRM PROFIT POINT.