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The Shipping Industry Deserves A New Container Design

The logistical externalities that empty containers cause are a key part of improving global supply chains. Trade imbalances between both intercontinental and local ports lead to large numbers of empty containers taking up valuable time and resources in the course of moving goods.

These empties impose monetary and temporal costs on shipping carriers, large companies such as Maersk or Hapag-Lloyd, which are then passed through to the shippers themselves and then again to consumers. Any solution that significantly alleviates the empties problem will be a vital step in pushing the efficiency frontier of global logistics.

Despite past failures of new container designs to alleviate the empties problem, there is no question that shipping carriers would derive enormous benefits from a successful solution. The costs of transporting, loading, and storing empty containers in ports worldwide provide no benefit to carriers or their clients, in addition to worsening port congestion and contributing to the persistent irritant of pollution associated with the shipping industry.

INTERNATIONAL TRADE FLOWS

Imbalances in global trade caused by wide-ranging macroeconomic conditions are the underlying root of not only the empty containers problem but the global supply chain crisis currently playing out. The explosion of international trade and growth, as well as economic development paths unique to each country, has created a fundamentally unbalanced international trade economy. These are long standing trends, and are unlikely to change in the near term.

Moreover, the container shipping industry reflects the same developments. East Asia (especially China) is driving huge volumes of exports, particularly to North America and the United States, while receiving a much smaller volume of goods in return. In short, far more good-laden containers are leaving some countries than are returning, driving a global logistics handicap related to containers that are unavoidably empty during large portions of the shipping routes.

Empty containers are the inevitable consequence of a simple imbalance of container movements both between continents and between countries. Therefore, any solution to the empties problem must come

from within the broader trade networks within which the issue exists. Given the extreme unlikelihood that empties cease being a logistical problem due to macroeconomic shifts, carriers and ports must seek to address the problem under the current status quo of international trade.

EMPTIES IN THE SUPPLY CHAIN

The costs associated with empty containers in the above operations are multiform. First, ports charge for every "lift" and "move" they perform on any container. While the fees for lifting and moving a full container is offset by the value of the goods within it, the costs of lifting and moving empty containers provides no commensurate benefit. Shipping carriers lose money on every lift and move of an empty container, and with containers often undergoing multiple lifts and moves during a single stay in port, the cost is recurring.

Second, there is the cost of storing empty containers either in port or within inland depots. While this is difficult to quantify due to the difference between shipping carriers' individual arrangements with port or storage entities, the financial and logistical problem caused by the storage of empty containers exists across firms.

Finally, there is the opportunity cost of moving empty containers. If a shipping carrier does not receive an order with which to fill an empty container before moving it to a new destination, then it must ship the empty container to the place where it can be of the most use. By taking up ship space that could be used for paid freight, empty containers eat away at carrier revenues.

CONSEQUENCES OF EMPTIES

The current port congestion suffered by the global supply chain was years in the making. Already in 2015, the Federal Maritime Commission in the United States identified congestion in American ports as a "serious risk factor to the relatively robust growth of the American economy and to its competitive position in the world economy." As the report states, "In light of the recent congestion problems at several key U.S. port gateways, it is a daunting prospect that at five to seven percent annual rates of growth twice as much port capacity may be needed in just 10 to 15 years to accommodate anticipated growth."

Given that so many containers at the United States' biggest ports are empty, a great deal of storage capacity is allocated to these assets. A solution that cuts down the number of empties sitting in port would be a far more cost effective solution to congestion than financially exhaustive port expansions.

Finally, there is the issue of pollution. The shipping industry produces a variety of emissions, both greenhouse and particulate. While many of these emissions occur at sea, they present serious health and quality of life problems when ships dock in port. According to the OECD, they are responsible for "almost EUR 12 billion per year in the 50 largest ports in the OECD for NOx, SOx and PM emissions." These, in turn, lead to an astonishing 60,000 worldwide deaths per year. Any operational improvements that increase throughput and decrease energy expenditure within the port would have a measurable impact on environmental and human health. More efficient processing of empties would be a key step in this process.

WHAT IS TO BE DONE?

Development of a new container design that folds from side to side, allowing for greater structural and mechanical integrity due to the stability of the vertical support, could be the key to creating a structure that can withstand the stressful conditions to which every container is subjected. The global shipping industry has been a foundation of prosperity, growth, and innovation for the past half-century. The intermodal container was a key step in this transformative process. In some ways a victim of its own success, the ubiquity of the container has caused problems in its own right. To that end, adding a

cutting-edge foldable design to the backbone of global trade is a step well in line with the transformative change the intermodal container has brought to the world.