

The Panama Canal expansion: business as usual or game-changer?

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Panama's centennial: a new beginning

In 2014 the Panama Canal will celebrate its centennial, an event that will not just simply be factual, but will also correspond to a new phase in its operations, if everything goes according to plan.

The estimated US\$5.25 billion expansion project will add a new set of locks and ancillary projects (dredging and widening) able to handle containerhips in the 12,000-15,000 TEU range, depending on ship design and load configuration. This has triggered a wide range of speculations, from a 'game-changing' event fundamentally impacting global freight distribution, to another range of assessments where the expansion would have limited or no perceptible impacts. This divergence in opinion underlines that global freight distribution, the strategy of maritime shipping companies and terminal operators and supply chain management have become so complex and interrelated that it is unclear for many actors how the expansion will pan itself out. While what is known is fairly straightforward, such as the operational characteristics of the expanded canal, it is by far supplemented by what remains uncertain, namely trade flows, shipping network configurations and the growth of the amount of transshipment in the region.

The problem in assessing the potential impacts of such a capacity expansion project is that in reality the consequences are multidimensional and prone with feedback effects, some of which may even be unintended consequences. There are thus many unknowns in this equation, namely how the multiple actors will react and to what extent the variety of converging and diverging strategies will lead to shipping service reconfigurations. For instance, how the strategic Pacific Asia – North American trade segment is going to be serviced? How much cargo is divertible from the West Coast to the East Coast through the all-water route? To what extent North and South American importers and exporters are going to be impacted by the availability, the cost and the reliability of transport services in a post-expansion era?

It can be inferred that the expansion of the Panama Canal is going to be a game-changer, but the new rules of the game are not clear. This article summarizes a study funded by The Van Horne Institute of the University of Calgary. It is an attempt to shed some light on key elements that will have an impact on the outcomes of the expansion on global shipping networks and trade flows. It focuses on macroeconomic factors, particularly the expected shifts in the structure of production; operational factors that the expansion may provide for the maritime shipping industry, namely economies of scale and slow steaming; and competitive factors related to how other transport chains may anticipate and react to the changes brought by the expansion, particularly the cost structure.

The canal expansion and global economic changes

The expansion project takes place in an economic environment prone to uncertainties since the financial crisis of 2008–2010 future trade growth prospects are being reassessed. One major uncertainty revolves around demand saturation for the American

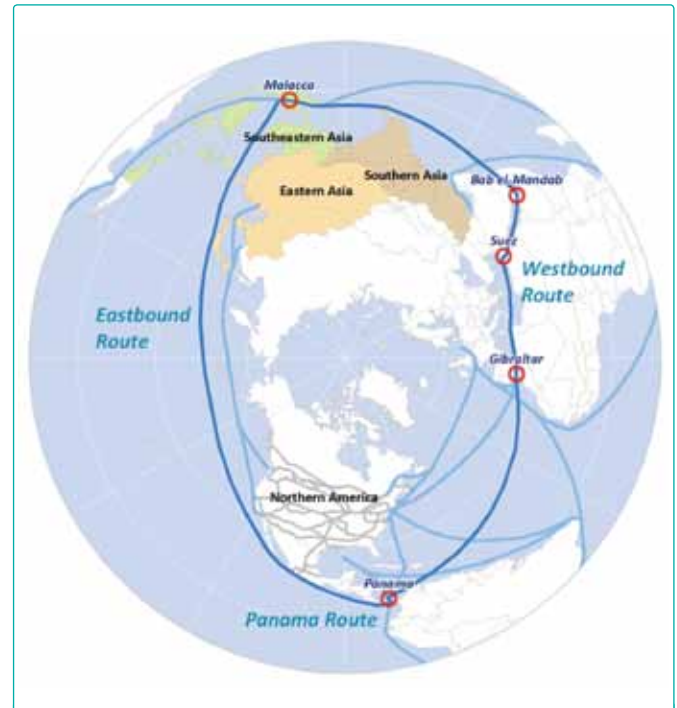


Figure 1. Main export-oriented regions and shipping routes servicing North America.

economy, which has been an important driver for the traffic transiting the canal over the last century. For instance, it has become clear ex-post that the American housing bubble of 2001–2007 was associated with a staggering level of debt-based consumption; once the bubble collapsed, so did its associated artificial level of consumption. The US today is facing a major government debt crisis that will affect future public spending and might trigger a downward pressure on US consumption levels. Economic opportunities in North America, particularly on the short- and medium- terms, appear to be more limited and would thus imply lower growth levels they were previously anticipated in port development plans, which prior to 2008 tended to be very optimistic. This is compounded by long-term demographic trends such as aging, where a growing share of the population will be involved in wealth consumption (retirement) as opposed to wealth creation. This would involve changes in the level and composition of the cargo carried by maritime shipping.

Globalization is therefore not a static process, particularly since comparative advantages are constantly shifting. While East Asia has been a driver for global economic growth for decades (for example, Japan, South Korea, Taiwan and Hong Kong), it is the Chinese economy that has the most deeply impacted the global structure of production and trade. For several manufacturing sectors, the exploitation of comparative advantages within the North American Free Trade Agreement (NAFTA) were essentially by-passed by the 'China effect'. This was accompanied with a surge in transpacific trade and cargo handled by West Coast

ports. The Panama Canal obviously benefited from such a growth pattern, particularly for the all-water route between East Asia and the American East Coast that gained in popularity in the first half of the 2000s after uncertainties related to labor issues along West Coast ports and the capacity of the American land bridge to handle expected cargo volumes. For a variety of reasons, the comparative advantages of China are being eroded, particularly for labor intensive activities, which imply a redistribution of elements of the manufacturing base to other locations, namely Southeast Asia and South Asia (Figure 1). Although the interior provinces of China could represent development opportunities, accessibility and reliability issues in freight distribution make this alternative prone to risks.

Expectations about future growth in aggregate demand have shifted to locations that are therefore dissimilar to the patterns that have prevailed in the last two decades. The export-oriented paradigm that characterized China cannot endure indefinitely. Since the expected changes in aggregate demand involve lower growth levels in markets that previously were the dominant drivers (for example, United States and Western Europe) and higher growth levels in markets that were previously more marginal (for example, South America, South Asia and Africa), this will have a notable impact on the global structure of trade flows.

The extent to which the limited growth prospects of the conventional market of the Panama Canal will be compensated by emerging Latin American markets is unclear, but remains positive. Economic and trade growth on both South American coasts result in a proportional growth in Panama Canal usage as there are limited alternative shipping options. An exception is the growth of the Cape Route option for the trade flows between Asia and South American countries such as Brazil and Argentina (we refer in this context to the Suez Canal article by the same authors in this edition).

New operational factors in global maritime shipping

An important rationale behind the expansion of the Panama Canal relates to the improvement of economies of scale in maritime shipping. A growing share of the world containerized fleet is unable to use the current Panama Canal, imposing new configurations in maritime services. By 2014, post-Panamax vessels are expected to account for 48% of the global container fleet capacity. Still, maritime shipping companies also expanded substantially ship designs fitting the Panamax specifications. This underlines the importance of the standard, not only because of its capability to use the Panama Canal, but also since many ports around the world have a draft and crane equipment designed with such specifications. Switching away from standards is always a costly and risky endeavor. The canal expansion has the benefit of putting the capacity on par with the level of economies of scale applied in long distance maritime shipping while remaining the de facto ship size standard.

Maritime shipping is also highly sensitive to bunker fuel costs as they represent between 45% and 50% of operating costs with limited opportunities to mitigate outside slow steaming. For decades, the cruising speed of container ships has been relatively constant, enabling to maintain a level of schedule integrity along pendulum routes. Rising bunker fuel prices and excess shipping capacity caused by the financial crisis of 2008–2010 induced several maritime shipping companies to lower the operational speed of their ships. While the standard sailing speed of a container ship is in the range of 20 to 25 knots, 'normal' slow steaming involves speeds between 18 and 20 knots, with super slow steaming reaching speeds as low as 14 knots. For transpacific shipping services, slow steaming can add between three to seven days in transit times and requires the addition of two or three ships to the pendulum service to maintain the frequency of port calls.

For instance, a standard Far East – West Coast loop that requires six to eight ships to maintain with normal cruising speeds, requires nine to ten ships with a slow steaming service. Being at the far end of transpacific pendulum services, the Panama Canal may find itself impaired by slow steaming, but this can effectively be mitigated with improved reliability of port calls and the pull that additional transshipment cargo may draw on shipping routes.

Expected competitive changes in North American freight distribution

Like all mega-projects, stakeholders that will be impacted are expected to undertake mitigating strategies on their own. Maritime shipping companies can change their capacity deployment and ports can invest in expansion projects in search of a new equilibrium. The stakeholders of the North American landbridge (mostly rail companies) have not remained idle with corridor development and inland terminal initiatives; they are gearing up the competition. Several elements of the transport cost structure are likely to change with the Panama Canal expansion, which will be an important determinant in the comparative advantages of respective routing options, including the American landbridge, the usage of the Suez Canal, or the all-water route through the Panama Canal. The usage of the all-water route can be perceived as a balancing act between lower transport costs at the expense of more time spent in transit than for the intermodal option.

The tolls related to the expansion of the Panama Canal will also play a significant role in the cost structure. Already, the PCA (Panama Canal Authority) has substantially increased tolls; from US\$40 per TEU capacity of the ship in 2006 to US\$72 in 2009, an 80% hike. In 2011, tolls were slightly increased to US\$74 per TEU capacity. This means that toll increases have already captured about 40% of the potential cost savings of the expansion, which mitigates a substantial share of the expected gains. An overview of the existing cost structure to ship containers between East Asia (Shanghai) and North American ports is revealing (Figure 2). The pattern for inbound traffic is straightforward and related to shipping distance; the lowest among the sample being Vancouver and the highest being Montreal at the opposite end of the all-water route. The container shipping rates for outbound traffic differ with shipping distance playing a much less evident role. They are more reflective of trade patterns, particularly of export opportunities in the port's hinterland. Where inbound flows are significant and where return cargo is proportionally scarcer outbound rates are much lower as shipping companies try to attract backhaul cargo by discounting. The greatest paradox concerns New York and Vancouver, both at the opposite end of the all-water route from Asia. While, as expected, the inbound rate per TEU is 60% higher for New York than Vancouver, the outbound rate is 15% cheaper for New York. The availability of empty containers along the East Coast, as exemplified by New York, could expand export opportunities with the Panama Canal expansion. The shift of the line of cost equivalence (where it costs the same to either use the West or East Coast to reach Asia) deeper inland is a distinct possibility and would come with additional cargo handled by the East Coast port and the Panama Canal, but this is far from being given. It is subject to several uncertainties linked with the price of energy, the Panama Canal tolls as well as the capacity of inland rail corridors. Yet, this shift inland remains a reasonable assumption.

East and Gulf coast ports see the expansion of the Panama Canal as an opportunity to increase cargo volumes and gather a greater share of the transpacific trade, which was the dominant growth factor in containerized transportation. West Coast ports tend to perceive the expansion of the Panama Canal as a threat to their hinterland market share, particularly for the Midwest. It is uncertain to what extent the cargo handled by the West Coast is

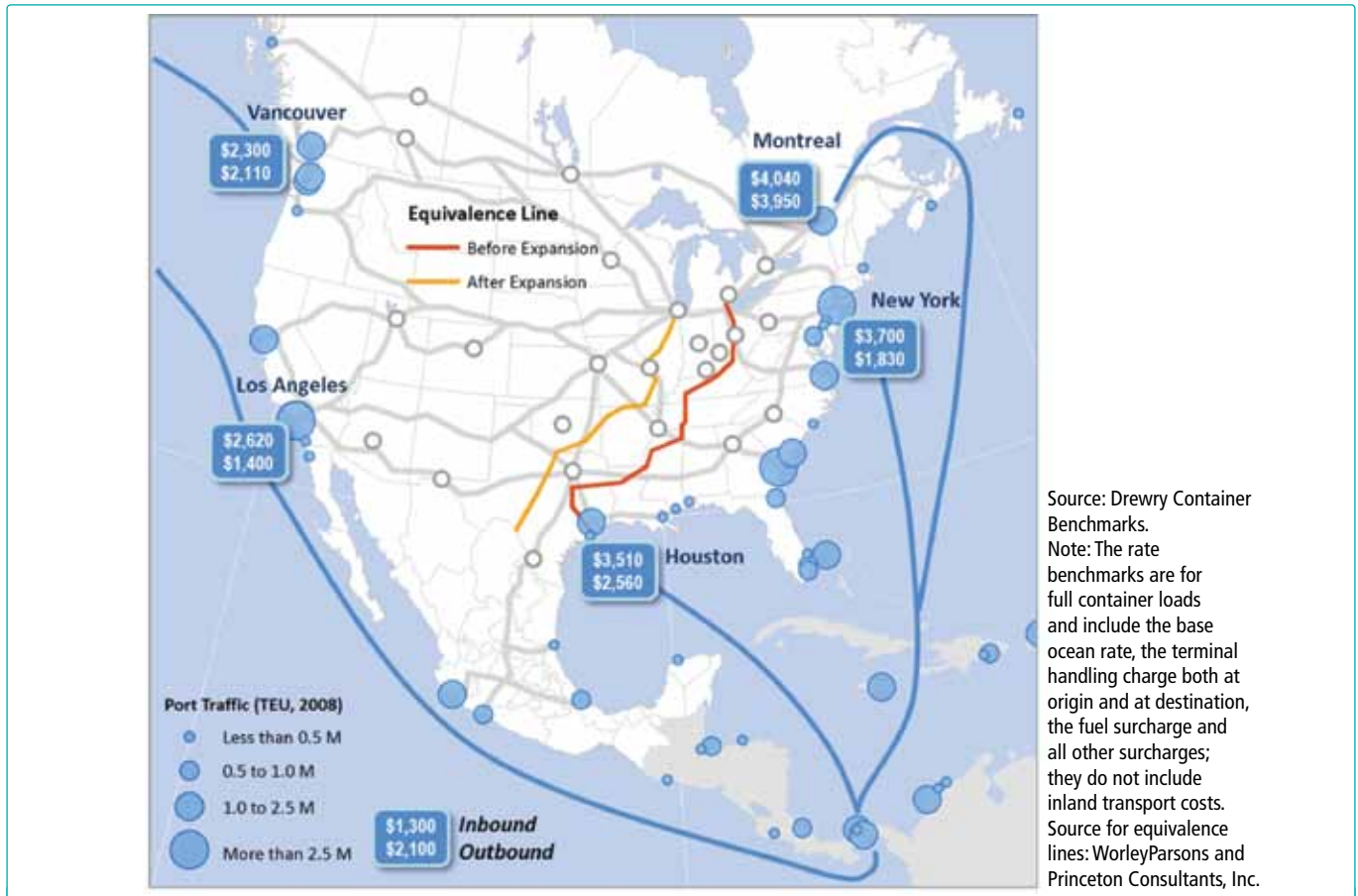


Figure 2. Shipping rate in USD for a 40-foot container with Shanghai, selected port pairs, mid 2010.

Source: Drewry Container Benchmarks.
 Note: The rate benchmarks are for full container loads and include the base ocean rate, the terminal handling charge both at origin and at destination, the fuel surcharge and all other surcharges; they do not include inland transport costs.
 Source for equivalence lines: WorleyParsons and Princeton Consultants, Inc.

divertible to other maritime ranges, with some putting this figure in the vicinity of 25% of the intermodal cargo. Still, Pacific Asia remains the fundamental market of the West Coast and the cost structure has to change significantly to have an impact.

The expanded canal as a value proposition

The expansion of the Panama Canal is opening a new phase for transshipment in the region. It is important to underline that at the global level only 17% of the global commercial relations involve direct connections between ports, so transshipment is a fundamental aspect of maritime shipping networks. In recent years, an active transshipment market has emerged in Panama and the Caribbean, particularly within what has been dubbed as the ‘transshipment triangle’. The growth in the Caribbean transshipment activities is linked to issues such as economic growth in Latin America, being at the crossroads of transatlantic

and north-south trade flows and the need of shippers to reconcile these numerous inbound and outbound trade flows within their shipping networks. Transshipment activities are thus a mix of hub-and-spoke network configurations as well as interlining between long distance shipping routes. The advantages gained in terms of network inter-connectivity and better usage of ship assets outweigh the additional handling costs that transshipment entails.

The expansion of the Panama Canal comes at a unique time in world trade developments, which are prone to uncertainties since the main trade drivers, such as American import-based consumption, are being questioned while new trade relations are not firmly established. Still, South America represents a remarkable potential for additional volumes and transshipment activities. Therefore, the expanded Panama Canal will not face a ‘business as usual’ situation, but the new rules of the global trade game are not clear.

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