CHAPTER ?

The Organizational and Geographical Ramifications of the 2008-09 Financial Crisis on the Maritime Shipping and Port Industries

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Introduction

The previous chapter questioned the underlying fundamentals that have propelled the growth of global trade over the last decades. The present downturn, after years of fast economic growth, is fundamentally challenging the direction of future trade flows and the sense of present trade organizational arrangements. From a business cycle perspective periods of growth are commonly followed by adjustment phases where misallocations are corrected, particularly if these are based on credit. This chapter explores the ramifications that the readjustment of global imbalances entails over three issues.

The first ramification concerns the impact of the crisis on strategies of container carriers and terminal operators.

The second ramification involves how the forces behind the added value creation process are reconciled with the debasement of value chains through competition and efficiency improvements. While the value capture process is a much sought after effect, particularly by gateways between major systems of circulation, to what extent can this value be diluted by diminishing returns?

The third ramification pertains to the duality between concentration versus deconcentration, particularly in terms of ports, gateways and corridors. In an environment where traffic is likely to consolidate would additional concentration at major gateways and corridors accelerate as shipping lines rationalize their services?

The above issues combined should provide an answer to the pressing question: is a turning point in the making in global freight distribution and value chains, or are we witnessing nothing more than a temporary market correction that will not have a major impact on the logistics trends of the past few years before the crisis of 2008-2009 happened.

First Ramification: The Strategies of Shipping Lines and Terminal operators

During the past decennia, shipping lines and terminal operators have tailored their business strategies under the premises of strong growth in container trade, fuelled by globalization and the large-scale adoption of the container. Shipping lines and terminal operators have benefited greatly from these developments. However, the economic crisis seems to shake the fundamentals of the pricing and investment strategy of shipping lines and terminal operators and their broader involvement in value chains.

The dynamics driving the liner shipping industry

Notteboom (2004) provides an extensive overview of the dynamics behind the liner shipping business. Shipping remains a very capital-intensive industry where some assets are owned and others are leased and there exists a wide variability in cost bases (Brooks, 2000). Once the large and expensive liner networks are set up, the pressure is on to fill the ships with freight as the economies of scale they provide can be brought to bear in terms of pricing, capacity and frequency. Lines accept that they have to take whatever price is offered in the market. This acceptance has, in turn, led to intense concentration on costs.

Consecutive rounds of scale enlargements in vessel size (see e.g. Drewry, 2001 and Cullinane et al, 1999) have reduced the slot costs in container trades, but carriers have not reaped the full benefits of economies of scale at sea (cf. Lim, 1998). Adding post-panamax capacity gave a short-term competitive edge to the early mover, putting pressure on the followers in the market to upgrade their container fleet and to avert a serious unit cost disadvantage. A boomerang effect eventually also hurt the carrier who started the vessel upscaling round.

Shipping lines also rely on organizational scale increases. Horizontal integration in liner shipping comes in three forms: trade agreements such as liner conferences (which are outlawed in Europe since October 2008), operating agreements (e.g. vessel sharing agreements, slot chartering agreements, consortia and strategic alliances) and mergers and acquisitions. The economic rationality for mergers and acquisitions is rooted in the objective to size, growth, economies of scale, market share and market power. Co-operation between carriers serves as a means to secure economies of scale, to achieve critical mass in

the scale of operation and to spread the high level of risk associated with investments in ships (Ryoo and Thanopoulou, 1999 and Slack *et al*, 2002). Alliances provide its members easy access to more loops or services with relative low cost implications and allow them to share terminals, to co-operate in many areas at sea and ashore, thereby achieving costs savings in the end.

In a shipping industry already dominated by large vessels, mergers, acquisitions and strategic alliances the potential cost savings at sea (marginal improvement) still left are getting smaller. Inland logistics is one of the most vital areas still left to cut costs. Besides cost and revenue considerations, the demand pull force of the market is a main driving force for carriers to integrate their services along the supply chain (Slack *et al*, 1996, Heaver, 2002). Lines that are successful in achieving cost gains from better management of inland and container logistics can secure an important cost savings advantage.

The reaction of the liner shipping industry to the downturn

Container lines have to a certain extent adjusted their strategy to cope with the recent significant drop in volumes. The main fields of action relate to capacity strategy and pricing strategy. The pursued capacity and pricing strategies have an impact on the overall market structure.

Capacity deployment The current crisis and overcapacity in the shipping industry is partly the result of exogenous factors such as a decrease in demand and partly the result of endogenous factors such as wrong investment decisions by shipping lines. Also Randers and Göluke (2007) argue that the turbulence in shipping markets is partly the consequence

of the collective action of the members of the shipping community. Much of the overcapacity problems are linked to the complete failure by the key stakeholders, in the first place the ship owners and providers of ship finance (many without a maritime background), to correctly anticipate the future markets for different ship types and sizes. Shipping lines have had to adjust their capacity deployment strategies. Until early 2008, shipyards still struggled to satisfy demand for new and bigger ships. However, this development has stalled. Due to the economic slowdown, a large surplus of cargo capacities emerged particularly on the Europe-Asia and Transpacific routes. As shipyards were still completing the numerous orders from previous years, total slot capacities in the market would continue climbing until 2012. In late 2008, a number of shipping lines started to postpone orders and older ships were put out of service in large numbers. In mid April 2009, the worldwide laid-up fleet totaled about 1.3 million TEU or 10.4% of the world container fleet. This figure decreased slightly to 9.9% or 1.27 million TEU in August 2009 (Journal of Commerce). Most of the idled ships are of the class between 1000 and 3000 TEU capacity, while hardly any post-panamax vessels were laid-up.

Table 1: Far East – Europe capacity situation

	March 2009	**October 2008**	**% change**
Total no. of weekly services (North Europe/Med)	45 (26/19)	64 (36/28)	-30%
Total ships deployed	406	549	-26%
Average vessel size (TEU)	7310	6517	12%
Total capacity (TEU)	2.97 million	3.58 million	-17%
Average weekly capacity (TEU) March 2009 vs. October 2008	319,301	405,901	-21%
Average weekly capacity (TEU) 1Q 2009 vs. 4Q 2008	335,793	397,350	-15%

Source: Notteboom (2009) based on Alphaliner data

Shipping lines massively suspended liner services particularly on the Far East-Europe and transpacific trade routes. Total capacity on the Far East- Europe trade fell by 21% between October 2008 and March 2009 (Table 1).

Table 2: Changes in fleet operations, TEU-mile supply (estimates made in October 2009)

	2006	**2007**	**2008**	**2009 (est.)**	**2010 (est.)**	**2011 (est.)**
Deliveries of new vessels	+14.1%	+13.1%	+12.7%	+15.6%	+23.6%	+20.4%
Delayed deliveries from previous years	-	-	-	+1.2%	+5.0%	+5.0%
Scrapping	-0.3%	-0.2%	-0.9%	-2%	-2%	-1%
Newbuilding delivery deferrals	+1.0%	-0.3%	-1.2%	-5%	-5%	-5%
Newbuilding cancellations	-	-	-	-2%	-5%	-10%
Lay-ups/service suspensions	-	-	-	-10%	-5%	-2.5%
Slow-steaming/re-routing	-	-1.9%	-5.6%	-7.5%	-5%	-5%
Effective Supply Growth	+14.8%	+10.7%	+5.0%	-9.7%	+6.6%	+1.9%
Effective Demand Growth	+12.4%	+11.3%	-0.3%	-12.4%	+10.1%	+4.6%

Source: own compilation based on figures from Drewry and Goldman Sachs

Vessel lay-ups, order cancellations and service suspensions were not the only tools used by shipping lines to reduce capacity (Table 2). Many vessels continue to slow steam at around 18 to 19 knots, despite the cheaper bunker prices, as the longer roundtrip time helps to absorb surplus capacity in the market (i.e. more vessels needed per loop). In early 2009, Maersk Line and the Grand Alliance were examples of shipping lines temporarily opting for the Cape route around South Africa instead of the Suez Canal route, mainly on the Eastbound leg of the roundtrip. The Cape route has longer transit times, but shipping lines could avoid high toll fees on the Suez canal (up to nearly USD 700,000 for the largest

vessels – one way) which are difficult to justify given the economic climate, cheap bunker fuel in the beginning of 2009 and poor ocean freights on return Asia routes.

The situation in the charter market is particularly interesting. In mid 2009 the world container slot capacity amounted to 12.4 million TEU. Containership operators own 6.2 million TEU of the global fleet, while the remaining half is owned by financiers through leasing contracts. Given the current market situation chartered-in vessels are returned when leases expire and consequently, taken out of the market. A certain portion of the charter expiries are renewed with daily rates in October 2009 about 75% lower than the average level of 2008. Many operators return chartered ships when leases expire, because they have their own newly build deliveries coming to market. This has a substantial impact on the balance sheet of those who have provided financing to these charter ships. Therefore, the market could see fewer container ships on trade routes, at least until rates rebound to profitable levels.

Pricing strategies A second shipping line strategy to the decline in shipping volumes is an adjustment of pricing strategies. In an environment of overcapacity, high fixed costs and product perishability, lines will chase short run contributions filling containers at a marginal cost only approach, often leading to direct operational losses on the trades considered. Even though lower rates may allow carriers to take on extra cargo, it also reduces their profitability. In many cases, shipping lines can earn more money with higher rates and lower utilization than with lower rates and higher utilization.

One of the main influencing factors affecting the recent pricing strategies of shipping lines was the dramatic evolution in the bunker cost, one of the main operating

costs for shipping lines (Notteboom and Vernimmen, 2009). The first half of 2008 saw a steep increase in bunker costs, with heavy fuel oil peaking at around USD 700 per ton in July 2008, compared to about USD 200 in January 2007. The economic slowdown initially put a strong downward pressure on the fuel price, with bunkers in Rotterdam plummeting from USD 700 per ton in July 2008 to USD 171 during by late December 2008. While this had a positive impact on vessel operating costs, shipping lines soon realized that filling their ships became extremely difficult with freight rates no longer generating enough revenue to cover operating costs. Spot container freight rates were reduced to virtually zero, with only a small compensation for fuel surcharges. Rates bottomed out in February/March 2009 as they could not go much lower (see the example in Table 3). In the second quarter of 2009, vessel capacity reductions on the major trade lanes started to have a positive effect on rates. The increases were a signal that the liner shipping industry has slowly adapted to the volume adjustments. By early 2010 the bunker price was already back to some USD 450 per ton and hence a lot of measures taken by the shipping lines can be put in question if such increases are to continue.

Table 3: Base freight rate and bunker adjustment factor (BAF) for the maritime transport of one forty foot container (FEU) from Shanghai to Antwerp (excluding CAF, THC and other surcharges)

	Typical freight rate (in USD)	**Typical BAF (in USD)**
Q1 2007	2100	235
Q2 2008	1400	1242
September 2008	700	1440
February 2009	750 (all in)	-
April 2009	1500 (all in)	-
September 2009	2200 (all in)	

Source: ITMMA based on market figures

Implications on market structure The crisis also has an impact on the market structure. A wave of acquisitions and mergers appears inevitable in the medium term, particularly if the recession continues in 2010 and 2011. The drivers for a further consolidation in the liner business relate to the poor financial results of shipping lines which could see some shipping lines default and to the objective of many shipping lines to push down costs by increasing the scale of operations. Many leading container shipping lines incurred high losses in 2009 (Table 4). In the first half of 2009, liner revenues averaged 20% below operating breakeven. In comparison, Goldman Sachs (2009) reports long-term average EBIT margins (earnings before interest and taxes) of +11.8% in the period 1995-2008. The liner shipping market is cyclical in nature so there have been other periods in which container carriers faced operational losses. What makes the current crisis unique is both the pace and intensity of the present financial problems of most shipping lines bringing a number of them close to bankruptcy. In early October 2009, CMA CGM had to seek a restructuring of a USD 5 billion debt in order to stay afloat (i.e. moratorium on its debt). ZIM Line, CSAV and Hapag-Lloyd have entered into far-reaching restructuring programs and also Maersk Line and MSC are known to be suffering badly.

Table 4: Financial results for a number of major container shipping lines

Shipping Line	**Operating losses in H1 2009 (Million USD)**	**Percentage rate shortfall in H1 2009 (*)**
Maersk Line	829	8%
China Shipping	475	37%
COSCO	630	38%

Hapag-Lloyd	618	19%
OOCL	197	10%
NOL/APL	379	15%
Hanjin	342	17%
ZIM Line	380	33%

(*) Shortfall as percentage of average rate (EBIT/Revenue)

Source: authors' compilation based on Marsoft (2009)

The crisis increased the diversity among shipping lines regarding long-term strategies. MSC, Evergreen and Hapag Lloyd are among the shipping lines concentrating on the core business of liner shipping. The concept is to invest capital in liner shipping, demanding a return on that capital. While MSC and Evergreen are also present in the terminal business and have some presence in inland logistics, Hapag Lloyd limits itself to operating ships. APL and OOCL reinvented themselves as logistics service providers competing directly against established logistics service providers such as Kuehne & Nagel and DHL. Japanese and Korean lines increasingly rely on their role within large shipping conglomerates. For example, NYK and MOL have only 40% of their business in liner shipping. By being involved in many sectors, these conglomerates spread risk. Finally, the AP Moller group (of which Maersk Line is a subsidiary) and CMA CGM continue to rely heavily on vertical integration with involvements in container shipping, terminal operations and inland logistics. Particularly the AP Moller group has gone beyond container logistics with involvements in supermarkets and the oil business.

Towards a structural shift? Is the reaction of the shipping industry a temporary adjustment or is it the start of structural shifts in the industry? The answer lies in at least

four considerations: redesign of service networks including adjustments to ship size and routing patterns, competition among lines and go-forward strategies on capacity deployment, and review of lines' business models.

First of all, the adjustments made are historic in proportions: never have so many vessels been taken out of service or have shipping lines redesigned their liner service networks. There is a common belief that the market will not see an increase in the maximum size of container vessel for at least the next five years. The Emma Maersk class and comparable vessel sizes of MSC (cf. the MSC Beatrice of around 14,000 TEU) are thus expected to form the upper limit in vessel size, at least for the coming years. The crisis has also urged shipping lines to rationalize services and to cascade larger vessels downstream to secondary trade routes. Low charter rates might give incentive to outsiders, such as large logistics groups and financial groups, to consider entering the liner shipping market. Routing patterns are being reassessed. For example, the crisis led to the rediscovery of the Cape route due a combination of high Suez Canal fees, low vessel loading factors and high insurance fees caused by piracy problems near Somalia. The worldwide shifts in cargo flows (e.g. strong growth of flows between South America and the Far East and Africa and the Far East) combined with an active hub port strategy of South-Africa (Notteboom, 2010), Mauritius and others have given a strong opportunity for ports in Sub-Saharan Africa to take up a more prominent role in the world shipping networks.

Secondly, the abolition of liner conferences since October 2008 has led to an interesting competitive game with respect to capacity deployment. Some shipping lines see the crisis as an opportunity to gain market share. MSC, the world's second-largest ocean carrier, is closing the gap on market leader Maersk Line, by rapidly expanding its fleet

during the slump in container shipping, while its rivals shrink their capacity. This diverging strategy in a first phase paid off by increasing its share in container volumes. In a second phase, it clearly negatively affected the financial base of MSC rapidly emptying its deep financial pockets. The lack of solidarity and coordination among shipping lines when it comes to capacity deployment potentially leads to a trigger point where the fragile rate restoration process might be undermined by shipping lines wanting to reverse their strategy. Capacity management thus proves to be a very difficult issue in shrinking markets, as the lines which decide to cut capacity might see other shipping lines 'free riding' on the resulting rate restoration.

As a third consideration in assessing whether a structural shift is occurring, the crisis is a good opportunity for shipping lines to make a comprehensive review of their business models. The pace and timing of economic recovery will be an important factor to shipping lines. The containership sector will likely continue adjusting rates up to a level where carriers may achieve mid-cycle margins and returns by 2011-2012. Demand is expected to grow at a slower pace than previous up-cycles, while deferred deliveries and idled fleet are likely to cap upside to rates and returns until supply is fully absorbed, which could take four to five years from now. It is evident that any path to recovery will have to cope with structural economic factors such as the need for covering the accumulated debt, either by paying it back or through default, and the impact of higher unemployment on consumption patterns. A path of slow recovery would allow shipping lines to redeploy resources and equipment step by step without destabilizing the market and the rates. However, a steep recovery would take everybody by surprise and would put strong pressure on making idle

capacity available to the market in a short period of time. Such a fast development towards high demand could lead to a situation of (infrastructural) capacity constraints, soaring rates and soaring fuel prices. The bigger companies are also likely to expand their control of the market, to reassess vertical integration strategies in the chain, and take over slots and terminals from smaller competitors.

How shipping lines actually respond to economic downturn and its aftermath under the three factors posed for consideration remains to be seen, but it seems likely that the response will be more wholesale than piecemeal, more a permanent adjustment than a temporary band aid.

The dynamics driving the terminal operating business

Whereas a decade ago the container handling sector was still rather fragmented and characterized by about ten large players, the picture looks drastically different today. The worldwide container handling industry is nowadays dominated by four worldwide operating companies (PSA, HPH, DP World and APM Terminals), representing some 42% of total worldwide container handling. In developing a global expansion strategy the four dominant operators try to keep a competitive edge by building barriers to prevent competitors from entering their domains or against them succeeding if they do. These barriers are partly based on the building of strongholds in selected ports around the world and on advanced know how on the construction and management of container terminals. It is increasingly difficult for new entrants to challenge the top global terminal operating companies.

Global terminal operators are increasingly hedging the risks by setting up dedicated terminal joint ventures with shipping lines. As terminal operators are urged towards a better integration of terminals in supply chains and shipping lines are acquiring container terminal assets worldwide, leading terminal operating companies are developing diverging strategies towards the control of larger parts of the supply chain. The door-to-door philosophy has transformed a number of terminal operators into logistics organizations and or organizers/operators of inland services. Prior to the crisis, the scarcity of land for terminal development (particularly in developed economies), excellent prospects for container growth and high returns on investment (in many cases 15% or more) attracted many investors. More and more financial suitors such as banks, hedge funds, private equity groups and investors entered the terminal business in the period between 2000 and 2007 (Babcock and Brown, Macquarie Infrastructure and American International Group to name a few). Global terminal operators and investor groups paid record prices for port assets (Table 5).

Table 5 - Major Port Terminal Acquisitions since 2005

Date	Transaction	Price paid for transaction compared to EBITDA
2005	DP World takes over CSX World Terminals	14 times
Early 2006	PSA acquires a 20% stake in HPH	17 times
Mid 2006	DP World acquires P&O Ports	19 times
Mid 2006	Goldman Sachs Consortium acquires ABP	14.5 times
End 2006	AIG acquires P&O Ports North America	24 times
Early 2007	Ontario Teachers' Pension Fund acquires OOIL Terminals	23.5 times
Mid 2007	RREEF acquires Maher Terminals	25 times

Note: EBITDA = Earnings Before Interest, Taxes, Depreciation and Amortization

Source: authors' compilation

An important driver in the acquisition of port terminals by the financial actor is the assumption of liquidity, implying that it is possible to rapidly sell terminal assets if needs be as a buyer could readily be found. In a market where containerized flows are growing, terminals are indeed fairly liquid assets, but they can quickly turn to be illiquid if market conditions change. In retrospective, higher terminal asset prices beget even higher prices, which can be seen as a port terminal bubble with its resulting overinvestment. This would represent a dramatic shift from an enduring perception of lack of capacity towards a belief in overcapacity.

Reaction of the terminal operating industry to the downturn

Terminal operating companies have to a certain extent adjusted their strategy to cope with the drop in container volumes since late 2008.Vertical integration strategies of terminal operating companies have been stalled. For instance, until early 2008 PSA Europe was actively looking into the development of a hinterland strategy in Europe. With the crisis, all attention is back on the seaport terminal operations. Also other major terminal operating groups such as HPH and DP World are revising their hinterland strategies which could eventually lead to a (temporary?) reversal of their direct involvement in barge services, rail services and inland terminals.

During the peak years which preceded the economic crisis, accountants, venture capitalists, financial speculators and pension funds with no or little knowledge of the terminal

operating business assumed increased importance in the global terminal operating companies and shipping lines were not sure whether they should establish a specialized terminal handling company, get into a joint venture with either an terminal operator or another carrier or both. Besides, governments and port authorities started to become quite greedy when tendering for the operations of their port facilities (generally container terminals). As a result extremely high prices were paid for facilities that at best were second hand (see Table 5 earlier). Due diligence became a formality and expected net returns on investment and project IRRs (internal rate of return) were grossly overrated as they were based on the belief that container throughput figures would continue to rise, container handling facilities would be in short supply and hence prices would rise steeply. A similar reasoning was made by bidders for new terminal developments whereby the container facilities were expected to be full almost immediately after their commissioning and handling tariffs would follow an ever rising curve. To make sure that the project would not escape them, bidders (even the more experienced and rational) were ready to put in bids that far exceeded the conditions of a reasonable offer. Not only were they committing themselves to huge investments and tariff reductions, but they were also accepting excessive risks.

The crisis led to a sudden decline in the attractiveness of terminals as a result of existing cash problems among many companies and a fear for structural overcapacity in the market. The current overcapacity forces down tariffs and thus undermines the ROI. Currently, most terminals are frantically looking for additional clients, ships and cargo. The argument that port throughput and in particular the container throughput will come back to acceptable levels, overlooks the fact that a serious consolidation on the supply side of shipping is

inevitable and that many carriers may leave container shipping altogether, or at least specific segments of the market. The changed economic situation means that terminal operators have adopted a more cautious assessment of future prospects. We observe a clear slowdown in investments from global operators, shipping lines and financial institutions in container ports globally. In April 2009, DP World announced that more than half of their terminal plans are (seriously) delayed and some are even canceled. Babcock and Brown, AIG and other investment firms are pulling out of the terminal business in some parts of the world.

The general economic slowdown may well result in some investors having to sell terminal interests and this may create opportunities for those global terminal operators and financial investors with ready access to the necessary funds. The most likely terminal portfolios which may become available are those owned by shipping lines. This does not preclude genuine terminal operators portfolios, particularly if they have over invested in new or expanded terminal assets.

Of key interest in any M&A activity is the valuation of port and terminal assets. In the peak period of demand growth and interest in acquiring terminals during 2005-2007, port companies were being valued (and paid for) at EBITDA multiples in excess of 20 times. Anecdotal evidence suggests that multiples of around 8-12 times EBITDA are the new benchmark, but there has yet to be any major M&A deal go through to verify these new levels in the market.

The financing of large terminal projects has become a more difficult task then before. This picture is quite a shift from a few years ago when financial means for terminal projects were widely available and when the scarcity of port land for further expansion

constituted the major concern to terminal operators. However, partly because of the scarcity of land, ports should be considered as long term investments and for those cash rich, now may be an opportunity to take advantage of the low prices forced on those selling their assets.

Second and Third Ramifications

The analysis so far has focused on the ramifications directly related to the maritime shipping industry, particularly shipping lines and port operators. The sudden adjustments observed will also have profound ramifications on the added value function of global supply chains as well as the level on concentration of cargo flows. These potential changes are more medium and long term in scope, implying that they will be dealt more from an assumption standpoint.

Changes in the added value process: from capture to retention

The generation of value in a supply chain is a process that mainly takes three major forms (Henderson *et al*, 2002):

- Value creation or capture. Concerns entirely new activities within a supply chain and is linked with a paradigm shift such as a new terminal, lower distribution costs, a new technology, a new market, etc. This process involves the higher return in terms of added value since new activities are created.

- Value expansion. The growth of existing strengths, mainly in relation with the growth of traffic along a supply chain.
- Value retention. Keeping desirable added-value activities which under existing circumstances would have ceased and/or relocated elsewhere. It is a difficult process to mitigate since it is linked with changes in economic fundamentals.

Under the current context, it is becoming clear that the emphasis for many transport chains will shift from the creation, capture or expansion of added value to strategies aiming at retaining what has been gained in light of growing competition and the lack of pricing power. One of the first advantages to be impacted by a recession is the pricing power of key players, forcing a spatially and functionally unequal rationalization of supply chains. Intermediary locations that were able to extract value from freight flows in a context of enduring growth see their business model being compromised by a debasement of the process. As seen before, maritime shipping has curtailed much capacity, even if from hindsight it was at a rate that was slower than the real drop in demand, sharply impacting of freight rates and their capacity to extract revenue. Port operators are even in a more complex situation since their capacity cannot be changed (reduced) effectively and they have limited margin to expand their hinterlands. Like maritime shipping companies, their pricing power is reduced and several will struggle to retain their added value activities.

The terminal overcapacity situation has made terminal operators less stringent on dwell times with cargo able to remain stored at terminal facilities for longer periods of time without penalty. An additional level of terminalization of supply chains could increase the

time and cost flexibility of supply chains (Rodrigue and Notteboom, 2009). The dynamics of the maritime/land interface are impacted with a rebalancing of the share of the gateways versus the hinterland in the value capture process, and this to the advantage of the hinterland. Pressures on leasing rates and demurrage can also be felt as maritime shipping and leasing companies see lower utilization levels of their containerized assets. Leasing terms are becoming more lenient with the resulting improvement in the flexibility of empty container repositioning. An important added value activity that could be impacted by such a process is transloading. The rationale of transloading where the contents of maritime containers are transloaded into domestic trucks for demurrage could be increasingly by-passed, leading to a loss of an added value activity at gateways but additional opportunities may arise inland with a better availability of maritime containers, at least if the lines are ready to make more containers available in the hinterland.

The debasement of the value capture process of several containerized supply chains would thus incite the search for cargo, which would benefit inland locations. As shippers ponder the rationalization of their supply chains, value capture could further move inland particularly at locations able to provide return cargo instead of just empty containers to be repositioned. The selection of transport chains would be more a factor of total return for the shippers than specifically servicing the needs of their customers in terms of frequency and time. This could also lead to additional strategies aiming towards the containerization of commodities as a way to better anchor cargo, which could help redirect container flows towards gateways, corridors and inland ports able to provide more balanced trade options.

Spatial (de)concentration of cargo flows

At this point, the rate of decline in port traffic does not appear to be related to size, namely among the world's largest ports. A reconfiguration may be observed first as maritime shipping companies restructure their networks according to demand patterns, leading to traffic changes (mostly negative) for the concerned ports. However, as further rationalization takes place, shipping companies face a more comprehensive review of their port calls and network configurations. Port pricing plays an important role in this reconfiguration with the larger ports and their more developed hinterland transport systems in better position than the small and medium-sized ports.

There are signs that the current drop in volumes leads to an increased geographical specialization of gateway ports vis-à-vis specific overseas maritime regions. For example, shipping lines have started to consolidate most of their vessel calls on the Far-East – North Europe trade in Rotterdam. Consequently, small ports (e.g. Amsterdam) and even large ports (such as Hamburg and Antwerp) in the region have lost Asia-related calls. However, at the same time Antwerp has succeeded in further reinforcing its strong position on liner services to Africa, the Middle East, India and the Americas.

Regarding this, a remarkable dichotomy could emerge between ports and their hinterland because of changes in cargo flows. The hinterland is more flexible to handle volume changes since it is less subject to economies of scale. It can deal with a significant scale back while being able to maintain a similar level of performance, particularly for trucking which is close to be indifferent to traffic changes on an unit basis. For ports, the volume handled is a strong factor in the productivity and competitiveness of terminals. There is a limited capability, particularly for terminal operators, to handle the financial ramifications of a drop in cargo volume, particularly since terminals are financially

leveraged with enduring growth expectations. This generates a new dynamic equilibrium between maritime and inland transport systems. Ports that have a relatively captive hinterland in proximity have more latitude than ports that have a more long distance and fragmented hinterland, or depend heavily on transshipment. Also, ports that have a more balanced traffic are likely to be less impacted. It is however not entirely clear at this point to what extent sustained declines in traffic could be a factor of cargo concentration or deconcentration.

The pricing power remains a powerful factor with shipping companies even more sensitive to cost considerations in periods of economic downturn. Still, this trend may not always favor the concentration of cargo flows. For instance, the ports of Los Angeles and Long Beach decided to be more environmentally stringent at the wrong time, imposing various fees and restrictions on gate access. An outcome is that maritime shipping lines are considering moving cargo from the largest west coast hubs to other ports along the range. MSC would offer more calls to Vancouver with Maersk and CMA-CGM having more calls to Seattle. By offering a behavior that is perceived as less rent seeking, several smaller ports try to mitigate traffic pressures since many may not have been heavily involved in capital intensive expansion projects, which in a context of lower traffic expectations undermines competitiveness. The need to provide minimum facilities to serve the lines will in any event involve ports that have at least some additional capacity to handle the bigger ships or they will not play any substantial role.

Conclusions

In this chapter we have provided an analysis of what we identified as three major ramifications of the current crisis on the maritime and logistics industry.

The first and dominant ramification dealt with the pricing and investment strategy of shipping lines and terminal operators and the dichotomy between integration and disintegration within value chains. Based on the analysis provided, we argue that the current crisis has led to individual capacity strategies in the liner shipping industry that do not necessarily converge. This observation is a potential source for instability in the market, as free riders seek short-term gains on the back of other shipping lines which are idling capacity. A sound industry-wide capacity management is a prerequisite for avoiding a path of destructive rate competition which could form the base of a hefty period of peaks and lows in the liner industry, even beyond the current economic crisis, but such a capacity management system has also to be in line with the competition policy of national and supranational governments. In such a market environment, a vertical integration strategy could help shipping lines to decrease their strong reliance on an unstable liner shipping business.

Secondly, we argue that temporary measures of shipping lines will likely have long-term effects on the routing of goods. The emergence of the Cape route could be an example of such a development path. The crisis thus opens windows of opportunity as it forces market players to search for new, sometimes uncommon, solutions.

Thirdly, the crisis might have far-reaching effects on the (financial) attractiveness and capacity situation in the container terminal business. While the long-term prospects might not be as bleak since land scarcity will remain a major concern, the industry in the short and medium terms will have to deal with overcapacity and lower returns.

For the two other ramifications, only preliminary assessments can be made so far. The second ramification involves how the forces behind the added value creation process are reconciled with the debasement of value chains through competition and efficiency improvements. While the value capture process is a much sought after effect, particularly by gateways between major systems of circulation, evidence underlines that in light of uncertain future traffic flows, many elements of the transport chain will switch towards value retention strategies. This will likely involve more flexibility in the usage of containerized assets, such as initially longer dwell times, and permit a rebalancing of the respective share of added value activities taking place around gateways versus inland locations, and this is possibly to the advantage of the hinterland. The most important driver of value capture and expansion would be linked at setting more balanced transport chains with return cargo with attempts at better integrating some bulk within containerized supply chains a fundamental part of such a strategy. For many inland ports, this would become a crucial factor to insure their viability on the medium term.

The third ramification pertains to the duality between concentration versus deconcentration, particularly in terms of ports, gateways and corridors. The last decade has been the object of a process of traffic concentration, but this concentration consistently involved opportunities for smaller ports and inland terminals to capture additional traffic as containerization diffused geographically and functionally. The rebalancing of freight flows either towards concentration or deconcentration remains in flux. While large ports because of their pricing power and better hinterland access could be less impacted than smaller ports by a rationalization of network configurations, rent seeking behavior imposed by prior infrastructure investments could advantage players that are less financially leveraged.

Again, this raises the question to what extent financial considerations as opposed to macroeconomic considerations, could be an explanatory factor in the traffic performance of transport chains, including maritime routes, gateways and inland ports.

All this put together, particularly in consideration to the across the board container traffic decline, we argue that the evidence supports more the paradigm shift thesis than a temporary correction. A thorough and more structured analysis of the full ramifications of the crisis on the container industry structure will only be possible years from now once the market has adjusted to a new financial and macroeconomic context. Here, we have had to limit ourselves to the identification of key trends, developments and potential impacts.

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