THE FINANCIALISATION OF THE PORT AND TERMINAL INDUSTRY: REVISITING RISK AND EMBEDDEDNESS

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ABSTRACT:

The paper explores the evolving relationship between the port and terminal industry and the financial sector. Since the financial industry has taken an active role in global economic affairs, understanding global trade and transportation requires more than ever a perspective about financial issues and their impacts on transport operations. Paradoxically, the recent analytical emphasis on the strategies of port operators has rarely focused on one of the fastest and most radical changes ever to affect the maritime and port industries. The paper argues that through the lenses of financial issues – financialisation – a unique dimension of the maritime industry can be understood. It analyses how a changing pattern in risk perception has supported a bubble in the period 2002-2008 and how financial interests in the industry have repositioned themselves since the start of the economic crisis in 2008. The analysis demonstrates how since then, the financial sector is – reluctantly – rediscovering the risks that are part of the maritime industry, notably those related to business cycles.

KEYWORDS: FINANCIALISATION, RISK, EMBEDDEDNESS, PORT TERMINALS

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INTRODUCTION

Finance, shipping and the port terminal industry have always been intractably linked. In recent times however financial practices within the changing maritime sector were reassessed and these links reshaped. Since the financial industry has taken an active role in global affairs, understanding global trade and transportation requires more than ever a perspective about the role of financial considerations as a driver of decisions related to the allocation and management of maritime shipping and terminal assets and, not least, operating practices. It is argued that through the lenses of financial issues both the significant changes that have taken place in the pre-2008 decade and the consequences of the crisis on the maritime world are best understood.

This requirement is not limited to the 'maritime' world only. The recognition of financial institutions and other institutional investors (e.g. pension funds) as key actors in the 'new stage of capitalism' [1] has triggered an examination of financialisation as a concept that describes the growing importance of financial markets on large firms' governance and corporate strategies [2, 3], with a variance of epistemological approaches and explanatory mechanisms developing (for a classification: [4]). In general, financialisation refers to "*the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies*" [5]. The integral part of financial institutions in the 2008 economic crisis renewed interest in 'finance-driven capitalism', its geographies and varieties [6] and calls for research that captures the range of new actors, the extent they reshape the economic landscape, the risk they imply, and the ramifications for people, places and economic sectors [7]. Paradoxically, in the contemporary analysis of maritime shipping and port economics this perspective is lacking. Research has shed limited light so far on one of the fastest and most radical changes ever to affect the maritime and port industries.

This paper discusses the ramifications of *the financialisation of the terminal and port industry*. It argues that the financial sector performed the paradoxical role of providing capital for firms related to terminal operations, and therefore contributed to their remarkable expansion, but also incited a lower level of embeddedness between firms and the strategic and operational issues that characterize the port terminal industry. The tenet is that the financial sector has the tendency to obfuscate risk either by being an intermediary between investors that are outside the sector of capital accumulation and, on occasion, by purposefully undermining the risk potential so that a transaction (e.g. acquisition or merger) can take place under conditions that are favourable to the financial intermediary.

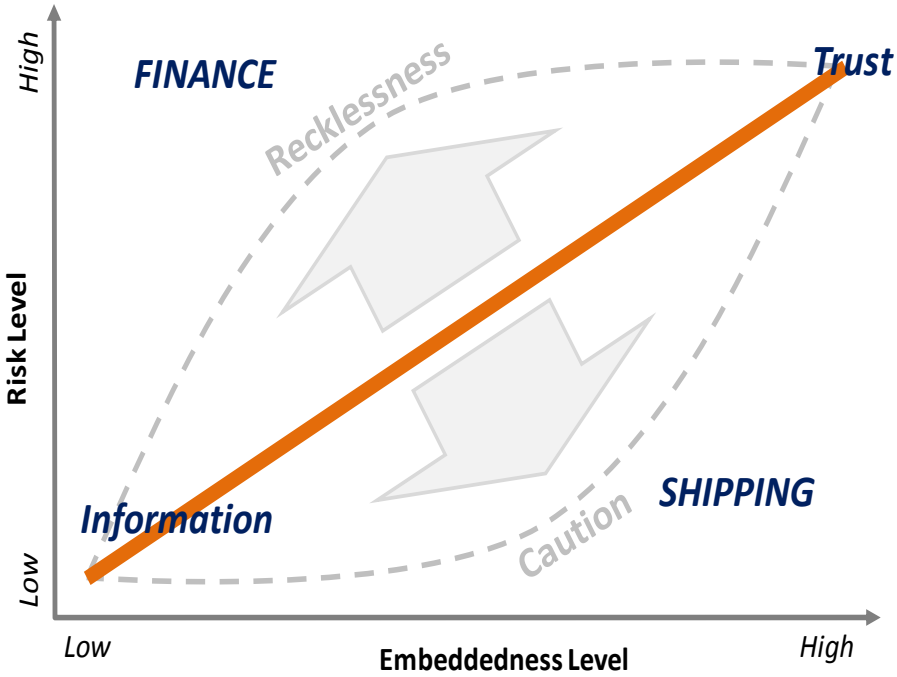
To support this assertion, the paper discusses the concepts of risk and embeddedness, the changing nature of the links between capital and the maritime world and why the terminal industry became so attractive to the financial world, the factors that contributed to the emergence, the rationale for, and the consequences of the observed financialisation. This discussion is supported by empirical evidence on the increasing role of financial drivers steering the industry, the increased pre-2008 recklessness, and the lower embeddedness of active market players. Then, the paper examines the impact of the 2008 economic crisis on the perception of risks, demonstrating that financial actors realise that the real risks were much higher than

expected, and the excessive leverage and misallocations, whereas changes in the fundamentals of international trade found them ill prepared. The paper concludes presenting the key trends of an emerging paradigm shift that is marked by the renewed embeddedness of firms in the port and terminal industry.

RISK AND EMBEDDEDNESS

Risk assessment and mitigation is vital in asset management. Although there are no truly effective way to fully assess and mitigate (the reality forbids such a conclusion), the higher the embeddedness of the concerned actors, the lower the risk. Embeddedness is the level of respective interaction between the actors of two sectors and the level of knowledge they have about the issues that are strategic to their interactions. It mostly involves transactions and information exchange, as relevant information and knowledge can be gathered, analysed and shared. Thus, a high level of embeddedness involves regular and constant interactions with an implicit trust between the actors. Embeddedness does not remove risk; it simply enables to better assess it (Figure 1). A high-risk level would require a high level of embeddedness (trust) while a low risk level only requires a low embeddedness level (information). A diverging behaviour from this relation can either be recklessness, when too much risk is taken, or caution when low risk options are preferred in spite of the available opportunities. While the financial sector has a propensity for recklessness (discarding or underestimating risk), the port and maritime industry has traditionally been cautious.

FIGURE 1 RELATIONS BETWEEN RISK AND EMBEDDEDNESS



The port sector has its own set of risk factors to be considered in capital investment, some of them related to the financial sector, but many related to its business and operational conditions (see table 2). Following a standardized typology, overall risks

are technical; market; financial; political; and environmental, with all of them being highly interconnected.

Pure financial risks include for example, *capital and currency risks.* As regard to the former, there is a risk of losing the investment capital either through devaluation or default, particularly since a terminal requires a large sum of capital to be invested and the amortization of this capital takes at least a decade. The higher the margin taken on the asset, the higher the risk of this asset being illiquid. Since for capital investment terminals were used as co-laterals, the capital risk was perceived to be low, particularly because it was expected that the value of this asset would rise and that a buyer would be found if the asset needed to be sold. Moreover, terminal operators generally face currency risks as a result of fluctuations in exchange rates, including the case of major currencies.

TABLE 1 A TYPOLOGY OF RISKS IN PORTS, TERMINALS AND SHIPPING

Risk Category	Type	Details
Technical	Internal	Construction and technology
Market	External	Gross domestic product, growth, inflation, market structures, changes in supply chain management practices.
	Internal	Business models (e.g. concentration/specialization risk), traffic demand, elasticity, pricing and capacity strategies of rivals and on alternative routes, energy cost risks
Financial	External	Interest rate, taxation currency, exchange rates, debt rating of the country, payment risk (customer base).
	Internal	Capital risk (including loans availability and interest rates, revenues, payback period, grant financing)
Political	External	Legal, Regulatory, Security, moral hazard
Environmental	External	Changes of environmental laws, unforeseen societal sensitivities

Market risks include unforeseen changes in demand and supply. While business cycles have been an enduring element linked with global trade, the surge in traffic in the last decade has induced behaviours that did not expect a recessionary cycle, at least for maritime shipping. Market risk was assumed to be low. On the supply side, market risks are prevalent, particularly because of contestability. Intermediate hub ports with a strong focus on sea-sea transhipment operations are particularly contestable and are thus among the riskiest terminal investment projects [8]. In recent years this risk was abated by the surge in transhipment throughput as liners organized their networks to cope with the growth in long distance trade implying that transhipment hubs readily found business. With emerging hinterland access regimes, the contestability of gateway traffic is also more acute. Thus, market risks may equally be considered as revenue or investment risks. They compound capital risk in a terminal due to the length of the amortization and the intervening changes in demand due to traffic fluctuations and contestability.

Market risks are very explicit in contracts, for example, terminal operating companies (TOCs) often face high throughput guarantees in concession agreements. Ultimately, they refer to serious deviations from the basic macroeconomic scenario considered when initiating the endeavour. Strategic or optimism bias is facilitated by technical uncertainties [9] and by the frequently underestimated fact that maritime

trade is very sensitive to income, industrial production, and economic growth - a sensitivity factually exposed by the 2008 crisis [10].

There are additional internal micro-level market risks that affect a port or terminal's position vis-à-vis other ports or, in some markets, other transport modes. The *energy cost risks* are indicative. Energy is one the main operating costs for shipping and terminal assets. Terminal operators have less of a tradition in hedging against energy costs, comparing with shipping lines that typically try to protect themselves through either hedging operations or bunker fuel surcharges [11].

Political and regulatory risks concern international trade and manufacturing issues. For terminals, these involve the risk of arbitrary changes in the commercial environment due to political expediency (cf. DP World in the US), favouritism to a carrier or operator, and even confiscation (nationalization). Entering the market at a specific point of time means that regulatory changes in the long run are unforeseen. Regulatory risks refer to unexpected changes in competition (i.e. market opening challenges incumbents or regional partners positioning) and planning conditions, or more expensive operational models. For terminal operators the regulatory framework at the time for concession renewal is another unforeseen issue with uncertainty increasing the risk of the committed investment during the early stages of operation. The cases that regulatory difficulties emerge right after day one of the concession are not rare. Since many countries have so far been eager to negotiate concessions with global TOCs to promote trade and economic development, there is limited background to assess the political and regulatory risks involved in a context where expectations (e.g. traffic and revenue) are not fully met.

Market concentration/specialisation risks are common when a player is focusing on a specific region and/or type of service. Containerisation and economies of scale in mega-ships have expanded specialisation risks, as they assume the availability of very large freight volumes while they have limited options in terms of ports of call. With better hinterland access, the traditional markets of many terminals are highly contestable.

Moral hazard risk possibly represents one of the most pernicious outcomes of the 2008 financial crisis, as several large and politically connected financial firms were able to use their influence to socialize potential losses, particularly by using the threat of systemic risk. Many port terminals are either public or have strong relationships with the public sector. Additionally, several are perceived to be of national strategic interests. If they face financial difficulties, they have the opportunity to use their political embeddedness to access public capital or private capital guaranteed by the public sector. This can potentially lead to misallocations enabling less performing operators to remain in business while they may have not or would have been forced to substantially rationalize their assets. Another perverse effect is that because of bailouts and government capturing a great share of the existing capital, the private sector is left with reduced credit lines and higher interest rates. There is a link between moral hazard risk and political risk. Policy makers can have strategic reasons to protect a terminal operator from defaulting. [12]

All these risks were always fairly well known to the industry and embedded in their business strategies. The increased financialisation of the industry and the associated

cycle of overinvestment resulted however in a multiplication of risk taking. New risk mitigation strategies of terminal operators opened the way for financial speculators to repackage and offer them on capital markets. As a result, the link between risks and the financial products got somewhat lost (obfuscation of debt making it less transparent/clear). It is however worth looking at the historical processes that have led to this situation.

FINANCE GOES MARITIME: FROM EMBEDDEDNESS TO FINANCIALISATION

Shipping is a sector that historically has received at times "too much" finance [13]. Randers and Göluke [14] argue that the turbulence in shipping markets is partly the consequence of the collective action of a shipping community that massively orders new-builds when demand peaks. These investment and allocation decisions add significantly to the volatility of the business environment; the surplus capacity directs to rates and profits deflation and eventually to the recessionary phase of business cycles.

The links between the financial industry and the maritime world can be traced back to joint stocks companies of the 17th and 18th centuries (e.g. the Dutch East India Company). With limited liability enactments in the 19th century, the financial industry provided capital to build ships, purchase trade cargo and mitigate shipping related risks. The latter led to the creation of the insurance industry (e.g. Lloyd's of London in 1871). Capital was paid back once a voyage was completed and the cargo sold. The first forms of hedging were developed as options that could be purchased on cargo before the ship called its final destination. The value of these options was a tool to assess risk.

Until the 20th century, the involved actors were in proximity and familiar with one another. The visual and social link between finance, trade, shipping and port operations was a fundamental characteristic at the waterfronts of global trade cities (i.e., Antwerp, Amsterdam, Rotterdam, London, Hamburg, New York, Singapore and Hong Kong). The high risk in maritime transportation was mitigated based on trust and local embeddedness.

Industrialization created more opportunities for capital accumulation within national economies. The financial sector saw shipping as a more marginal component, often resulting in a growing geographical disconnection between physical maritime and port activities on the one hand and the location of management and control functions over global shipping markets and related finance on the other. London, for example, still thrives as a global shipping centre despite a massive move of port activities downstream on the river Thames [15]. Despite a certain degree of spatial disconnection, several financial institutions kept strong links with the maritime sector, but only at a few locations.

The surge in global trade from the 1950s and onward substantially expanded the market base and the opportunities of maritime shipping. Containerization created multiplying effects through its rapid diffusion and its capital intensiveness. The role

of finance in maritime shipping and terminal operations was redefined, and the embeddedness between finance and shipping took a new dimension.

Financialisation has been evident since the early 1990s, when globalization drove trade and concomitantly container growth. Focusing on port terminals, while most of the finance remained in Europe and North America, growth was taking place mainly in Asia. Up to that point, for example, the U.S. ports' use of the capital markets as a source of financing had been limited to issues of competitive bid revenue bonds under municipal auspices [16]. At start, growth was absorbed by existing terminals, with average terminal utilization reaching the 60-70% range and at the most heavily used facilities the 70-90% range. Since the mid-1990s, the threat of congestion, coupled with the expectation of future growth, gave ground to an aggressive expansion strategy by TOCs. This not only triggered high mergers and acquisitions activity, and with it the emergence of global TOCs [17, 18, 8], but also required large capital investment backed by financial institutions. These investments stabilized the utilization rate of port assets at the global level. Meanwhile, the need to capture growth and opportunities in external markets led to a further disconnection between the financial sector and the maritime world. In addition to the separation that took place at the local level, globalization further separated the financial sector from the industry and its geography.

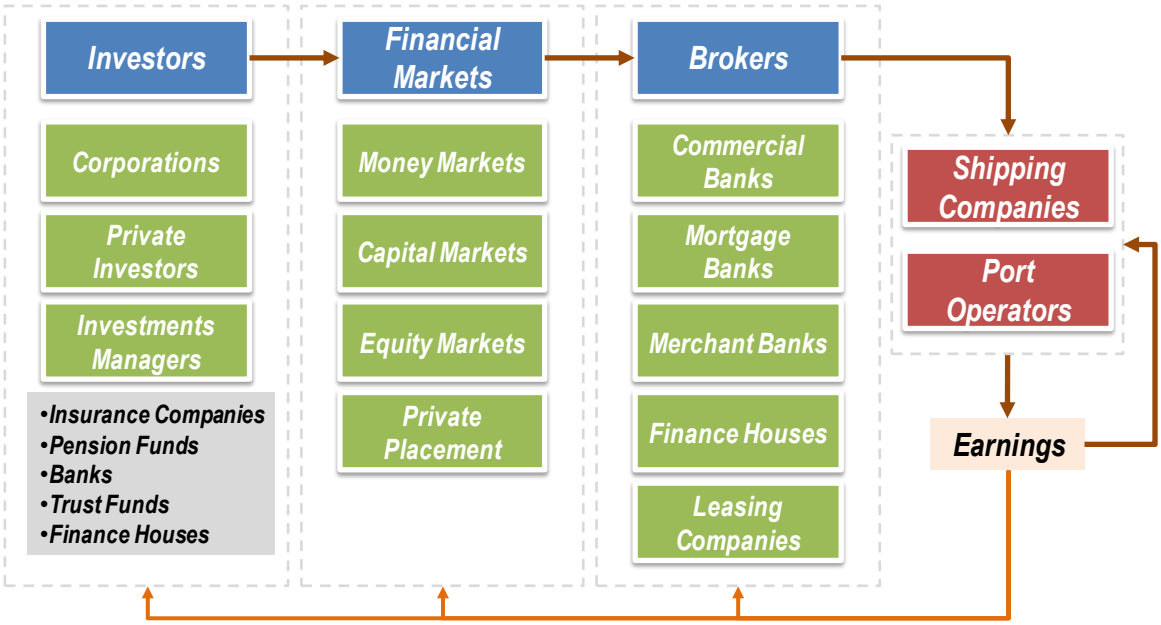
The financial and economic crisis that began in 2008 underlined an array of unintended consequences, such as distortions between the expectations of the financial sector and the returns that can be achieved with the physical assets they have stakes in.

FINANCE AND LEVERAGE UPSIDE-DOWN

4.1. THE RATIONALE

In the past, finance was a tool used to leverage the opportunities of the maritime world. The capital was used to expand its commercial opportunities by financing ships, terminals or indirectly international trade (e.g. letters of credit). The financing of port terminals (and shipping) came from several sources, but it was commonly the responsibility of specialized actors with close relationships with the industry (figure 2). The earnings were used to directly finance operational and capital requirements, as well as pay back dividends to the institutions providing capital. In this context, it was the maritime industry that mostly decided the allocation of investment capital and the financial sector provided this capital based upon trust, merit and expected level of return. Those were strongly derived from existing trade volume and its growth potential.

FIGURE 2 PORT AND MARITIME INDUSTRY FINANCE



Source: adapted from Stopford (2009)

Capital tends to accumulate in sectors where expected returns are the highest and the financial sector is constantly trying to assess opportunities in capital allocation. This process is mitigated with the potential risk of each transaction. Globalization and the growth of the port industry skewed this perception of risk downward. Risk was assumed to be low and correspondingly high levels of embeddedness between finance and maritime transportation were judged not to be necessary. The rate at which transactions were taking place also undermined opportunities to create embeddedness between finance and the maritime sector.

The rationale for the growing involvement of the financial sector is clear, at first because port terminals are more *capital intensive*. The substantial levels of productivity brought by containerisation resulted in a much more capital-intensive industry depending on financing not just for the acquisition and operation of terminal assets. The same applies for intermodal equipment [19]. The amortization of investments tends to take place over longer periods, implying a more direct involvement and oversight of financial firms. Terminals in landlord ports became particularly attractive investments as land lease arrangements in these ports allow investors to acquire exclusive user rights on prime port sites for the entire duration of the lease term, which typically ranges between 25 and 40 years for larger terminals (see [20] [21] for a discussion on terminal awarding procedures and lease agreements in ports).

With the growth of international trade, ports became an increasingly profitable industry, not necessarily in terms of rate of return but mostly in the volume of this return as well as its underlying assets. This attracted financial firms, such as banks, insurance companies and even pension funds, seeing transportation assets, such as port terminals, as an investment class part of a diversified global portfolio.

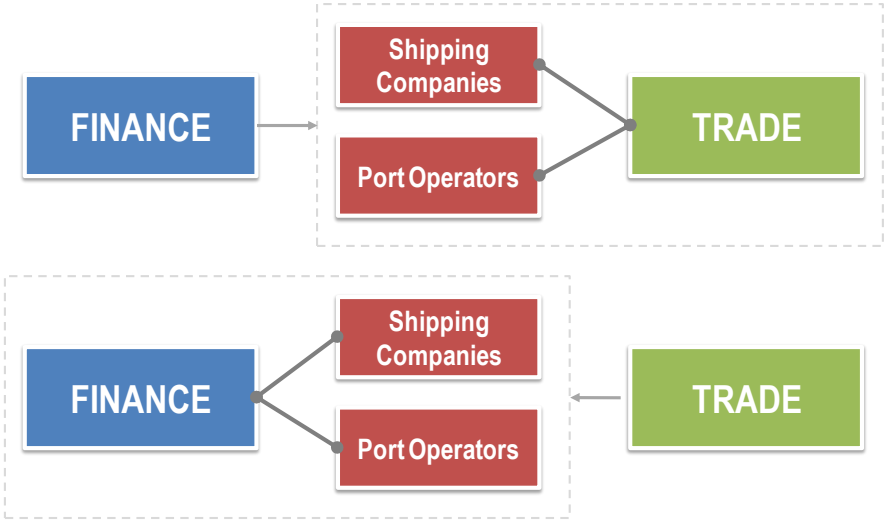
A major reason why pension funds became interested in terminal assets was the time horizon of the investment, namely concession agreements which are long term.

This helped to provide large quantities of capital to develop intermodal assets and correspondingly saw an increase of their value. Scale factors also played. Global financial firms were looking at opportunities large enough to accommodate the vast quantities of capital at their disposal and terminals represented an asset class that suited well the scale of this allocation. Therefore, both the capital, time and scale prospects of port terminals were in synchronism with the prospects of the financial industry. The dominance of the financial sphere over the real global economy, as the value of financial transactions became bigger than the flow of traded goods and services [22], provided the contextual framework that facilitated this synchronization. With the growth of international trade, transactions between commercial actors became increasingly complex and reliant on financing.

4.2. Consequences of financialization

Financialisation implies higher and more diversified pools of capital available. It also underlines a shifting balance between interests in maritime shipping, ports and the financial sector. The relationship between finance and maritime transport was inverted. While in prior times it was the trade prospects that were perceived as the co-lateral of shipping companies and port operators (top part of Figure 3), with financialisation it is maritime transport that was used to leverage finance, namely its rate of return on capital investment but also the value of the assets that can be used as co-lateral (bottom part of Figure 3).

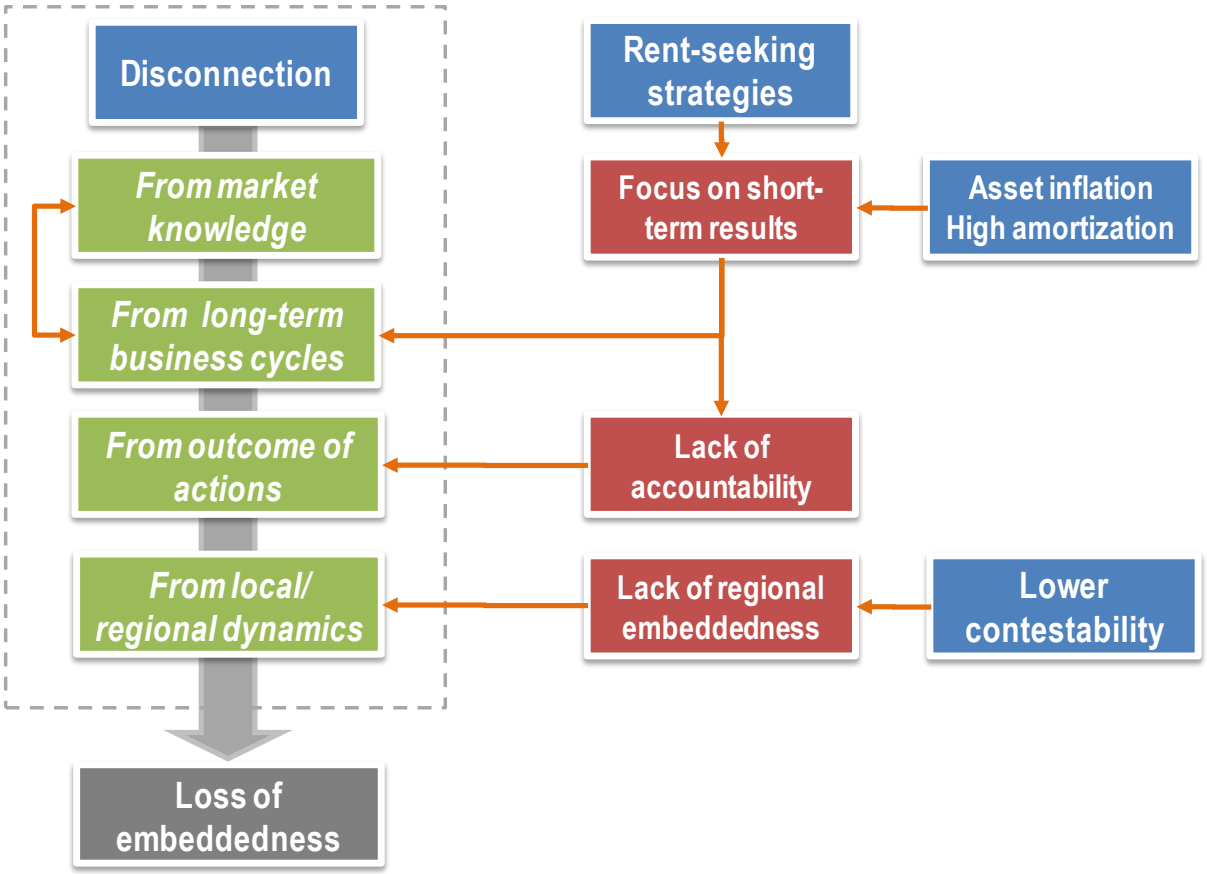
Figure 3 Financialisation and the Disconnection of Ports, Shipping and Trade



Trade issues were considered as secondary and growth potential as given. With financialisation, the perspective about transportation shifted from a derived demand to an induced demand; providing capital to the industry would result in a growth in the demand for cargo handling. This led to a large wave of investment in ships and terminal assets that were perceived increasingly as low risk by financial actors having limited if any experience in the sector, namely insurance companies and mutual funds. Port expansion was gaining strong financial backing, with relevant syndication loans heavily oversubscribed, even when the first signs of the crisis were spreading [23]. Between 2000 and 2007, more than US$ 36 billion poured into port terminals, almost half of it in 2007 [24].

The inverted relationship brought by financialisation led to five major consequences as discussed below. Figure 4 gives a schematic representation of the linkages between the consequences.

FIGURE 4 THE CONSEQUENCES OF FINANCIALISATION



CONSEQUENCE 1: DISCONNECTION

The port industry is confronted with three types of disconnection. Firstly, the increasing role of accountants and financial advisors in the global terminal operating business fuelled a disconnection from the underlying market knowledge. The industry witnessed an increasing intervention of financial speculators, venture capitalists and pension funds with no or little knowledge of the terminal operating business. Since a growing number of port managers are coming from a financial background, they carry with them their perspective on asset management. Terminals tend to be seen as financial assets as opposed to their physical and operational reality. Financial analytical tools, such as the concept of compound annual growth, prevailed in the analysis of maritime shipping growth potential and its expected level of return.

Secondly, there is a lower level of concern about capital loss and due diligence, as the financial sector has consistently demonstrated a lack of accountability due to political and legal influences. The lack of accountability - particularly present in credit and lending institutions - is exemplified by handling of the deep-rooted bonus systems and executives. The financial sector tends to excel at rent seeking behaviour within the sectors it is involved in.

Thirdly, many companies went public on the stock exchange (cf. DP World, Hutchison Whampoa, Dalian Port) and with it a bonuses culture spread to the shipping and terminal operating business.

These trends resulted in an increasing focus on quarterly results linked to stock exchange dynamics, thereby generating another type of disconnection: an emphasis of short-term results which jeopardizes the need for long-term strategies founded on a deep understanding of and anticipation to long-term business cycles. This short-term focus on results also triggered a trend towards expected ultra-short payback periods for investments in capital goods such as container gantry cranes and yard equipment on container terminals. Prior to the economic crisis, some TOCs wanting to invest in equipment had to demonstrate that they could guarantee a payback period of only two to three years to have the investment even considered by investors. This led to a higher risk of too optimistic throughput forecasts in view of securing such investments in terminal equipment but also in view of gaining access to a terminal concession in a port with strategic value to the TOC, thereby further disconnecting financial dynamics from real market dynamics.

Consequence 2: Rent seeking strategies

Assets are less perceived for what they are (port terminals) but simply from their potential (or expected) levels of return. Financial firms have the tendency of chasing return without understanding well the fundamentals and the long-term prospects of the industry. Rent seeking compounds the potential for misallocations as a sector in growth and achieving returns begets more investment than required as several actors desperately seek to gather a stake in the sector (also known as herd behaviour). Surplus capital leads to surplus capacity. In other words, part of the problems in terminals were self-inflicted by investors not underlying dimensions in system dynamics. As in shipping, the port overcapacity situation during the economic crisis was partly the result of exogenous factors such as a demand decrease and partly the result of endogenous factors such as wrong investment decisions in ports fuelled by the providers of finance who failed to correctly anticipate the future markets, often exaggerating its potential. High levels of financialisation combined with a lack of embeddedness are a breeding ground for stronger peaks and lows in business cycles in the port and terminal industry.

Consequence 3: Low contestability (The paradox of market opening).

Increased interests in maritime assets lead to a perceived liquidity, implying that financial and other actors can enter and exit the terminal market on a short notice. Port authorities and relevant policy makers' tendency to reform towards market opening and lower barriers of entry initially enhanced this process. Financialisation reversed this trend in a paradoxical way as entry was perceived to be easy but in reality the capital requirement for entry became excessive. Up to 2008, the drivers to container terminal development included globalization, port policy reforms and sub-prime spread. With container terminal development seen a necessity that should not be subject to regulatory intrusiveness, financial interests entered into the port business, several times as owners focused only on deal structure and financial engineering. They did so based on corporate information (e.g. detailed searches of relevant company registries or solvency), financial information, commercial activities

and profitability. Lenders used to focus on concessioning terms and clarity (i.e. length, transactions, construction; operation; termination provisions; government breach; concessionaire's breach; rate adjustment; and tariff flexibility). Given the financial capacities of new investors, all these triggered clauses in concessions and other forms of private participation (e.g. entry requirements in the qualification stage) that limited the pool of potential entrants to big players only [25]. The inflationary effects linked to continuously increasing capital investments in turn augmented the cost of potential market exit, contributing further to lower market contestability.

Consequence 4: Asset inflation and high amortization.

Rising terminal prices resulted in rising marginal asset costs and declining marginal revenue, which is counterintuitive in a context of economies of scale. It underlines an asset inflation phase reminiscent of a bubble. Expectations about future growth and the corresponding volumes also lead to expectations that the capital investment would be quickly amortized. The higher future growth expectations are, the lower the expected time frame for amortization and the higher the financial appeal.

Consequence 5: Growing discontent on lack of regional embeddedness.

The consolidation in the terminal operating industry and the growth of global TOCs, backed up by finance providers, led to a growing discontent on the lack of local/regional attachment and embeddedness of these firms. Port authorities aim at making the port attractive by providing a competitive supply of services for carriers and shippers. Increased financialisation made ports increasingly dependent on external co-ordination and control by foreign actors who extract a big share of the economic rent (wealth) produced by ports and who are often guided by the aim of creating shareholder value. The economic effects of seaport activities are no longer limited to the local environment (i.e. port region and local market players), but are spread over a wider geographical area and among a large number of international players. Port authorities and regional/national governments are challenged to ensure that the port region gets a fair share of the economic rent created. This is needed as a large part of the population takes seaports for granted and community groups typically argue that there is an imbalance between the benefits and costs for the local community of having larger and larger ports. This viewpoint is a breeding ground for major socio-economic confrontations related to port development; the lack of regional embeddedness and of a fair return to the local/regional community may jeopardize a port's future development and its societal 'license to operate' [26].

4.3 Evidence of Declining Embeddedness

The British ports case is a most illustrative example of the disconnection from local/regional economic and social dynamics as a result of excessive financialisation processes. Over a period of three years (2003-6), a number of UK ports moved into foreign hands with finance and investment companies showing an interest in bidding for UK ports. The port assets almost appear to be an afterthought in light of the concerned financial transactions. In December 2005 Babcock & Brown Infrastructure (BBI), the Sydney-based fund of Australia's second-largest investment bank, (Table 2) purchased PD Ports, the owner of Tees and Hartlepool ports. In 2006, the Admiral consortium acquired Associated British Ports Holdings, which through its subsidiary

ABP is the owner of 21 ports. Admiral consists of four partners, namely Wall Street bank Goldman Sachs; GIC, the Singapore Government investment company; Canadian pension fund Borealis; and the infrastructure business of the UK's Prudential. Simon Group was taken over by a subsidiary of the CdMG group of companies based in Belgium, Montauban SA, following a cash offer in 2006. Montauban has interests in several European port facilities. Mersey Docks and Harbour Company was bought by the property holdings Peel Holdings in June 2005.

TABLE 2. MAJOR SHIPPING AND TERMINAL MERGERS AND ACQUISITIONS (1997-2007)

Acquirer / Firm A	Acquired / Firm B	Type	Resulting firm	Date of merger / acquisition	Sum involved ($US million)	No. of terminal projects involved
Neptune Orient Lines	American President Lines	A	APL	1997	825	8
Eurokai	Bremen Lagerhaus Gesellschaft (BLG)	M	Eurogate	1999	undisclosed	10
Eurogate Holding	Contship Italia	Eurogate 34% Eurokai 66%	acquirer's subsidiary	1999	undisclosed	6
Maersk Line	SeaLand	A	Maersk SeaLand, CSX Lines, CSX Intermodal and CSX World Terminals	1999	800	29 of which 13 under CSXWT
P&O Ports	International Terminal Operating Co. (US)	A	acquirer's subsidiary	1999	93	17
Hesse Natie	Noord Natie	M	Hesse Noord Natie	2001	undisclosed	22
Hutchison Port Holdings	Europe Combined Terminals B.V.	A	acquirer's subsidiary	2001	undisclosed	4
Hutchison Port Holdings	International business division of ICTSI	A	absorbed into HPH's portfolio	2001	undisclosed	8
PSA Corp.	Hesse Noord Natie	A	acquirer's subsidiary	May 2002	717	22
Nippon Yusen Kaisha	Ceres Terminals	A	acquirer's subsidiary	October 2002	undisclosed	9
CMA-CGM and P&O Ports	EGIS Ports S.A.	A	Portsynergy France S.A.	July 2003	undisclosed	3
P&O Ports	Canadian Stevedoring	A	acquirer's subsidiary	January 2003	80.5	17
Dubai Ports World	CSXWT	A	absorbed into DPW's portfolio	December 2004	1 150	12
Peel Holdings	Mersey Docks & Harbour	A	acquirer's subsidiary	June 2005	771	2
Babcock & Brown Infrastructure	PD Ports	A	acquirer's subsidiary	January 2006	1.2 bn	2
Dubai Ports World	P&O Ports	A (partial)	absorbed into DPW's portfolio	March 2006	6.8 bn	28
CdM Belgium	Simon Group	A	acquirer's subsidiary.	June 2006	undisclosed	2
Admiral Acquisitions UK Ltd.	Associated British Ports	A	Company to retain name (ABPH)	August 2006	2,8 bn	21

Macquarie Infrastructure	Halterm	A	Company to retain name	Nov 2006	CDN$172.75	1
AIG	P&O Ports	A	unknown	Feb 2007	450	6
Ontario Teachers Pension Fund	OOCL (NA portfolio)	A	Company to retain name (TSI)	Jan 2007	2 235	4
Morgan Stanley	Montreal Gateways	A	Company to retain name	Feb 2007	460	1
Macquarie Infrastructure	Fraser Surrey Docks	A	Company to retain name (FSD)	Jan 2007	undisclosed	1
Deutsche Bank RREEF	Maher Terminals Inc	A	Company to retain name (Maher Terminals)	March 2007	undisclosed	2
AIG	MTC	A	Name retained but may change in future	July 2007	undisclosed	9
Goldman Sachs (Infrastructure Partners)	SSA Marine (Carrix)	A	Company to retain name and mgt	July 2007	Undisclosed	60+
Babcock & Brown Infrastructure	Rauma Stevedoring and Botnia Shipping	A	acquirer's subsidiary	October 2007	140	2

Sources: Authors collection; [18; 27]; list indicative not exhaustive.

A salient example of embeddedness minimization was the 2006 DP World takeover of P&O Ports' global port portfolio. The takeover was surrounded by controversy as six major US terminals where P&O operated and would be controlled by a United Arab Emirates based firm, raising security fears from members of the US Congress. DPW was forced to sell its American port operations to American International Group / Highstar Capital following a vote by the US House of Representatives. This political attempt to safeguard US port from overseas control illustrates the globalised and politicized environment of the financial world's involvement in ports.

Apart from container terminals, highly capitalized infrastructure investors moved into a break-bulk market that used to be dominated either by family owned firms and port-owned and operated entities, end-users of cargo, or cargo producers themselves. For instance, expecting plenty of upside to be exploited in the break-bulk market, in 2007 BBI announced several cargo-handling acquisitions in Europe and the US [28] that made it Europe's third-largest bulk stevedore and a leading break-bulk cargo handler [29]. The absence of a local presence led BBI to establish a Luxembourg-based company, BBI Euroports, to run its new businesses.

Notably, in the aftermath of the crisis (July 2009), BBI decided to adopt a fast-track exit strategy, registering a pretax loss of US$170 million after agreeing to sell 40% of Euroports, even at 15% down from an implied value when the sale was first announced. The fact that the transaction followed discussions between stakeholders (BBI and Arcus Infrastructure Fund) and was followed by the involvement of third financial firm (Antin IP that now hold convertible bonds), demonstrate the emerged absence of interaction between the financial and the maritime world about strategic issues shaping the port sector [30].

Even before the arrival of the crisis, the extent that new port owners were lacking embeddedness with the new operating environment had led to concerns that the ownership of ports by foreign companies, particularly those with no prior experience

of owning and managing ports, may create instability within the industry. The British House of Commons, in particular, stated that "*Ports companies with foreign interests may decide on balance that investment and development is best prioritised outside the UK; similarly investment companies may see more profit in selling off ports for land. The Government must recognise the risks and develop an action plan to mitigate them*" [31]. As in several other cases, calls for governmental action to protect "*vital port infrastructure from the depredations of any investment companies*" were put on hold in the wake of the 2008 financial crisis.

4.4. Additional Forces towards Recklessness

First, prior to the crisis *supply was lagging behind demand.* Combined with traffic growth expectations this created the need to quickly provide additional infrastructure in several markets that were expected to face serious capacity constraints in light of the anticipated growth. The scarcity of land for terminal development (particularly in developed economies), thoughts for capacity shortages in shipping, excellent prospects for container growth (the China effect) and high returns on investment (in many cases 15% or more) attracted many investors. TOCs and investor groups ignored geographical proximity to investments made, and paid record prices for port assets (EBITDA > 20; [32] for details). That way, they challenged in practice the advocacy (cf. [33]) that institutional investors undermine the decline in barriers to international investment and continue to prefer geographically proximate investments for their portfolios. When new terminals were planned all over the world, but particularly in the western world were seriously delayed due to environmental issues and a lack of community support, globalization and containerization de-embedded many ports from their region.

Second, the *emerging port terminal management and business models expanded the role of financial firms*. Concessions or lease agreements were set up to maximize financial returns and were directed towards global TOCs. Governments and port authorities started to become quite greedy when tendering port facilities (generally container terminals). Bidders for new terminals expected terminals to be full almost immediately after their commissioning and handling charges to follow an ever-rising curve. To secure the project, bidders (even the more experienced ones) put in bids that far exceeded the conditions of a reasonable offer. Prices rose at unforeseen levels, and the 'right price' was replaced by the financing of projects at 'any price'. The latter became a function of the available financing, which tended to be readily available. When major deals were announced in the early 2000s (table 2), concerns of the inflated market values were not enough to hold this inflationary trend [34]. Bidders did not only commit themselves to massive investments, but were also accepting excessive risks. Authors' discussions with port authorities have revealed the disconnection between the port authorities and their tenants, and the questions that emerge (i.e. regarding strategies, operations and policy implementations) as a result of the absence of communication between the two parties.

Third, *port users and shipping lines that expressed interest in port terminal operations were experiencing their own financialisation*. Capital poured in the shipping industry through the use of a number of new 'innovative' methods and

tools [35] and a growing number of equity and equity-linked offerings were made on financial markets (from US$1 million in 2000 to over US$17 million in 2007; [36]). The total of Commitment of banks to Greek shipping alone has gone from US$16.5 million to US$66.9 million within the seven-year period that preceded the economic crisis ([37]).

Cheap credit was a determining factor, as central banks (e.g. the American Federal Reserve), engaged in massive credit expansion after the stock market crash of 2001. Global financial firms captured a substantial share of this credit and allocated some of it in maritime assets, which were bid up through asset inflation. Commonly, in terminal deals the acquiring firm only provided 10 to 15% of equity while the remaining 85 to 90% of the capital was leverage provided by financing. The high volatility in the shipping markets supported the emergence and growth of a paper market on shipping freight. Complex financial products and derivatives were developed [38] in order to manage risks, emanating from fluctuations in freight rates, bunker prices, vessel prices, scrap prices, interest rates, and foreign exchange rates, more effectively, in a cheaper and more flexible manner. This extensive use of risk management techniques and instruments attracted financial investors. The risks, if managed effectively, can stabilize cash flows, with positive repercussions for business. Beyond the effect these factors had in ports, they produced conditions for further ignoring the fundamentals of the port sector.

Fourth, the *increased interest in the securitisation of leases of port areas* [39], and financial investment in general. Securitisation is a process whereby financial assets are bundled together into tradable securities, which are sold onto the secondary market [40]. The conversion of either existing assets (asset-backed securitisation) or of future cash flows (future-flows securitisation), transforms (illiquid) primary assets into subordinate units/securities that can be negotiated. Increased securitisation activity in the global economy, together with the emergence of derivative markets, has altered risk management by market players and banks to an extent that has been seen as a source of the 2008 financial crisis [41].

All the above converged to transform the financial perception of the port industry to be increasingly seen as a low risk sector, inciting the involvement of actors that had limited experience and funds and that used to invest conservatively. A new range of sources and quantity of capital became available. As long as global trade was booming, opportunities abounded for the accumulation of this capital in terms of new modes and terminals as well as mergers and acquisitions involving assets valued at increasingly higher prices. The crisis of 2008-09 made evident that this approach was unsustainable and, by changing the rationalization in the maritime industry, imposed a rediscovery of risk. Several investors withdrew their interest to execute the right to operate terminals that had been tendered to them just before the crisis. These investors came to realize that their offerings in terminal awarding processes had gone well beyond what could initially be expected, thereby underlining the financialisation context prior to the crisis [42].

5. RE-EMBEDDING FINANCE

5.1. Instinctive risk mitigation

The financial crisis of 2008 generated circumstances that acted as a “wakeup call”, forcing all stakeholders to seriously reassess their strategies and business models; when demand sharply declines and hidden risks resurface, the port industry shows a series of initial reactions to mitigate risk in the short run. Following the banking sector, some terminal operators sought government help or state involvement, a practice that was more emphatic in the container shipping industry (see [12]). However, a major difference with the financial sector is that many financial institutions are deemed too big to fail, whereas a terminal operator default might temporarily disrupt the market (depending on network configuration of shipping services) but the market mechanism would quickly fill in the gaps and absorb ships or terminals of the defaulted companies, particularly in a situation of overcapacity. The main reasons for governments to intervene in the market process and to prevent a port terminal from defaulting are to be found in the perceived strategic role of the port to the national economy, or even its military role. National pride in some cases pushes away economic rationality.

Another immediate reaction of ports/terminal operators to a decline in demand relates to adjustments in capacity management by suspending or delaying investments and by idling assets such as ships and terminals (or berths). Some companies opt for a sell-off of non-core activities, or do equity swaps that reflect better their regional strategic interests [43], thereby leading to a vertical disintegration trend. Market players also turn to the renegotiation of contracts (e.g. concession agreements) in an attempt to mitigate the negative impacts of a sudden drop in demand. As studies in broader samples of activities suggest “finance-driven” capitalism, large equity investors require high returns on invested capital over a shorter time period and are said to have a low tolerance for a deviation from expected returns [6]. Once a paradigm shift takes place, a once highly desirable sector can quickly be abandoned leading to a rapid devaluation of the assets as buyers can no longer be readily found. This is reminiscent of events taking place on stock markets where devaluations can be sudden and substantial.

5.2. Rebalancing risk via a paradigm shift

The new risk balance involves *access to finance that is more stringent*, in sharp contrast to the easy credit environment that prevailed until 2008. Even operators with a solid balance sheet are facing greater scrutiny, with terminal operators themselves recognizing that container volumes and better operating margins are only some of the parameters in the picture [44]. In the longer term, risks cannot be mitigated in a sustainable way, as it is evident that financialisation and disintermediation are a dangerous mix.

The on-going reassessment of risk incites a paradigm shift leaning on the *return of forms of embeddedness*. The re-embeddedness will take many forms, including the bankruptcy of the weakest players and the tenet of false asymmetry where it is assumed that the larger players have more and better information than the smaller players is being questioned. The larger players in the maritime world appear to be those who have lost the most; paradoxically because they had better access to finance and were thus able to overstretch more than smaller players. If this restructuring process does not materialize because of various bailouts, then in the

medium and long-term the industry could end up in a weaker position, less performing and thus more difficult to finance. In some cases nationalization could become an option, particularly for terminals considered as critical infrastructure to national economic interests, with terminal management given back to port authorities or at least an increased direct terminal involvement of government agencies. This could reverse the terminal concession trend in some countries. Those who remain will thrive through a keener assessment of the market potential and will allocate capital accordingly.

The more realistic trend in terms of growth prospects is another structural shift. This is likely to involve *abandoning prevailing forecast assumptions and methodologies*, such as the compound annual growth paradigm. This methodology essentially assumes that container traffic growth behaves in a manner consistent with several financial products. Port traffic assumptions are thus likely to be less backward looking, involving stronger cyclical effects than perhaps it was first assumed. A greater attention on market fundamentals is thus imposed, which is again paradoxical since finance is in theory an exercise in capital allocation based upon market potential and that it is mainly finance that has distorted growth cycles.

Another paradigm shift concerns the *renegotiation and reassessment of terminal contracts*. In the aftermath of the crisis, such renegotiation unfolded in specific cases (e.g. Mandras, Ecuador and Piraeus, Greece). Whether this will take a more extensive form remains to be seen as what happens when the volume and performance conditions do not materialize. While concession agreements negotiated in the last decade tended to focus on securing the deal before the others and how such a transaction could be brought into some financial structure, the quality of the asset will be more critically assessed. A greater consideration of cost recovery of port infrastructure investment is expected and embedded into contract clauses.

5.3 The New Normal

Once the cycle of deleveraging completes the port sector will undertake a growth phase requiring capital investments [45]. This does not mean the return to conditions which prevailed in the years preceding the crisis, but a new 'new normal' paradigm to be marked by the following trends.

Trend 1: Rebalancing short-term and long-term benefits

In the financial world recessionary cycles affect investors' willingness for further investments even after the cycles are completed. The values of port and terminal businesses may have peaked. This is partly because financial institutions realign the balance of their strategies and reroute the allocation of their resources. Potential new entrants and existing investors will head towards exploiting the offering of discounts, and the diversification of their portfolios in order to increase resilience. It is also because the values of terminals are no longer hidden by headlines auctions, as in the recent past. Fluctuations in asset prices generate the risks of changing ownership in container terminals as new entrants and investors are balancing the search for short-term gains against long-term performance improvement.

Trend 2: Redefining public involvement

Bringing the state back in terminal infrastructure finance is not any more an a priori dismissed possibility. While Italian ports have called for a "Marshall plan" for ports, European port authorities collectively agreed some funding in the context of the Trans-European Network policy (TEN-T). The pendulum of project finance might also return to equity rather than debt, with a relatively increased role of state support, and/or indirect institutions (i.e. World Bank, European Investment Bank, etc.) and "sovereign" funds. This will lead to forms of Public-Private Partnerships (PPP) that may differ from the conventional concession model of a landlord port authority with the private sector having a lower tolerance to risk. With more realistic volume and pricing assumptions, rent-sharing schemes will be redesigned. Port authorities are expected to develop strategies allowing them to share in the increased value of terminal businesses, such as by negotiating higher lease and royalty charges or even aiming for a direct participation in a terminal.

TREND 3: REFOCUS ON RESOURCE MANAGEMENT

While the disconnection suggests that changes in terminal equity is less likely to result in immediate effects such as the deterioration of operational performance, the refocus on operations, and resources and asset optimization (staffing; equipment; civil works etc.) gains momentum. Asset valuation models are likely to be revised.

TREND 4: REASSESSING PORTFOLIOS, VERTICAL DISINTEGRATION AND CONSOLIDATION

Restructuring through selling minority stakes is part of the agenda, as private equity turmoil is not very likely. For the industry, the downturn generated the need for seeking alternative schemes, while for some funds this is the opportunity to enter an industry dominated in the recent past by the 'big pockets'[46].

In the wider logistics context, a number of sectors, such as shipping, air freight, some areas of road freight and related freight forwarding activity, offer the potential for consolidation. Many companies in those areas could offer potential both for mergers or acquisitions. Normalization of valuations means that investment by industrial buyers might enter in the frame whereas many owners might be willing to accept new investments. On the other hand, tight credit and aversion to risk pushes investors toward smaller stakes or even away from further investments.

A wild card for the new paradigm is if ship-owners interest in investing in terminals remains. In fact this interest goes beyond container terminals, to include other cargo terminals, passenger and cruise terminals. Shipping lines have been very active investors in terminals before the crisis. The lack of profitability in the liner sector and general lack of funds in the banking sector curtails this in the short to medium term.

TREND 5: RESTRICTIONS IN GETTING FINANCE

Less liquidity at higher costs makes financing a challenge. As funding shortage remains an uncertainty in the banking sector, banks are expected to pass on high funding costs. The era of abundant and cheap finance has come to an end as states absorb more capital to refinance rising public debt burdens, with the possibility of

sovereign default clearly in the balance. This marks a shift from the years that financial means for terminals were widely available. However, partly because of the scarcity of land, ports should be considered as long term investments and for those with capital reserves, there is an opportunity to take advantage of the deflationary environment created by those forced to sell their assets in whole or in part.

Emerging markets are also impacted. The rising tendency of banks to concentrate on home markets, core sectors and clients curtails financing opportunities in emerging markets. Declining appetite for riskier assets as well as banks' desire to de-leverage might result in a 'financial nationalism' led by western banks that have dominated cross border lending and project finance.

TREND 6: DEALING WITH MATURE MARKETS

The economic crisis has made market players realize that some economies have reached a maturity phase characterized by low to moderate long-term growth perspectives and a shift towards quality of service instead of pure quantitative growth. In North America and parts of Europe, trade growth, including container traffic, is maturing. This brings fierce competition among market players, since realizing growth in a stable market is only possible when capturing traffic from rivals (i.e. increase market share). Up to now such competition effects have been underestimated bringing higher market and commercial risks than anticipated. Market players are challenged to rethink risk allocation and to focus on costs, quality and performance.

6. CONCLUSIONS

Globalization and its associated global trade growth have incited an intense phase of capital accumulation in the port industry. The growth prospects and capital requirement to finance terminal projects have attracted the attention of large financial firms and changed the relationships finance was traditionally having with the industry. Financialisation, as a proxy for the growing influence of capital markets, their intermediaries, and processes in contemporary economic and political life, has attracted growing attention [7]. Supported by financial institutions, global terminal operators have built an impressive portfolio of assets. Finance has made a complex industry even more complex with an array of new players such as sovereign funds and various ownership stakes.

As this study demonstrated, in the decade before the economic crisis ports and terminals had experienced the arrival and normalization of what Froud and Williams [47] termed as a 'culture of value extraction'; financial principles interpreted port businesses as abstracted bundles of financial assets and liabilities to be traded for higher economic returns than the existing configurations are able to deliver. The financial sector provided capital, thus opportunities to more effectively capture growth, but was also prone to asset inflation.

An unintended consequence that came to be fully realized with the 2008 financial crisis was one of over-investment and asset inflation with the expectation of unrealistic levels of return. While a growing role of finance enabled the industry to expand to new levels, the concept of risk that was traditionally highly embedded

within the industry has been obfuscated. The risks turned out to be more prevalent than expected and many players assumed the consequences.

In the aftermath of the economic crisis, there is a paradigm shift in the making. While financialisation shifted the relations between the port industry and the trade patterns it is servicing, this relation is shifting again towards a new paradigm better placed to assess risk. The broken link between, (a) financial institutions whose decisions have assumed a central role in port development and directed towards particular corporate strategies, and, (b) the territorial and relational specialties of economic environments and markets within which ports and terminals develop, is re-established in a different way. Concerns, like the organization of production factors, trade developments, regulatory regimes, localized corporate and social cultures, once more condition decisions to invest. Given this reconnection, uneven geographies of future financialisation processes, in terms of assets investments, profitability opportunities, and exclusion potentials, that is observed in other sectors (see [48]) might also apply in the port sector, reversing the trend observed in the pre-crisis period of a more reckless nature of financial actors involvement.

The core of this paradigm shift involves the recreation of the embeddedness that finance unintentionally loosened. Mere information, while useful, must be supplemented by knowledge, experience and trust so that the sector should be seen again as what it fundamentally is; capital intensive assets supporting trade and intermodal connectivity. The matter remains about how such embeddedness can be improved. This first starts at a better understanding of global trade dynamics, financial and monetary cycles and the misallocations they create and their relationships with the port and shipping industries. Second, an on-going integration through intermodalism is taking place between different segments of the global freight distribution system. This implies the setting of transhipment hubs, but also of various hinterland access regimes (see [49]) where shipping companies, terminal operators and inland modes (e.g. rail and barge) are incited to develop common strategies with embeddedness being a logical outcome.

The above does not imply exclusiveness as mechanism for actors wishing to enter or exit the sector. Regionally, embeddedness and inclusiveness can take the form of port cluster formation that takes advantage of agglomeration effects, along with the presence of cluster governance organizations and institutions that foster coordination and pursue regional strategies [50]. Through better access to competencies and innovative ideas, suppliers and customers and capital, and an overall reduction of transactional costs, increased coordination among market players opens the way to an improved embeddedness and mutual awareness of the challenges facing the various players in the port industry and the wider logistics community.

Market mechanisms that allow the restructuring and rationalization of the industry remain at work. However, the potential for future misallocations has not abated. If financialisation was a contributing factor that has recently shaped the development of the sector, it remains to be seen how it will shape its future.

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APM Terminals acquired Terminal Link's 20% interests in Mobile Container Terminal, taking full control of the facility.

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