

Institutional Development Paths in Seaports: The Southern African Case

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In the last three decades, transport economists and geographers have published an array of studies on port institutions and governance. Many of these publications emphasize the role of institutions in enabling or inhibiting port efficiencies, port competition (inter and intra) and the development of a port's resources and capabilities.

Political instabilities and their consequential economic lags have to some extent misaligned the pace of institutional reforms in Southern African ports compared with ports in the developed world. Some ports in this region (South Africa, Mozambique, Namibia, Mauritius and Madagascar) have however, over the last 10 to 15 years begun to follow the port reform trend, and as such have undergone various degrees of institutional reform. This work seeks to provide a detailed case study which discloses a holistic overview of recent and on-going institutional reforms of Southern African ports from two perspectives. Firstly, by assessing the extent to which institutional structures have shaped and mediated port development in Southern Africa. Secondly, by conducting a port institutional positioning comparison between a range of North European and Southern African container ports in order to determine how similarly Southern African ports resemble more established first world ports. Southern African ports effectively present a unique case of mixed port institutional development trends compared to those in more developed regions of the world. As such, this case study reinforces the fact that different port institutional structures are locally embedded and do matter in port competition, and that institutional reform has supported port development to varying degrees.

Keywords: Institutional development path, Port Institutions, Southern Africa, Container Port.

1. Introduction

In the last three decades, transport economists and geographers have published an array of studies on port institutions and governance. It will be demonstrated in the next section that many of these publications emphasize the role of institutions in enabling or inhibiting port efficiencies, port competition (inter and intra) and the development of a port's resources and capabilities.

Political instability and their consequential economic lags have to some extent misaligned the pace of institutional reforms in Southern African ports compared with ports in the developed world. Some ports in this region (South Africa, Mozambique, Namibia, Mauritius and

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Madagascar) have, however, over the last 10 years begun to follow the port reformation trend and as such undergone various degrees of institutional reform.

Given Southern Africa's importance (the region constitutes 41% of Africa's container throughput), this study seeks to provide a detailed case study which: (1) Discloses a holistic overview of recent and on-going institutional reforms of Southern African ports; (2) Provides understanding as to what extent institutional structures have shaped and mediated port development in Southern Africa and (3) Compares the current institutional position between a range of Southern African and North European container ports.

Our paper is structured as follows. Section two provides the theoretical background describing what port institutional arrangements are, as well as why and how they evolve. Section three consolidates the literature discussed and presents the research methodology and analytical framework for application to Southern African port institutions (introduced in section 4). Section five applies the analytical framework to the case addressing the research question in three separate discussions. First, a high level indication of the extent of port institutional variation in the region is disclosed. Second, a more detailed discussion of each port's institutional development path follows which zooms in on each path's critical junctures points (effectively main drivers of port institutional reform in the region). Finally the institutional position of Southern African ports is compared to a selection of five ports of the Hamburg- Le Havre range in northern Europe in order to determine which Southern African ports most resemble these more mature/ developed ports.

Southern African ports effectively present a unique case of mixed port institutional development trends compared to developed regions of the world. As such, this case study reinforces the fact that different port institutional structures do matter in port competition and that institutional reform has supported port development to varying degrees.

2. Theoretical Background

2.1. Defining Port Institutions

Notteboom et al. (2013) describe institutions as the humanly devised and or socially constructed sets of rules that constrain and enable human interaction. Aligned to this definition, Roland (2004) defines institutions as constraints on behaviour imposed by 'rules of the game'. Gertler (2004) characterises institutions as having formal regulations, legislation, economic systems as well as informal societal norms that regulate the behaviour of economic actors. This comprises firms, managers, investors and workers which effectively all define the system of rules that shape the attitudes, values and expectations of individual economic actors. North (1991) succinctly describes the mechanics of institutions as rules of the game in society that shape and constrain the behaviour of economic agents.

Port management models to a certain extent define the rules of the game between players in a port context. A simplified typology of port management models, which effectively categorises a port's 'rules of the game' with respect to functional responsibility, is disclosed in table 1.

In a comparative case study of port governance in the United States, United Kingdom, Australia, India and Canada, Brooks (2004) finds the WBRTK typology of ports too simple an approach. The main criticism relates mainly to the fact that the WBRTK does not provide guidance to a government faced with pressure to devolve port administration in terms of the application of each approach given the **country specific (or local) situation**. This notion holds true especially for ports in developing countries which operate in a significantly different economic and social climate compared with the more developed first mover port reform countries of the developed world.

Table 1. Typology of Port Ownership WBPRTK Models

Port Type	Infrastructure	Superstructure	Port labour	Other functions
Public service port	Public	Public	Public	Majority public
Tool port	Public	Public	Private	Public/private
Landlord port	Public	Private	Private	Public/private
Private service port	Private	Private	Private	Majority public

Source: World Bank (2007)

2.2. Why do Port Institutions change?

Roland (2004) distinguishes between fast-moving and slow-moving institutions in which a 'fast change' can be spurred on by a revolution and a 'slow-change' driven by changes in social norms. According to Debie et al. (2013) the act of reforming port institutions implies the implementation of a public policy to change specific actions and coordination structures, most commonly at the national level. Hall (2003) asserts that the trajectory of institutional change is reflective of both the local political economy and the role of public officials in deliberating over formal institutional choices in the face of considerable uncertainty. Notteboom and Winkelmanns (2001) argued that most changes in port institutions relate to a retreat or at least a redefinition of the role of the public sector in ports through privatisation, commercialisation and corporatisation schemes. The retreat of government flourishes in the belief that an enterprise-based economy would allow for greater flexibility and efficiency in the market (e.g. through higher competition) and a better response to consumers' demands. Some reasons for institutional changes are as follows:

- To prevent market failure

The conventional assumption in a market economy is that competitive forces will ensure the efficient allocation of resources. Market failure is seen as a prime reason for public intervention in ports, and thus a strong incentive for not aiming for a full retreat from government in ports (Notteboom and Winkelmanns, 2001). Failure of the competitive market mechanisms results in three forms of market failure as outlined by Vining and Boardman (2008). Such market failures include: the existence of public goods, imperfect competition and externalities. These failures necessitate and justify market intervention. Public goods are defined by Suykens and Van De Voorde (1998), as 'those goods and services that could or probably never be supplied sufficiently or satisfactorily by a competitive industry, or might not be supplied by them at all.' Vining and Boardman (2008) discusses the economic principals of non-rivalrous and non-excludable properties associated with port infrastructure. They also advocate the existence of public goods as a motive for government intervention in the provision of port infrastructure at a socially optimum price. Imperfect competition in a port context pertains to a port's existence as a natural monopoly. The scarce existence of 'natural ports' (e.g. in terms of location) and the large capital costs and economies of scale deter entry of new incumbents and result in the formation of a port as a natural monopoly. Positive externalities can result from port projects that can (for example) be combined with corridors to form a network. These network externalities may result from economies of scale or economies of density (increase of benefits as the distance between nodes increases). Negative externalities as a result of port activity can also be observed through congestion and pollution. Vining and Boardman (2008) provide a typology of public intervention for the provision of physical and intangible port infrastructure depending on the level of market failure (under severe, moderate and low market failure). In such cases, repairing the market failure can only be achieved through port institutional changes. Baird (2004) argues, however,

that ports are increasingly regarded as regular services as opposed to public goods. This implies that the cost recovery principle is therefore justified for ports.

- To seek new sources of investment finance

The growth in containerization has led to larger vessels which have necessitated deeper and wider port channels, larger stack port terminals and more efficient port handling equipment and technology (to name a few). Such investments come at a significant cost and often a significant burden to the state. In her discussion of port reform in developing countries, Niekerk (2005) states that the intention of port reform is to create stand-alone businesses that are financially viable. Financial imperatives for investment funding include affordability, a suitable return on investment (if any) and an appropriate risk assessment. Developing countries confronted with rapid economic growth often face scarcity of government funding for projects such as port developments which are required to align investment levels with projected demand. Such scarcity necessitates the need for more creative funding strategies such as: foreign lenders/foreign aid, private partner investors or perhaps even the sale (partial or complete) of port property to the private sector. These different funding mechanisms will ultimately require a change to the 'rules of the game' or port institutions thereby permitting the devolution of ports, and 'reducing the financial burden of the state' (Debie et al., 2007).

- To seek a higher efficiency and effectiveness

Institutions (rules of the game) are characteristically restrictive and as such, constraints can inhibit the efficiency levels and effectiveness of a port. In their study assessing port governance models, Brooks and Pallis (2008) link governance decisions and a port authority's aligned structure and strategy fit as the input to an optimal port performance (output). This resultant output goal (after a transition period) is both efficient and effective to internal and external stakeholders. Tongzon and Ganesalingam (1994) divide efficiency measures into two broad categories: operational efficiency and customer-oriented measures. Their study proposes bringing effectiveness into the measurement of performance in a greater way than has been done to date. Marlow and Paixão (2003) identified the importance of measuring port effectiveness in the context of a 'lean port' and the need for agility in a highly competitive environment. Cheon et al. (2010) evaluate how port institutional reforms influenced efficiency gains of 98 ports between 1991 and 2004 applying the Malmquist productivity index. The authors argue that examining the sources of efficiency gains provides a foundation for reforms of port strategies and institutions in the long term. The results of their quantitative study did, however, reject the premise that as ports have become more decentralized in corporate structure, they have acquired higher efficiency gains. They cite improvement in total factor productivity of world container ports largely from the reforms of ownership structure and asset management practices, rather than through decentralization and corporatization at the port-authority level. The results of Cheon, et al. (2010) are also reinforced by the work of Chang (2011) which refutes the notion that causality runs from institutions/ institutional change to development improvement and asserts this causal relationship to be simplistic, linear, and static. In a port context the results of Cheon et al. (2010) and the hypotheses of Chang (2011) highlight the possible misconception that port efficiency gains follow institutional change.

- To exploit windows of opportunity/locational opportunity

Jacobs and Notteboom (2011) discuss the role of territorial institutions and strategic action in opening windows of opportunity at different competing locations. In their study they present three case studies within the Rhine-Scheldt Delta. The results demonstrate that a process of regional evolution took place, when a window of opportunity at one location triggers a response at another location. The findings show that a combination of (missed) windows of opportunities and 'critical junctures' creates a distinctive path of institutional development among ports.

- To seek the appropriate institutional 'fit'

In their respective management studies, Mintzberg (1990), Venkatraman (1989) and Grant (2009:276) emphasise the need for 'fit' between the environment, the governance model, the organisational strategy and the resources and capabilities of the organisation as an imperative for efficient and effective operations. De Langen and Van der Lugt's (2007) framework of strategic fit applied to port authorities shows the embeddedness of port governance with the environment, strategy, resources and capabilities. This framework was used to analyse three Dutch ports at both a port cluster and port authority level. The objective was to ultimately identify the appropriate institutional fit given influences from environment, the strategic position and resources/capabilities of the ports. Changes in the port environment have led to considerable changes in the governance models of ports (Brooks, 2004). This further emphasises the point that seeking the appropriate environmental fit can be executed by institutional changes. Notteboom and Winkelmanns (2001) discuss the correct management fit for port organisations. The authors cite political management structures as an impediment of many public port organisations. These political management structures prevent ports from developing enough flexibility and versatility to cope with increased productivity requirements and innovation in order to respond adequately to structural changes in the world economy. Seeking the appropriate organisational or human resource fit for a port authority could be achieved through institutional change. In their commentary on institutions in evolutionary geography, Boschma and Frenken (2009) state that when institutions generally do not fit with the specific features of a new economy, institutions are created to support, sustain and further grow the new industry.

2.3 How do institutions change/develop? : Factors shaping the Institutional Development path time continuum.

- Institutional path dependence

'Yes, institutions do evolve in a manner that shares important attributes with biological processes of evolution' (David, 1994:217). There are essentially two rationales guiding institutional path dependence, namely an evolutionary and institutional perspective. Table 2 provides the two economic perspectives of path dependence which impact institutional change (Evolutionary and Institutional). The Institutional developmental path of a port is influenced either by group behaviour providing structural constraints, being locked into a specific path or the emergence of economic, macrostructure from micro-events and behaviours.

In their discussion on the four phases of path dependence, Martin and Simmie (2008) propose a pre-formation, path creation, path dependence (where lock in occurs) and finally a path decay phase. In the final phase of path dependence (path decay), there is a loss of momentum and eventual path dissolution along the institutional development path. This phase can be attributed to reasons such as, a rise in external competition, the purposeful abandonment of a particular path and negative lock in. A critical juncture event, for example a change from a planned/command like economy to a more market economy, provides an opportunity for institutional change to a new institutional development path, thereby decaying the current path.

- Devolution of ports

Various scholars have defined devolution broadly as the transfer of responsibilities from a state authority towards the private sector. This is done so either directly through a sale or concession agreement, or the sharing of responsibilities (Brooks, 2007; Cullinane and Song, 2002; Hoffman, 2002; Thomas, 1994). The devolution of ports is founded on the belief that, 'the private market is an efficient means of allocating resources' (Brooks, 2007). This is essentially based on the premise that the public sector is simply too bureaucratic and lacks the agile management style required to cope with the demands of the fast paced global shipping and logistics environment. Notteboom and Winkelmanns (2001) argue that public port companies that are operating in a competitive market environment without any government shelter and based on a commercial/non-politicised management style are not necessarily less efficient than private ones when confronted with the same environment and organisational structure.

Table 2. Path Dependence Rationales

Evolutionary Economics	Institutional Economics
Path Dependence and 'Lock In' perspective (David, 1985; Notteboom et al., 2013; Martin & Sunley, 2006)	Dynamic Increasing Returns (DIR) Perspective (Arthur, 1989; Martin & Sunley, 2006)
Evolutionary economists view lock in from a perspective of routines with lock in being attributed to technology ³ (David, 1985). An example of lock in in a port context is the container. This led to standardisation, palletized cargo (even some minerals are now being containerised). Inter-modality (and such routines) all spurred on by the containerisation 'lock in'.	The role of various forms of increasing returns in generating path dependence in the economy. Premise is that small events cannot sway the outcome, however under increasing returns, many outcomes are possible. DIR is concerned with not just only technological evolution and 'lock in' but also the emergence of economic, macrostructure from micro-events and behaviours, that is with 'self organisation' (Arthur, 1989).
	Institutional Hysteresis (lagging) (North, 1991; Setterfield 1993) Path dependence viewed from the perspective of institutional change. Institutions are ultimately a product of individual and group behaviour – recognizing the role of institutions as structural constraints. Institutions of an economy are best thought of as evolving, non-optimal and path-dependent phenomena. Paths can be changed abruptly by revolutions, external shocks or incremental adaptation and deliberate design.

Source: Adapted from David, 1985; Notteboom et al., 2013; Martin & Sunley, 2006; Arthur, 1989; North, 1991; Setterfield, 1993.

Removing terminal assets and operational functions from government hands allows specialized entities to concentrate on terminal operations and cargo handling services (Cheon et al., 2010). Globally devolution has occurred in large and small ports and also at various levels within the port, i.e. operator, stevedore, port labour, etc. Although the intention to devolve port activities has similar motives, the results (depending on the measure used) globally have been mixed. Cheon et al. (2010) looked at the total factor productivity changes (MPI) of 98 devolved ports over 13 years and demonstrated an improvement for 83 and a decrease in efficiency for 15 ports. Debie et al. (2007) revisited port devolution cases of ports in France and Canada drawing attention to challenges confronting small ports following the devolution process. These include financial limitations and scale conflicts between regional and central governments over port planning and development.

- Public Private Partnerships (PPP)

PPP in the port industry is typically centred around a devolution process whereby the public sector seeks financial and operational partnerships with the private sector. According to Hodge and Greve (2007) scholars have been divided in their thinking of PPP. This is between the belief of PPP as a governance tool (changing the rules of the game) and others who believe that PPP is simply a language game. In both cases, PPPs are connected with infrastructure projects and are institutional arrangements for cooperation between the public and private sector. Given the risk and cost associated with huge infrastructure projects, PPPs are also seen as financial models that

³ Refer the works of David (1985) – QWERTY economics whereby the early development of the QWERTY keyboard led to it becoming the standard keyboard in use. That technology locked the industry into QWERTY.

enable the public sector to make use of private finance capital. The alternative view of PPP as a language game, uses PPP as a 'game designed to cloud' other strategies and purposes. This view sees PPP merely as a watered down version of privatisation or outsourcing. Farlam (2005) sees PPP as finance model development. The state shares risk and responsibility with private firms but ultimately retains control of assets, while avoiding some of the 'pitfalls' of privatisation (unemployment, higher prices and corruption). In terms of suitability, Vining and Boardman (2008) argue that PPP is only likely to work for port physical infrastructure with moderate levels of market failure. Moderate market failure in a port context refers to instances where there is moderate competition, the port is small to medium in size, the port is a regional port, there are moderate up-front costs, and there is a potential public good problem.

- Institutional plasticity (layering; stretching and conversion)

Physicists and engineers refer to plasticity as the propensity of a material to undergo permanent deformation under load. From an institutional context, the processes and modes of institutional change within a given path are still insufficiently understood (Stambach 2010:411). The evolutionary economic concept of path 'lock in' and 'de-locking' to some extent has constrained institutional path evolution to exogenous influences (negative or positive.) MacKinnon (2009), Notteboom et al. (2013) and Strambach (2010) agree in the need for raised awareness with respect to the influence of transformative capacities of agency in the process of institutional change. Mindfulness of different transformative process (not limited to 'lock in') was introduced by Strambach (2010) in order to explain a situation where **a range of alternative development trajectories** are possible. These alternative developments could be realized without necessarily breaking out of the existing institutional path in order to reach an alternative development trajectory. Notteboom et al. (2013) state that institutional plasticity allows for incremental institutional transformations. However such incremental changes will not necessarily result in a break with the existing path of development. Institutional plasticity transformations are exhibited in three forms namely, conversion, layering and stretching (Table 3).

Table 3. Three forms of Institutional plasticity

Conversion	Layering	Stretching
The alteration of existing institutions to serve new purposes or functions. Conversion can be achieved through the abandonment of existing layers or realignment of arrangements without the addition of new rules or procedures.	A gradual process achieved by the addition of new rules or procedures to existing institutions, or by the addition of new functions. Each new 'layer' constitutes a small change. However, the cumulative effect can lead to a mutation of the institution on the same path.	This occurs when actors cannot change existing arrangements and essentially apply flexibility and dynamism within the existing institution.

Source: Adapted from Notteboom et al. (2013), Martin (2010) and Strambach (2010)

Is institutional plasticity perhaps just another form of the dynamic increasing returns (DIR) and Institutional Hysteresis perspectives (IHP) of institutional path dependence? (refer to table 2). Like the plasticity view, both DIR and IHP also argue path evolution either by radical (shift in path) or through **incremental** means (development of macrostructure from microstructure or the re-organization of groups/agents without changing the rules of the game). Therefore,

incremental changes within the DIR and IHP views can exhibit the same results/ characteristics as institutional plasticity.

- Through economic resilience of regions

According to Simmie and Martin (2010), the idea of regional economic resilience refers to the ability of a local socio-economic system to re-cover from a shock or disruption. Hill et al. (2008) refer to resilience as the ability of a region to recover from shocks which remove or potentially remove the region from its growth path. The relative resilience to shocks, i.e. the sensitivity to shocks and the recovery (response times), are therefore an important consideration impacting port institutional development, particularly in developing economies. The tenacity of a region to remain, bounce back or move to a higher yielding equilibrium institutional path, effectively constrains or enables the extent to which 'lock in' or 'de-locking' of institutional path developments can occur. This hinges on the assumption/applies to cases whereby an external shock is required to 'un-lock' an equilibrium yielding developmental path (David, 2005). Simmie and Martin (2010) measure resilience as a regions 'susceptibility' to be moved off its equilibrium path. From an institutional economic perspective, **resilience** can be viewed as a form of **path 'lock in/ de-locking' elasticity**.

2.4 Port regulation

'In leading ports, regulation of private sector service providers has been minimized by ensuring an adequate level of competition' (van Niekerk2002:12). In the absence of adequate competition however, the role of an independent regulator becomes critical in safeguarding against anti-competitive behaviour potentially yielded by 'dominant' ports. The establishment of such a regulatory function is generally guided by a formal written enactment of a legislative authority (statute). The level (national, ministerial, port authority) at which port regulations are adopted will vary depending on the national port governance model. For example, port regulations in France and Italy reside at the ministerial level and in Rotterdam at the Port Authority level. All three are however also still subject to EU competition regulations. According to Farrell (2013) the objectives of port regulations depend on the policy environment. If government policy seeks greater competition, the objectives of the regulator overall would be to remove barriers to competition and facilitate transition to competitive markets. If government policy is not competition seeking, the regulatory objectives are then to generate outcomes similar to those which would be achieved by competition in situations where competition is impossible. This can be achieved (albeit more reactively) by monitoring industry performance, enforcing accountability, protecting consumers and ensuring fair prices. A discussion on the port regulatory position adopted at each of the Southern African ports in this case will follow at 5.1.

3. Methodology

The objective of this study is to provide a qualitative analysis of port institutional path development applied to Southern African container ports. Case study research is a useful research method for a thorough analysis of a specific situation (Van den Berg & De Langen 2011). Yin (1994) advocates case study research for the purpose of testing existing theory. Lee (1999) advises that case study research is best suited for the examination of why and how real-life (organizational) phenomena occur, but under conditions where researchers have minimum control. Mouton (2001) describes case research as being best suited for a small number of cases and also cites business and regional studies as typically applicable. The case selected comprises (and is limited to) the Southern African **container ports** of Maputo, Durban, Port Elizabeth, Cape Town, Walvis Bay, Port Louis and Toamasina. These are ports with varying capacity, have the same cargo operation (containers) and are located in the same region.

Figure 1 graphically consolidates the literature discussed in section two in order to provide the theoretical or conceptual basis with which the institutional development path in southern African ports will be analysed. In a given port system, the institutional development path can be viewed

over a time continuum (X axis) relative to the growth/ development of the port (Y axis). The underlying assumption is that *the institutional development path of a port authority will always seek to achieve the highest institutional equilibrium* - from the multiple institutional equilibrium paths available (E1 to E4). For the purpose of our analysis we define an institutional equilibrium path as the most appropriate port institution for optimum port development. To illustrate, at position A, the port endeavours to reach E3 (an institutional position which yields higher growth/development over the period of time). By exercising institutional resilience, the port authority can stay on the path gradually reaching E3 (B - a position close to but not on E3). A critical juncture point such as a political/economic shock or intolerable market failure, however, could pull the port authority away from its equilibrium development path, displacing or de-locking it to a point such as C.

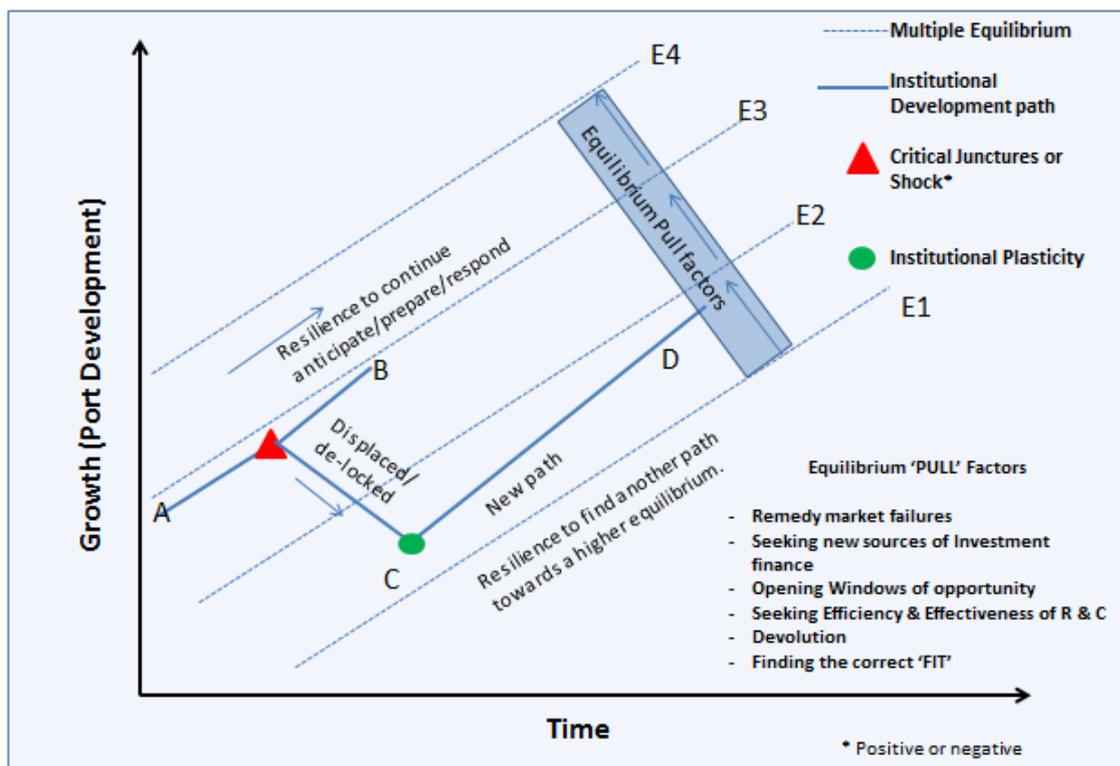


Figure 1. Institutional Development Path Trend (own elaboration based on literature review)

At this lower equilibrium development position, the port authority (depending on the level of resilience) will once again seek a higher institutional equilibrium for its development. If an institutional change such as devolution for example cannot be achieved due to structural (e.g. political constraints) then the port authority might exercise plasticity (D). In seeking a suitable institutional fit towards a greater institutional equilibrium path, the port authority might alter existing rules (conversion), add some new procedures (layering) or apply some flexibility (stretching). This would all be achieved while remaining within the same institutional framework.

The conceptual theoretical framework presented in Figure 1 will be applied as the tool used to qualitatively analyse institutional variation and institutional path development in our case study. Our two research questions are:

RQ1: What is the extent of institutional development path variation among Southern African ports? and

RQ2: To what extent have port institutional structures shaped and mediated port development among Southern African Ports?

From the (1) literature review, (2) observation of past international port reform cases and (3) general principles of good corporate governance, we observe that port reform has effectively impacted three main dimensions of a port authority. Firstly, the ownership structure (public, private and hybrid), secondly the core port authority functions (the regulator, landlord, waterside and operator function). Third, the governance practices of the port such as transparency and accountability and segregation of duties. Our final analysis is a comparative overview of the ownership structure and port authority functional variation between Southern African container ports and European ports in the Hamburg La Havre range. Port authority ownership structure and the extent to which critical port functions/services are separated from the port authority are the principal comparative factors applied in order to understand differences between Southern African and Northern European institutional ports. A comparison between Southern African and European port institutional arrangements is relevant to this study for various reasons. The European port system's maritime heritage (which dates back to as early as the 15th century) demonstrates the region's enduring and established track record as a maritime authority for developing ports. Southern Africa's colonial heritage has also resulted in some of the region's countries adopting legal principles and institutional arrangements from their former European colonists. The extent of this today with respect to port institutional arrangements however, requires further investigation. Finally, trade, development and co-operation agreements (such as the liberalisation schedules completed in 2012) established a free trade area that covers 90% of bilateral trade between the EU and South Africa. South Africa is by far the strongest of sub-Saharan Africa's economies with export volumes to the EU growing and their composition becoming more diverse. (EU, 2012). Negotiations with the EU are now focused on reaching a comprehensive and regionally inclusive agreement with the **entire** South African Development Community (SADC). This will further strengthen trade between the two regions and increase European interest in southern African port activities.

For our analysis, we will position each port in terms of the extent of port ownership (public/private) relative to the extent core port functions are separated from the port authority itself. The latter (port functions) will be analysed in terms of the port regulatory, port waterside and port operator functions. This framework is also consistent with the alternative port classification approach advocated by Brooks (2004) in response to the more simplistic World Bank topology of ports. Our framework however extends the degree of ownership analysis in order to obtain a greater view of the private or public ownership position in conjunction with any devolvement of services.

Figure 2 illustrates the analysis tool which will provide an aggregated position of each port for comparative purposes. We will compare each port's position relative to the three extremes presented in figure 2, i.e. ownership structure, governance and the extent of port core functional separation of services. A,B,C and D represent positions dominated by a combination of (extreme) ownership structures or extremely unevenly separated port functions:

- A = Zero government ownership with all main port functions separated from the port authority (private landlord);
- B = Zero government ownership with one authority performing all port functions (private service port);
- C = 100% government ownership with all main port functions separated from the port authority (public landlord);
- D = 100% government ownership with one authority performing all port functions (public service port).

Central in figure 2 as a reference point is balanced port reform, i.e. a perfectly balanced port institutional arrangement with 50% government ownership in each sphere of the port and 50% separation of port functions away from the port authority. Balanced port reform from this perspective is not proposed as the end goal for all ports, as each individual port's institutional

positioning will be dependent on, 'the country specific (or local) situation' (Brooks, 2004).. After government ownership and the extent to which port functions are separated from the port authority has been established for each port, we will be able to position each port for analysis purposes. This analysis tool will then provide a concise indication on the Southern African port institutional positioning relative to the north European ports - the basis of our comparative analysis and third research question:

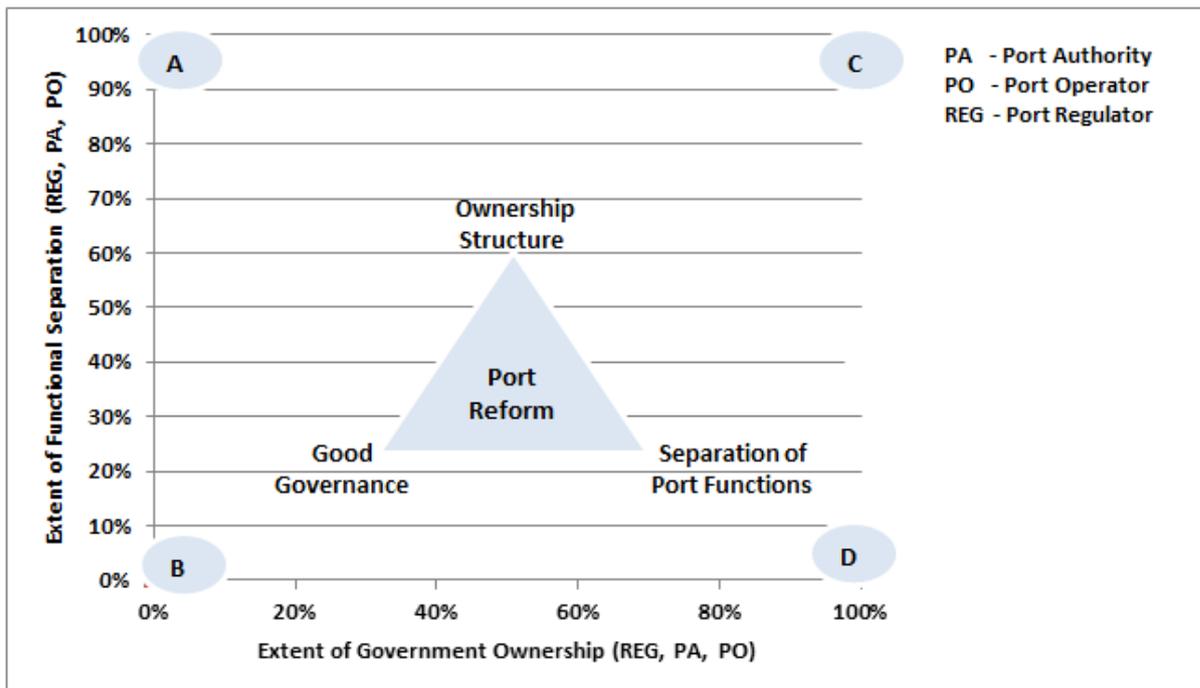


Figure 2. Port Institutional Positioning framework

RQ3: How aligned are Southern African ports compared to a set of EU ports within the Hamburg Le Havre range in terms of their respective port institutional positioning?

Our analysis consists of three steps. Firstly, all available and relevant port data/documents will be collated and analysed. The data is predominantly secondary and ranges from annual reports, strategic plans, corporate presentations, and available port statistics. Telephonic interviews (primary data) will be conducted in order to obtain clarity or confirmation of information where necessary. Second, the information obtained is categorised and allocated to the relevant section in accordance with the institutional framework. Third, the categorised information is reconciled against port institutional theory and conclusions for all ports are consolidated in order to determine the overall institutional development path and institutional variation in the region (see framework in figure 1). The discussion will be limited to the institutional arrangements of container ports in the region. It will also not include an evaluation of the causal relationship between institutional changes and port productivity improvements.

4. Case Overview: Background

Following the theoretical review on port institutional development and a discussion on the methodology, this section provides a background on the port authorities analysed in this study. Figure 3 shows the regional positioning of the Southern African container ports together with the container handling capacity of each port. Table 4 provides an overview of each port authority, the southern African country in which they operate and the container terminals identified.

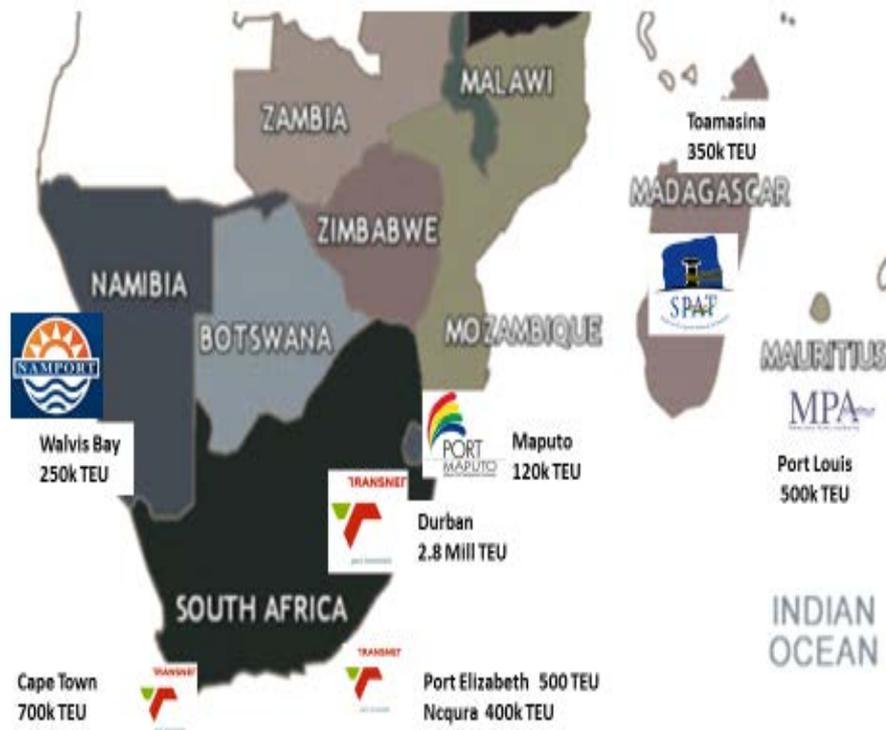


Figure 3. Southern African Ports and Container Operations

(Source: Map adapted from www.saplacestours.com, port capacity at 2011)

Table 4. Southern African Port Authorities and container ports

Country	Port Authority	Container Ports	Port Type & Ownership
South Africa	National Port Authority, a division of Transnet Soc (TNPA)	Durban Cape Town Port Elizabeth Ncquira	Service Port Tool Port Hybrid. The port Authority is a division of the separate legal entity Transnet, a public company with the South African government as the only shareholder. Transnet also holds the container operations (via TPT) and rail operations (via TFR)
Namibia	Namport Port Authority	Walvis Bay & Lüderitz	Tool Port, state owned enterprise.
Mozambique	The Port Authority (PA) Division of MPDC	Maputo & Matola	Private Port A National private company
Madagascar	Société de Gestion du Port Autonome de Toamasina (SPAT)	Toamasina	Landlord Port (PPP)
Mauritius	Mauritius Port Authority (MPA)	Port Louis	Tool/Service Port hybrid, government owned.

(Source: Authors own Elaboration)

5. Application of the Institutional Development Framework

This section presents the results of the analysis performed on the basis of the presented methodological framework. Section 5.1 provides a high-level overview of the extent of current port institutional variation in the region. Section 5.2 analyses each port's institutional path

trajectory, highlighting the salient critical junctures which necessitated past and current institutional reform. This section also points to possible future critical junctures based on current trends and issues faced by the ports today which might necessitate further institutional changes. Section 5.3 applies the port reform positioning framework in order to disclose the extent of port institutional variation between Southern African and European ports. Section 5.4 discusses the main findings resulting from the comparison among ports on a regional and European level.

5.1 Extent of port institutional variation in the region

Figure 4 depicts a summary of the extent of institutional variation among the region's ports. For comparative purposes, this has been divided by the extent of public participation at the government, port regulatory (PR), port authority⁴ (PA) and port operator (PO) level. Each port has also been assigned a 'tier'. This is done according to the level of segregation and private participation at each port's regulatory and functional level (tier 1 to 4).

Namport (T1), MPA (T2) and TNPA (T3) are ports with the highest levels of public participation (100%). TNPA and MPA are both separate legal *government* entities and similarly have separately devolved container port operations with *government* as the shareholder. Namport however, is one port entity with a mandate to run the port authority and container operations. With respect to regulatory responsibilities Namport and MCA both assume the role of both regulator and port authority, presenting some governance issues with respect to autonomy and neutrality. TNPA however is regulated by a separate regulatory authority (although still a government entity).

The ports at level T1 to T3 in figure 4 exist on the notion that the port is of national interest and provides social and economic benefits for the countries' citizens. This is the dominant factor '**locking**' these ports into the public service or tool port institutional framework. Given the capacity, customer and strategic business requirements, however, this framework may no longer '**fit**' and provide the sustainable outcomes required. The ports at tiers T4 (Maputo) and T5 (Toamasina) have undergone the greatest amount of institutional reform in the last 10 to 15 years. As a result, both ports have the least amount of public participation compared with the T1, T2 and T3 ports. Notably, the institutional development paths of the T4 and T5 ports have therefore had more juncture points which presented windows of opportunity for port reform to occur and subsequently permitted private sector investment.

⁴ Note: The discussion is limited to the container sector.

	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Government	Namibia	Mauritius	South Africa	Mozambique	Madagascar
Port Regulator	Namport	Mauritian Port Authority (MPA)	The Ports regulator of South Africa	Caminhos de Ferro Moçambique (CFM)	Agence Portuaire Maritime et Fluviale (APFM)
Port Authority	Namport	Mauritian Port Authority (MPA)	Transnet Port Authority (TNPA)	Maputo port development corporation (MPDC)	Société du Port à gestion Autonome de Toamasina (SPAT)
Port Operator	Namport	Cargo Handling corporation (CHC)	Transnet Port terminals (TPT)	DP world Maputo	International Container Services Inc (ICTS)

Figure 4. Institutional variation of Southern African Ports

note: port regulation (PR), port authority function (PA) and port operations (PO)

source: Own elaboration, information obtained from various Port Authorities

5.2 Port Institutions and Port Institutional Path development

In this section we analyse the institutional development trajectory of each port through the lens of the presented Institutional Development path framework (figure 1).

Namport (Namibia)

In the case of Namibia, the port authority Namport was established through the Namibian Ports Authority Act (Act No. 2 of 1994). In addition to managing the port facilities, Namport also has a regulatory function to 'contribute to the competitiveness of the SADC region's trade.' The Port of Walvis Bay has strategically positioned itself as a 'Gateway to Southern Africa' and as such is committed to grow its future container volumes. The port is however quite constrained with respect to available land use for capacity expansion (for example). A current feasible option is a land reclamation project which comes at a significant cost to Namport (€235.3⁵ million). This investment comprises around 23%⁶ of the country's GDP recorded in 2011. As such this presents a considerable challenge to the balance sheet of Namport with respect to the financing of such a large scale investment. In addition to this investment is the cargo handling equipment and expertise to operate the expanded port. The current stage in the port's life can be viewed as a critical juncture point in the institutional development path of Namport. This juncture point could present a window of opportunity for private/public partner participation to deliver the much needed financial investment and operational skills. A change in the institutional path can be achieved by e.g. unlocking Namport from the existing path or layering/stretching the current path (exercising plasticity) in order to achieve a more suitable institutional framework given the

⁵ N\$ 2.75 billion Namibian dollars, Uirab, 2012.

⁶ GDP obtained from World bank development indicators, refer Worldbank, 2014

port's objectives. This will ultimately depend on the level of regional resilience governing agents possess in order to unlock/stretch or layer Namport's institutional path and shift it to a higher equilibrium yielding position. Currently, from a container operation perspective, Namport has the least institutionally evolved port compared with others in the region. The late start does however allow it to benefit from the experience of many other developing countries in port reform processes in order to select an option best suited to the port's needs. The lock in trajectory of Namport however persists. During the last quarter of 2013 Namport secured a loan from the African Development bank in view of funding 87% of the container terminal expansion program. The difference will be funded through grants, retained earnings from Namport and the fiscus.

MPA & TNPA (Mauritius and South Africa)

The MPA and TNPA have been grouped in the discussion as they have an almost identical institutional framework. Both of the ports cusp between that of a public service and tool port. The major difference is that of the regulatory function. In the South African case, the regulator is a **separate** (although also public) entity. MPA, however, serves both the port authority and port regulatory function. The regulatory independence distinguishes the ports in terms of the degrees (tiers) of government involvement. These two port authorities also identify themselves as national strategic assets having a duty to serve and empower the citizens of the country through the employment of its local citizens and by supporting local small/medium enterprises. This is also one of the major reasons for the institutional lock in to the current port ownership model.

With reference to our institutional path development framework (figure 1), we graphically illustrate and summarize the development path followed in South Africa highlighting critical juncture events in figure 5.

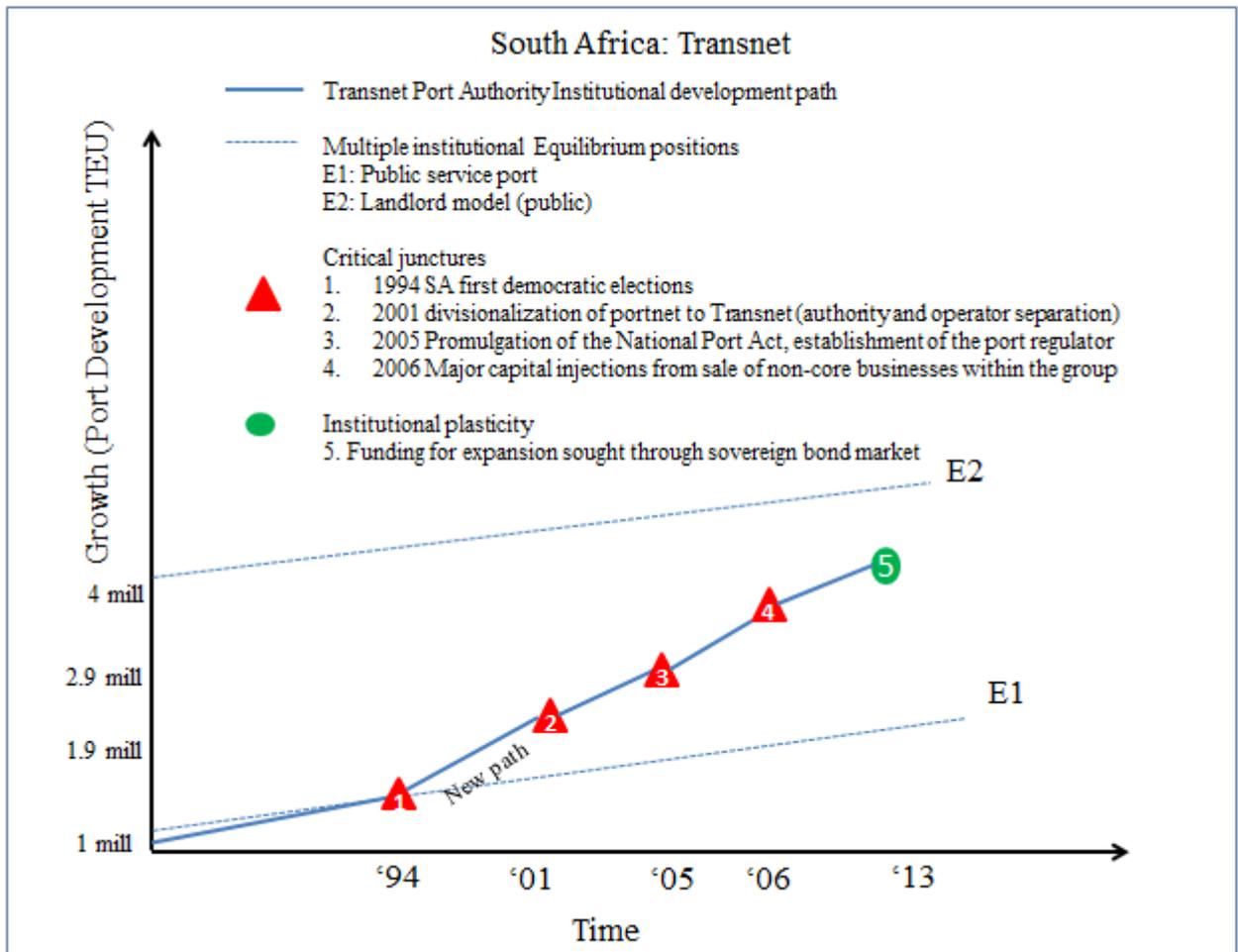


Figure 5. Institutional development path of South Africa

At juncture 1 (1.07 million TEU), South Africa underwent a political transition becoming an open democratic state in 1994. During this period, the ports were held and managed by a public entity controlling both the port authority and operator under one company, Portnet. At juncture 2, the authority and operator are separated into two divisions held within one holding company (Transnet). The promulgation of the National ports act in 2005 (juncture 3) thereafter established a separate and independent port regulator for the country. Much needed finances were required for capital investments in infrastructure to meet the demands for port services. The appointment of a new group Chief executive (Maria Ramos) resulted in a window of opportunity to divest non-core businesses held by the Transnet group, and fund much needed infrastructure development. Funding for further infrastructure expansion ahead of demand was subsequently achieved at juncture 5 in 2013 by exercising institutional plasticity. Remaining locked into the current institutional position (simply stretching it). With this institutional stretch, Transnet was able to find alternative means of funding (the sovereign bond market in local currency) while remaining within its current institutional path E2.

Currently, the port authority and the port operator remain as separate divisions within one state-owned enterprise, Transnet Soc. To regulate this state owned monopoly, the Port regulator of South Africa was established through the promulgation of ACT 12 of 2005 (the National Ports Act). Chapter 5, secs 29 established the regulator as an independent legal personality known as the Ports regulator. Secs 30 (1) of the Act prescribes the main functions of the port regulator namely to co-ordinate and harmonize the exercise of jurisdiction over economic regulation, equity of access to port facilities and monitoring activities of the port authority. Effectively this body seeks to generate outcomes similar to those which would be achieved had competition existed. The Ports regulator of South Africa has been most effective in curtailing the port

authority TNPA's annual proposed tariff increases. (Reductions on TNPA proposed tariff increases⁷: 2013/14 proposed increase of 5.4% reduced by the regulator to -43.2% (export container) and -14.3% (full container). 2014/15 TNPA proposed average tariff increase of 14.39% reduced by the regulator to 5.9%). Other complaint matters include the mediation of disputes through the port regulator tribunal on matters relating to port property rental terms, preferential tariffs, provision of port access and port authority tender procedures. What the regulator has not succeeded at however is stimulating intra-port competition among South African ports. This could be a possibly more dynamic and market directed means of curtaining tariff increases, as well as increasing port service levels. The Act also puts TNPA in charge of regulating terminal operators the majority of which collectively form a division within the holding company of Transnet (Transnet port terminals). The divisional structure of the authority and operator belonging to the same holding company also presents a potential conflict of interest. This is compounded by the fact that the Act also currently has no provisions/mandate for the Port regulator to regulate port services operators.

Since the democratisation in South Africa, Transnet has had the commitment of the national government (the company's shareholder) to inject significant investments into the four container ports effectively making them the most sophisticated on the continent. This commitment has provided the resilience to remain on this institutional developmental path despite much pressure from port users to change it. Pressure to reform the current port institutional arrangement of the South African ports is due to the following five factors. Firstly, the capacity investment requirements (given the market demand strategy of the South African ports- port facilities and equipment) amount to €6.83⁸ billion over the next seven years. The so-called Durban Dig-Out Project (DDOP), the plan to construct a large deepsea dock on the old Durban airport site, is considered as a critical project given the huge investment budget required (total estimated capital cost of 75 ZAR billion with phase 1 amounting to 37 ZAR billion). This places significant pressure on the holding group's balance sheet as far as traditional funding sources are concerned. Secondly, there is some uncertainty with regards to whether the average return on total asset⁹ (ROA) ratio yielded from the significant port investments over the last decade has been optimum. Coupled with that, actual capital investment¹⁰ (compared with budget) spending has been lower than anticipated. This can result in deferred expected future incremental cash flows on account of the late commissioning of assets. Third, there has been increased pressure from port users and the shareholder for greater operational port productivity. Productivity indicators such as moves per ship working hour, ship turn-around times and truck turn-around time have been lower than the target rates.¹¹ Fourth, South Africa has the ambition to become a larger logistics turntable for sub-Saharan Africa. Sea-sea transshipment activities and inland corridor transport to West and East Africa should support this role. However, container shipping lines are keen to develop dedicated facilities in their respective hub ports. The current port institutional setting with TPT as the only container terminal operator does not create windows of opportunity for third parties (such as shipping lines) to enter the terminal operating business in South Africa (Notteboom, 2010). Finally, market failure in the form of imperfect competition given that 99% of the container volumes nationally are handled by one company (Transnet) appears to enable some monopoly behavior particularly with respect to tariffs (i.e. terminal handling charges). These factors increase the pressure to rethink the current institutional arrangement and pursue meeting the current demands with private partners. The extent of the institutional shift on account of this critical juncture (i.e. an exercise in plasticity or radical reform) however remains to be seen. Negative sentiment towards privatisation still plagues the country and is fiercely contested by

⁷ refer record of port regulator tariff decisions, <http://www.portsregulator.org/news/press-releases/ports-regulator-tariff-decision-2014-2015>

⁸ 79.8 ZAR billion South African rand, Transnet (2012:60)

⁹ How effectively the port is converting the capital spend on assets invested into net income. A higher the ROA ratio, signals that the port company is earning more money on less investment spend.

¹⁰ Transnet (2012:103)

¹¹ Transnet (2012:112)

the country's largest and most influential labour union, the Congress of South African trade unions (COSATU).

MPA, has achieved significant container volume growth over the past three years, particularly with respect to transshipment cargo and has committed itself to become a regional hub port (Fraser and Notteboom, 2012). To achieve this, the port will require further investments such as dredging works to at least 16.5 meters (in order to accommodate the 8000-15000 TEU vessels hub ports attract). Other investments include breakwater protection from the elements to the tropical island, increasing the port surface area and the reinforcement of the quay walls. These are a few port superstructure investments required. Financial injections in port handling equipment and technology to realize these initiatives will also be required. Again, this places a huge burden on the balance sheet of the government owned enterprise and a burden to the countries fiscal budget. In order to overcome this, the Mauritian government has already taken steps to obtain a strategic partner in its container operating division Cargo Handling Corporation (CHC)¹² with the objective of increasing container traffic and contributing to the investment in port infrastructure and equipment.¹³ The international financial corporation (World Bank group) has confirmed its involvement in an advisory capacity concerning the sale of the Mauritius Port Authority's 40% stake in the government owned CHC. A pre-bidding process was initiated in 2009 and identified five organisations interested in the purchase of a 40% stake in CHC. At the final tender submission phase in April 2012, however, only one of the five organisations shortlisted in the pre-bidding phase submitted a tender. The Port Louis Maritime Employees Association (PLMEA) has expressed negative sentiments towards the 'privatization' of CHC vehemently opposing the restructuring initiative. Opposition from labour as well as the dominance of public involvement (60% majority shareholding following a concession agreement) have together driven a cooling of international investors who would prefer a more controlling stake in CHCL given the current economic climate. Like Nampont and TNPA, MPA's institutional developmental path is at a critical juncture triggered by the need to obtain other sources of funding (the initiation of a PPP) for the port's expansion program. A PPP can ultimately unlock the MPA out of its current pure public interest port lock-in development path and introduce private sector involvement for the first time in its terminal handling operations.

POM (Mozambique)

The Port of Maputo (POM) has achieved significant container volume growth during the country's recovery from 15 years of civil war (Fraser and Notteboom, 2012). Inadequate and failing equipment, operational inefficiencies, market failure, a lack of skills (managerial and technical) and a lack of funding necessitated the first wave of port institutional changes to the port of Maputo in 1998. Fischer & Nhabinde (2012:25) detail the critical junctures (mainly political) which included a protracted concession process and also lead to the change in strategic partners. The current ownership structure of the port of Maputo (tier 4, figure 4) is on a much 'lower government involvement' scale compared to the three ports discussed earlier. POM is unique in that the current structure has majority *private equity* shareholding on both the port authority (51%) and port operator (60%) level (i.e. Caminhos de Ferro Moçambique (CFM), the national rail and port operator is the government partner). Private sector port ownership was achieved after 5 years of negotiation and overcoming two¹⁴ considerable challenges. Under Mozambican law, it is not possible for a private person or entity to own public land. This necessitated the drafting of new legislation (the drafting of a "special license") that would grant sufficient rights to the Maputo Port Development Corporation in order to be recognised and accepted by the Government of Mozambique. Ultimately this allowed MPDC to be registered

¹² The shareholders of the CHC are the government with 6% shares, the State Investment Corporation (54%) and the Mauritius Ports Authority (40%). (All public)

¹³ <http://www.aptmauritius.com/local.php>

¹⁴ Refer Norris and Ogunbiyi (2003) for the complete list of challenges.

within the existing land registration system in Mozambique and provided the necessary comfort to lenders of the MPDC's land 'ownership' security.

SPAT (Madagascar)

With reference to our institutional path development framework, we graphically illustrate and summarize the development path followed at Toamasina highlighting critical juncture events in figure 6.

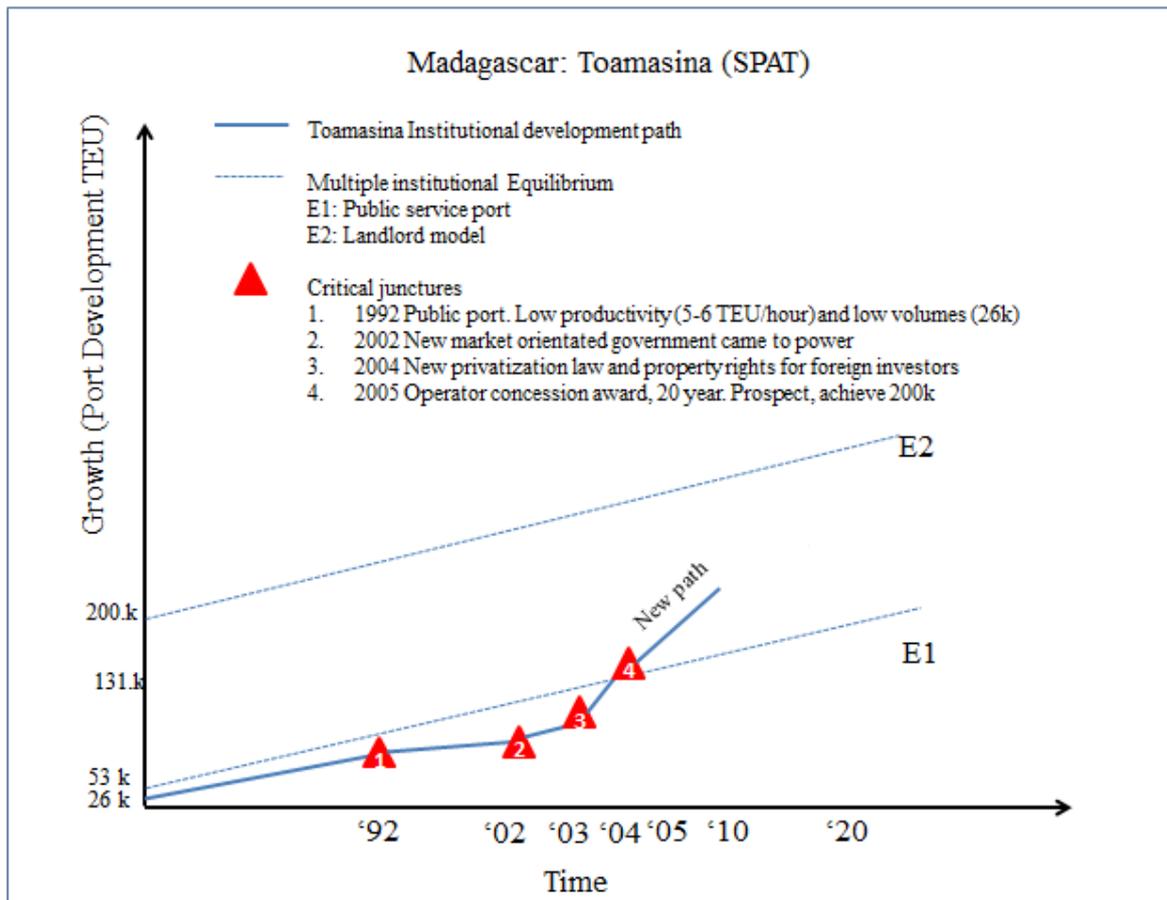


Figure 6. Institutional development path of Toamasina

At juncture 1, unsustainable low productivity and low volumes were generated at Toamasina which operated within a public service port institutional equilibrium path (E1). The election of a new market orientated government in 2002 (juncture 2) resulted in new privatization laws and property rights for foreign investors (juncture 3). This presented the opening of a window of opportunity for port investment which culminated in the conclusion of a private operator concession agreement and the shift to a new institutional equilibrium path (E2).

At tier 5 (figure 4), the port of Toamasina is identified as a port structure with most private participation overall compared with the other ports in the region. Under this institutional arrangement, the port authority SPAT is a commercial company with a 51% government and 49% private share equity structure. The sector is regulated by government authority Agence Portuaire Maritime et Fluviale (APFM) which reports to the Ministry of Transport and has a delegated maritime administration mandate¹⁵. APFM is responsible for the tasks previously performed by the State (Ministry of Transport). These tasks included administration and regulation of the sub-sector, supervision and control of the operation, defining and monitoring the implementation of

¹⁵ Supervisory authority for port authorities; conceding authority for full concessions, see Turpin (2013)

policies, maintenance of waterways, and finally, operation, maintenance and improvement of maritime signaling along the coast of Madagascar. The main responsibilities of SPAT are concession assignments to private companies, permission for temporary occupation of the port area, management and maintenance of the port domain (access channel, etc.), port development and port security. SPAT obtains funds/lease fees from concessionaires and port dues on cargo and ships. With respect to container operations, this is managed by a 100% private international container operator, i.e. International Container Services Inc. Three major differences distinguish the Port Authority of Toamasina with the other ports in the region.

Firstly, the ownership structure of port authorities distinguishes 'main ports' from 'secondary' ports. 'Secondary ports' are completely private port authorities (full concessions) whilst main ports like Toamasina are held by PPP port authorities such as SPAT. Secondly, the 'main port' structure is set up as a commercial entity with equity held by the public (in the majority) and the private sector in order to generate funding for port developments such as channel access (somewhat similar to the ownership structure of Maputo). Most port services (mooring, pilotage and towage) traditionally executed by Port Authorities are however conceded to private operators. SPAT therefore serves more an administrative role in 'sub leasing' port facilities/services (the main lease arose from APFM to SPAT) and developing/maintaining the larger scale port superstructure such as access channels. Third, unlike any of the other container ports in the region, Toamasina has a 100% privately devolved container terminal, managed by SPAT. The key factors driving port reform at Toamasina, like the other ports in the region hinged on finance for port development, port efficiency and technical skills. Like other port reform projects, the starting point was legislative reform which would permit the existence of an independent regulating authority and two types of port authorities. Notably, even though the port reform legislation was passed in 2003, the reform is still only partially implemented nationally.

Summary of the Institutional Development Transitions

Table 5 provides a summary of the institutional development paths of Southern African ports from the perspective of the presented theoretical framework (figure 1). The pre and post reform institutional paths are disclosed together with critical junctures which drove the reform process to begin with. The result (change column) identifies the nature of the institutional path trajectory change i.e. institutional path unlocking (resulting in a new path) or path plasticity (stretching/conversion or layering).

Table 5. Institutional Development Paths in container ports of Southern Africa

Port Authority	Previous Development Path	Critical Juncture Events	New Development Path	Result of Change: Plasticity or Path Un-locking
Namport	Public interest asset	Port Expansion requirements. Port Efficiency.	None: Lock in remains. PA ¹⁶ & PO ¹⁷ : Public.	Loans from Government and Development bank. No path un-locking pursued Plasticity.
Transnet	Public interest asset	Port Expansion requirements. Port Efficiency.	None: Lock in remains with some plasticity. PA & PA: Public.	Stretching (issue of sovereign bonds for financing requirements). No path unlocking pursued.
MPA	Public interest asset	Port Expansion requirements.	<u>At a critical Juncture</u> . Sale of 40% share of port operator ongoing.	At Juncture point. Un-lock will allow private equity investment.
POM	Public interest asset	Port Expansion requirements. Port Efficiency. Port Expertise. Attraction of positive foreign interest.	Un-locked on a New path. Result Private Port.	Un-locking resulted in majority 51% private equity in the PA and 60% private equity holding of the PO.
SPAT	Public interest asset	Port Expansion requirements. Port Efficiency. Expertise. Attraction of positive foreign interest.	Un-locked on a New path. Result Public Private Port.	Unlocking resulted in 49% private equity in the PA and 100% private holding of the PO.

Source: Authors Own elaboration

Comparison: Southern African and EU port Institutional positioning

In order to gauge disparities between the institutional position of SA and EU ports in accordance with our port institutional positioning framework (figure 2), we first identify the degree of port ownership (public/private) at each port and assess the extent with which core port functions are separated from each port authority. The next step towards achieving this analysis is the provision of a port authority functional matrix which effectively discloses the degree of ownership (public/private) as well as identifies the body providing the regulatory, waterside operation, landlord and port cargo operation function of each port. For the purposes of a concise analysis, we have limited the waterside function to eight main functions within a port. These include towage, pilotage, dredging, mooring and port control. The location of services are termed to be either 'inside' (within the locks or inside the breakwater and bay) or 'outside' (behind the locks or outside the breakwater and bay).

The results in table 6 demonstrate the relative consistency with respect to the institutional arrangements among the ports in the Hamburg-Le Havre range in Europe (EU-HL). Notably, the

¹⁶ PA : Port Authority

¹⁷ PO : Port Operator

five EU-HL ports were selected from the same port range, the Hamburg-Le Havre range¹⁸ (Notteboom, 2010) in an effort to avoid comparison disparities which could arise on account of comparing ports from different regional ranges. The Southern African ports although all located in the same region, have more varied institutional arrangements between them. Currently, no clear trend towards the same port path institutional 'end state' for all five ports in the region can be observed. Indeed, the Southern African case is a 'late port reform mover' compared to the European case and consequently there are obvious and significant differences in institutional arrangements between some ports. There are also however, some surprising similarities between selected EU-HL and some port institutional arrangements in Southern Africa. Some of these differences and similarities observed from the port authority functional matrix (table 6) are discussed below.

Regarding the port regulation function, South Africa, Maputo and Toamasina have bodies other than the port authority performing the port regulatory function. As discussed in section 5.2 (South African ports), this function is performed by a separate body in order to ensure there are no conflicts of interest given that the port authority and port operator are essentially divisions within one organisation (Transnet). Le Havre is the only EU-HL port most similar to Maputo and Toamasina in terms of the delegation of the port regulatory function to a body other than the port authority (Ministry). In the case of Maputo and Madagascar, government entities (which also effectively have a shareholding in their respective port authority) are responsible for port regulations. Walvis Bay differs in this respect as the regulator function is carried out by the Port Authority but its regulatory authority is overseen by the Namibia Competition Commission (NaCC)¹⁹ which has jurisdiction across the Port Authority with regard to competitive and regulatory issues.

Further to the discussion in section 5.1 of Southern African Ports waterside function and cargo operations we note the following concerning EU-HL ports. Waterside functions are managed by the port authority which is primarily a corporatized body with municipal and/or government interest. Much of the core waterside services are outsourced to third party providers and the service level agreements are managed by the port authority. Pilotage outside of the locks in the case of the two Belgian ports analysed is provided by the Maritieme Dienstverlening en Kust (MDK) or Common Nautical Administration. For Hamburg, Rotterdam and Le Havre, all pilotage is conducted by Harbour Pilot Associations or co-operatives. These bodies also perform towage and mooring functions at some EU-HL ports (see table 6). The port cargo operation functions in the case of the EU-HL ports are entirely private and are permitted through concession agreements managed by the port authority. The concessionaires range from shipping lines, international container terminal operators as well as Joint Ventures between these two groups. The Southern African ports which most resemble these port functional arrangements are the port Maputo and to some extent, the port of Toamasina. At the Port of Maputo, many waterside functions are outsourced and in the case of Toamasina, there is a gradual withdrawal of a number of waterside services previously performed by the former public port authority. The remaining three Southern African ports perform most of the critical waterside functions by their respective port authorities.

¹⁸ In Notteboom (2010) the theoretical rationale behind port range segmentation for the EU-HL port range is provided.

¹⁹ See Namibian Competition Commission : http://www.nacc.com.na/publications/research_papers.php

Table 6. Southern African & Northern European Port Functional matrix

Function	Regulatory	Port Regulation, Port Assets, Port Facilities and Services									
		Waterside Operation							Landlord	Cargo Operation	
		Service Provider (PA; Ministry or Outsourced Private Company)									
Port Regulations	Pilotage Inside	Pilotage Outside	Towage Inside	Towage Outside	Mooring	Dredging Inside	Dredging Outside	Port Traffic control	Lease/Concession agreements	Container Handling	
Walvis Bay	PA	PA	PA	PA	PA	PA	PAO	MIN	PA	PA	PA
South Africa	PR*	PA	PA	PA	PA	PA	PA	MIN	PA	PA	PO
Port Louis	PA	PA	PA	PA	PA	PA	PAO	MIN	PA	PA	PO#
Maputo	MIN	PAO	PAO	PAO	PAO	PAO	PAO	MIN	PA	PA	PO
Toamasina	MIN	PA	PA	PA	PA	PA	PAO	MIN	PA	PA	PO
Antwerp	PA	PAO	^MIN	PA	P	PAO	PAO	MIN	MIN	PA	PO
Hamburg	PA	HPA	HPA	PAO	PAO	PAO	PAO	MIN	PA	PA	PO
Rotterdam	PA	HPC	HPC	PAO	HPC	HPA	PAO	MIN	PA	PA	PO
Le Havre	MIN	HPA	HPA	HPC	PAO	HPC	PAO	MIN	PA	PA	PO
Zeebrugge	PA	PAO	^MIN	PAO	P	PAO	PAO	MIN	MIN	PA	PO

	Pure Public corporatized
	Pure public corporate & Divisionalised
	Pure public corporatized with PPP
	PPP majority public holding
	PPP majority private holding
	Pure private
	Government Ministry (MIN)

PA – Port Authority Function

PAO – Port Authority Outsourced function

PO – Port Operator Divisionalised/ Under concession

PUCO – Public Co-operative

P – Private Company

HPA/C – Harbour Pilots Association/Cooperation

PR – Port Regulator # Concession/private partnership under consideration

^Maritieme Dienstverlening en Kust (MDK). The Common Nautical Administration (CNA) °Port regulations are adopted by the Transport Ministry through the National Ports Act 1994, enforced by the National Port Authority.

Note: Dredging within the bay in South Africa is done in house by the TNPA's fleet of dredgers. Service level agreements guide the scope of dredging work required at each port, which is approved by in house Port Engineers. Major dredging work for expansion projects beyond the capacity of the fleet is outsourced.

The aggregated findings which were derived from the overall ownership and functional appraisal for EU-HL and Southern African ports is presented in figure 7 in accordance with the port reform positioning framework outlined in figure 2. The X axis represents an aggregated position of the extent of each port's level of **public involvement** in the regulator, marine waterside and operator functions. The Y axis represents an aggregated position demonstrating the extent to which regulator, marine waterside and operator functions are being carried out by the Port Authority directly (extent of **functional separation from the Port Authority itself**). We note the following salient findings with reference to figure 7:

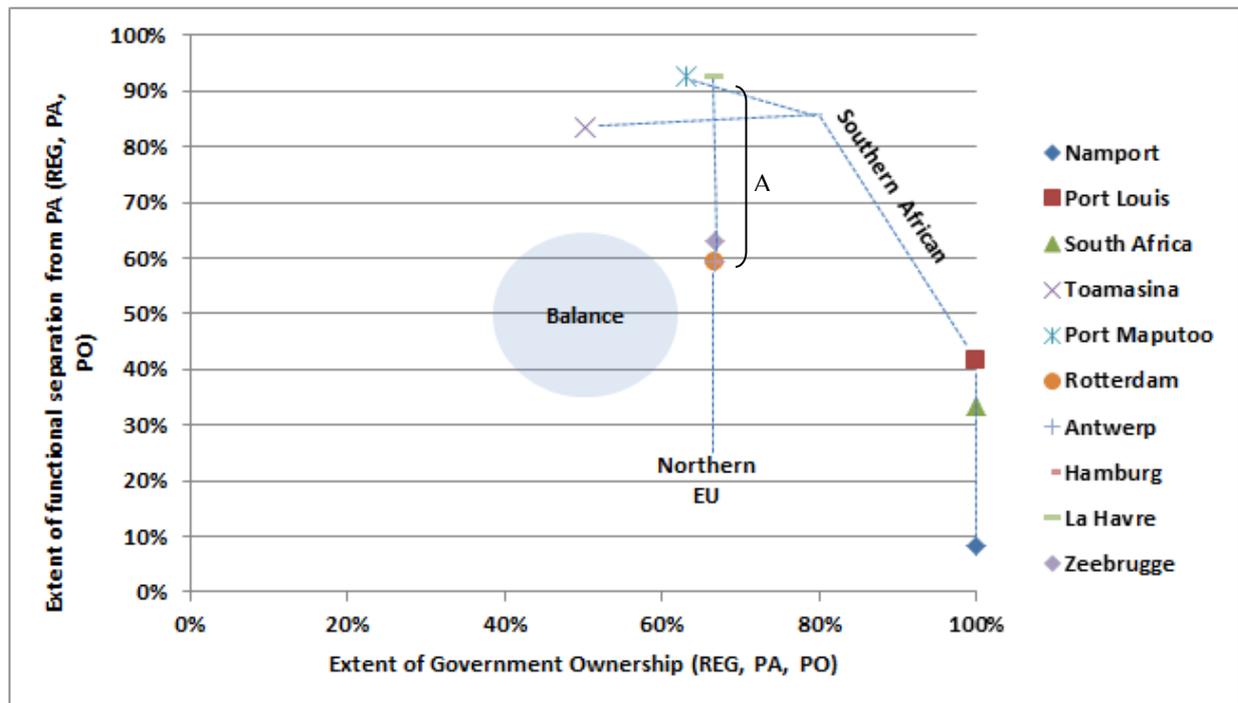


Figure 7. SA & EU-HL Port Institutional Positioning framework

- There is a much greater level of institutional variation between Southern African ports compared with the extent of institutional variation observed within the EU-HL range of ports. The extent of this is illustrated in more detail in table 6 (port functional matrix).
- Port Louis and South African and Namibian ports all hold the same lock in position institutionally (public ownership institutional path lock in) and as such are placed in close proximity in figure 7 based on their respective aggregated port ownership and port authority functional results. Namport represents the extreme of this institutional position and resides below the 10% mark in terms of the extent of functional separation of services from the PA.
- The ports in the EU-HL range overall are positioned very similarly with the exception of the port of Le Havre. The gap in the aggregated institutional position between the Port of Le Havre and the rest of the EU-HL ports (A) is on account of the regulator function. In France port regulations are adopted by the government at national level and managed by the General Regulations for Commercial and Fishing Seaports Department (Règlement général de police dans les ports maritimes de commerce et de pêche) and not the port authority as is the case with the rest of the selected EU ports. The difference illustrates overall greater segregation of functions away from the port authority level at Le Havre compared to other EU-HL ports. However, the extent of government involvement is positioned at almost the same level (X axis).

- EU-HL ports display the most balance in terms of devolution of port authority administrative and operational functions and ownership diversity in terms of public and private sector involvement (positioned closest to centre).
- Two of the smaller Southern African ports (i.e. Port of Maputo and Toamasina) which are currently the poorer and least developed, most resemble the EU-HL range ports (particularly Le Havre). This similarity is mainly on account of the alignment of port authority functions. With respect to ownership however, Maputo and Toamasina are positioned in areas with less government ownership (particularly at the port authority level) and as such are positioned further left on the X axis compared with EU-HL ports.
- Finally, with respect to the involvement of the local city municipality, the EU-HL port city municipalities (apart from Le Havre²⁰) each have an ownership interest in their respective port authorities. Southern African ports however are corporatized authorities listed either as a (wholly or partially) state owned enterprise reporting directly to a government ministry or private company shareholders.

6. Discussion

Southern African nations (South Africa, Namibia, Mozambique, Madagascar and Mauritius) have only since 1960 established themselves as independent countries. These transformations were often followed with second, third or fourth waves of political transformation. As such, these uncertainties and in some cases political shocks affected economic and social policies in the region. This ultimately also affected the institutions guiding port use and port development. Given the relatively low maturity of Southern African states as independent nations, political and economic vulnerability remains a significant threat to the quest for an institutional equilibrium. In building this capability, resilience is a critical imperative for a balanced port institutional development path.

From the analysis of the five port authorities, we have distinguished different tier levels of port institutional positioning determined by the extent of government involvement and segregation of duties/functions. An interesting observation is that the more developed/mature economies in the region appear to have the least amount of institutional reform. Namibia, South Africa and Mauritius are government held and regulated ports locked into the pure public port ownership model. Mozambique and Madagascar, two poorer and less developed countries, have more innovative port authority ownership structures and have undergone the most reform in the region. From this one can conclude that the market failure in these countries was so severe that government had to seek alternative mechanisms in order to finance the mass capital investments and improve operational efficiencies. Notably however, the governments of these two countries did not opt for total privatisation and sought a more balanced level of public and private participation within their respective port authorities. The tier 1 to 3 countries now also appear to have reached or are close to reaching a level of 'self-investment fatigue' which their respective balance sheets and government fiscal budgets can no longer sustain. This has increased the pressure to refocus the port authorities (possibly fully or partially devolving cargo operations) or to seek private equity partnerships. This is evident in the case of Mauritius, and has resulted in an (ongoing) sale process of the Port Louis Port Authority's 40% stake in the country's public container port operator CHC. Labour in South Africa, Namibia and Mauritius's vehement opposition towards privatization or public private partnerships serve as one of the other major anchors holding these ports in their public lock in positions. This was particularly evident at Port

²⁰ The Grand Port Maritime du Havre is a public institution overseeing administrative public service tasks. It is operated as a public institution responsible for the management of all port facilities in its district. It is run by a Management Board of four members. Its surveillance council is composed of State representatives, employees, territorial community (Upper Normandy, Seine Maritime, CODAH and Le Havre) and the Chamber of Commerce and Industry. (refer <http://www.havre-port.fr/en/>)

Louis. The Port Louis Maritime Employees Association's (PLMEA) held negative sentiments towards the partial privatization of the CHC container terminal operation. Opposition from labour as well as the dominance of public involvement (60%²¹ public shareholding in the port operator would remain following a 40% sale) has together driven a cooling of international investors who would prefer a more controlling stake in CHCL given the current economic climate. Unlocking the current institutional lock in position (for the purposes of alternative funding mechanisms for example) could unleash new funding windows of opportunity for these three ports. South Africa's Transnet on the other hand, maintaining their public port ownership lock in stance, have soured funding through the sovereign bond²² market. This debt instrument is planned to finance its port expansion programme and was issued as the first African local-currency issuance on international capital markets. For now, the South African port authority has managed to potentially diversify its funding alternatives without unlocking its current institutional arrangements. For Namport, the acquisition of a \$2,982 billion loan from the African Development bank in 2013, together with government grants (to fund the balance) in order to finance the Walvis Bay container terminal development firmly hold the Namport Authority in its public port lock in path trajectory.

In their study of the freight rate practices of shipping lines on the Far-East and South Africa trade routes, Chen et al. (2013) demonstrate that higher sea freight rates are applied by shipping lines on the Asia-South Africa trade. The authors cite the overcharge as a premium for business and operational risks. In consideration of port reform with (possible) consequential international investment, a politically stable, legitimate and responsive state is an imperative precursor for less risky international private investment. Based on current Worldbank governance indicators, political instability, social inequality and corruption however still plague much of the region today and this could have a significant impact on the number of potentially willing risk averse investors interested in investing in Southern African ports where institutionally possible.

7. Conclusions

This paper provided the theoretical motives for institutional port reform and disclosed the level of port institutional variation among southern African ports and a range of European ports. From the case study, we observed the need for investment funding as one of the primary motives for institutional reform. Greater operational efficiencies, strategic fit and market failure (with respect to competition mainly) were other port reform drivers. The overall assumption of our study was that a port will always seek a higher port institutional equilibrium development path. However, a port is often 'locked in' to a development path by various factors. These lock in factors include political, economic and legal constructs which can keep a port from moving towards a higher equilibrium yielding position. Unlocking Southern African ports from their respective institutional development paths has occurred or will be taking place at critical junctures (e.g. seeking investment finance and international technical skills) which have proven reasonably successful where the reform occurred. The result for Maputo and Mozambique (where major port reform occurred) has been the introduction of innovative port authority ownership structures which reopened the port reform discussion for the other ports in the region.

Zooming in on the most prolific reason for institutional reform in the region, i.e. the funding for port development, we conclude the following. From the recent funding mechanisms employed by the publically locked in South African, Namibian and Mauritian ports, it is clear that this position will not be relinquished in the near future. Ultimately, Southern African ports are following their own port institutional development path in the midst of pressure to follow a first

²¹ State Investment Corporation Limited -54%; and the Government of Mauritius - 6%

²² Bonds - Funding is sourced in the bond market and is disclosed as debt for the borrower. This strategy in the case of a public port allows the port to obtain funding without changing the equity (ownership structure).

world/developed country intuitional 'example'. But is 'public ownership lock in' an altogether bad phenomenon? Should Southern African port institutions mirror those more mature world ports? Analysing the expansion track record and container throughput growth of the 'publically locked in' ports over the last 15 years reveals a tremendous commitment to port growth from each of these three governments. Each country has undergone large scale investments at their respective ports and is committed to utilizing these state assets in order to aid economic development within the region. South Africa's port investment motives in particular went beyond a purely profit motivation and included a broader economic development approach. This was evident in the development of the deep water transshipment Port of Nctqura. The Nctqura (greenfield) port development was deliberately located at one of the poorest regions in the county, the Eastern Cape. This was done in order to boost economic activity in that region. Such an 'uncertain' port investment would have been less likely for a purely profit motivated business interest investor (see also Notteboom, 2011). A port more closely positioned to the country's main corridors and closer to Durban for example would have been most likely selected. After an uncertain start in 2009, public commitment has helped propel this port to become the fastest growing container terminal in the world (Drewry, 2013).

For these port authorities, remaining locked into the 'public interest asset notion' of a port, will make the funding of future expansion increasingly challenging given the scale of port projects. Debt, whether in the form of loans or perhaps the sale of bonds will always be subject to borrowing limits and finance costs for the lender and (in the case of bonds) higher yield requirements for investors.

There is scope for future quantitative research which builds further on this work beyond the extent of institutional variation by analysing the drivers of institutional change in Southern African ports. Firstly, there is room for a study analysing 'the cost of lock-in'. This study would assess the (cost) efficiency of publicly funded loans/debt instruments used for container expansion projects relative to other ungeared sources of funding (such as private participation through share offering for example). Such a quantitative financial analysis would empirically assess if the institutional lock in position of certain ports leads to overall higher financing costs for the port authority and public sector. A second area of further research could lie in a quantitative post reform audit review. Such a study would assess the achievability of the expectations (financial and operational) of investors subsequent to a port institutional change or stretch. The results of which could clearly guide policy makers by quantitatively highlighting under which institutional transition, the greatest financial and operational results were realized given the country specific context. A third opportunity for further research lies in the exploration of the contentious issue of institutional reform causality as highlighted by Chang (2012) (refer 2.2; efficiency). This study would explore of the impact which institutional reform has had on Southern Africa port productivity, specifically identifying the causal relationship (if any) between the two. Doing so would entail the development of an academically sound research tool used to identify causality in port institutional reform programs of cases where the reform was initiated in order to achieve greater port productivity.

Finally with regard to our conclusory remark which questioned the negative sentiment towards 'public ownership lock, scope for further research exists to explore the possible benefits which may exists from port institutional lock in.

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