

Chapitre conclusif

The effectiveness of port-city governance

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Biography

Olaf Merk is Administrator Ports and Shipping at the International Transport Forum (ITF) at the Organisation for Economic Co-operation and Development (OECD), international organization in Paris. As such, he directed studies on ports, port-cities, port regulation and governance. Olaf Merk is the author of various OECD books including "The Competitiveness of Global Port-Cities". As Administrator of the OECD Port-Cities Programme, his previous position, he directed 15 additional studies on port-cities, including on Hong Kong, Shanghai, Rotterdam and Hamburg. He has authored various port-related articles in academic and professional journals. He is also lecturer on port economics at the Institute for Political Science (Sciences Po) in Paris and the Normandy Business School (Le Havre/Caen). Prior to the OECD, he worked for the Netherlands Ministry of Finance. He holds a Master's degree in Political Science from the University of Amsterdam.

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Shared and differentiated challenges

Port-cities are not theoretical constructs, but concrete realities. Not only technical experts but also normal people can be heard to talk about port-cities. Ports have in so many cases been at the basis of cities that the city and its port continue to be some sort of Siamese twin in linguistic terms, even if the actual links might already have loosened. Ports are in this sense different from other infrastructures: one rarely hears someone speak about railway-cities or airport-cities; and in the occasions one does – e.g. disguised in terms as “aerotropolis” - one cannot stop asking if the word refers to something that actually exists or rather to an imaginative or potential reality. Apparently there is something about cities with a port that distinguishes them from other cities.

What makes port-cities different from other cities is – evidently – the port, in particular its spatial, economic and mental imprint on the city. *Spatial*, because it is the port that gives the port-city its characteristic form, even after port functions have disappeared. *Economic*, because the port allows the city to be open towards the world, trade and entrepreneurship. *Mental*, because the port gives the city its freedom, diversity and dynamism. In port-cities “the unknown streets bear the names of rivers and of countries”, recalls the Flemish poet Paul van Ostaijen. Because of their common features, port-cities have shared challenges. How to bridge the global and the local, how to combine flows of people and goods, how to design a balanced interface between sea and land? At the core is the fundamental question on how to mix two inherently different logics: the semi-closed world of club goods (modern ports) and the open networks of urban agglomerations (global cities), each suggesting two different sets of policy orientations that somehow need to be bridged (Table 1). How to create port-related value added, solve port-related congestion, mitigate port-related environmental impacts, manage land use conflicts between port and city, preferably in such a way that citizens are proud of their city and port? Similar challenges are not unknown to other cities, but the presence of a large working port gives them a whole different dimension in port-cities. The port-city commonalities can explain and give meaning to programmes that compare port-city policies - such as the OECD Port-Cities Programme, and organisations that bring together port-city actors - such as the AIVP.

Table 1: Typical policy aims for ports and cities

	Port	City	Port-city
Structural logic	Closed cluster	Open networks	Mix
Transportation	Freight	Passengers	Smart co-existence or dedicated corridors
Labour	Efficiency	Job creation	High value added employment
Environment	Limit impacts	Quality of life	Green growth
Land use	Cargo handling, industry	Waterfront for housing	Mixed, with some role for port

Source: Merk (2013)

The evolutions of port-cities have been extensively described. The most relevant well-known evolutionary model is the port-city interface model as developed by Hoyle (1989). He distinguishes five different stages of port-city interactions that go from integration in primitive port-cities, to expanding port-cities, modern industrial port-cities, retreat from the waterfront and finally the redevelopment of the waterfront. This trajectory illustrates the disintegration of port and city in subsequent stages that are placed in time: the period of the modern industrial port-city being the mid-20th century, the retreat from the waterfront from the 1960s to the 1980s and redevelopment of the waterfront between the 1970s and 1990s. Although certainly capturing a generic development path that applies to many port-cities, it fails to account for the many port-city trajectories that do not fit neatly with the stages, let alone with the time-line.

Despite their common features and challenges, port-cities can be hugely different from each other. Ports have different functions, layout, volumes, and surfaces that make every port-city different. Not surprisingly, efforts have been made to bring some order in this seemingly endless variety. A well-known typology of port-cities is based on two different indicators: the size of urban or regional population, and the size of port traffic ; the relation between the two can be used to measure maritime dependence. Such a relative concentration index has been applied for typologies of Mediterranean port regions, to US port-cities and port-cities on a world-wide level. Depending on the dominance of port and city, Ducruet and Lee (2006) have developed a typology of nine different port-cities, ranging from coastal port towns to the world port city. They calculated relative concentration indices of 653 different port-cities between 1970 and 2005 which allows them to outline different port-city trajectories. Although intuitively convincing and theoretically attractive, one can wonder what the practical applicability of this categorisation is. Port-cities that fall in the same category often have strikingly different development paths and very few policy challenges in common.

The typology that for the moment seems most policy-relevant is one that crosses the growth paths of port and city, suggesting four different types of port-cities. The first type of port-city has both population and port growth; the main challenges of these port-cities include space constraints, congestion and under-capacity of the port, with the need for infrastructure investments and relocation of port sites. This subsequently opens up the possibility of transforming port land into housing or mixed urban development. The port-cities of the second type, growing cities with ports that face declining cargo volumes, typically convert to urban waterfront development. While they may also be dealing with a transformation of port land to different uses, like port-cities with growing ports and population, their port area simply shrinks. In contrast, the cities in which the population is shrinking and the port growing (type 3) have a different concern, which is to find port cargo outside the metropolis and better connections with the hinterland. Finally, the port-cities where both ports and cities (type 4) are in decline need to find new sources of growth. Transformation of

port areas there may require less new housing development but cultivate leisure or business areas instead, as well as attempts to attract new services and port niches.

Table 2. Policy challenges for different port-city types

	Growing city	Shrinking city
Port growth	New port sites (Singapore)	Extending hinterlands (Rotterdam)
Port decline	Urban waterfronts (Baltimore)	Economic transformation (Bilbao)

Source: Merk (2013)

Gaps in existing knowledge

There is a large demand for insights on which port-city policies and institutions work. This demand can be illustrated by the appearance of reports on port policies driven by the ports sector, in particular the European Seaports Organisation (e.g. ESPO 2012) and International Association for Ports and Harbors (IAPH) in policy areas such as green port policies, environmental management and renewable energy in ports. The great popularity of the conferences of the International Association of Cities and Ports (AIVP) is another indication, as well as the wide support for our OECD Port-Cities Programme, entirely funded by interested ports and cities.

However, there is not an extensive academic literature on port-cities. Almost as if the physical disintegration of port and city has resulted in scientific compartmentalisation (port studies on one side, urban studies on the other), which makes studies on port-cities relative rarities. It is remarkable in this respect that studies on the history of port-cities are flourishing, whereas research on the current state of port-cities is more or less missing. The research on port-cities that exist is mostly based on place-specific case studies, but a comparative perspective is mostly lacking also because a common methodological framework is not applied – one of the reasons why we have developed the OECD Port-Cities case studies with one harmonised methodological framework.¹ Issues that have been treated in academic literature are port impacts on cities, spatial relationships between ports and cities, port-city economic trajectories, port-cities in history and a large amount of case studies of specific port-cities.

What is striking in most of this literature is the absence of description and assessment of port-city policies. There are only a few assessments of specific policy instruments. There is some literature on port pricing policies, but most of this literature is theoretical rather than practical. There are articles on port labour markets, but these focus more on institutional mechanisms rather than public policy tools. However, there are exceptions; e.g. the effectiveness of port gate strategies and truck retirement programmes in US ports have been well analysed and documented (Bishop et al. 2011, Lee et al. 2012, Dallmann et al. 2011, Norsworthy and Craft 2013); the effectiveness of some maritime cluster policies

has been assessed (e.g. Doloreux and Shearmur, 2009), as well as environmental port dues (Swahn, 2002), onshore power (Arduino et al. 2011) and waste reception facilities (De Langen and Nijdam, 2007). However, most reports on port and port-city policies are not coming from the academic domain, but have been written by international organisations, such as World Bank (The Port Reform Toolkit), ILO, IMO, European Union and OECD (OECD 2011, Merk 2013). It is within this context that we have tried to provide an overview of existing policies (Merk, 2013) and to quantify the effectiveness of these policies (Merk and Dang, 2013). This chapter provides main findings from these publications and assesses their relevance for port-cities.

Measuring effectiveness

We have attempted to measure the effectiveness of port-city governance by i) identifying the links between port and city on the basis of quantifiable outcomes; ii) assessing policy effectiveness in achieving such outcomes; and iii) highlighting emerging patterns of various policy instruments taken as a whole. Governance is here broadly defined, so it includes policies and institutions. We have conducted this analysis in Merk and Dang (2013) by using the principal component analysis (PCA), an appropriate methodology to explore these issues. It allows to measure key correlations for a set of indicators, shows the direction of the correlations, and summarises the various indicators into a limited number of interpretable factors. As such, this technique helps to derive good summary indicators to address the multidimensional aspect of port and city outcomes, identify ports which are performing along these factors, highlight policy effectiveness by comparing port performance to port policy scoring, explore the links between policy scores across different policy areas.

For the purpose of that study we build a database of main port-city instruments and port-city outcome indicators. Policy instruments were identified (Table 3) on the basis of a series of place-specific case studies that were conducted within the framework of the OECD Port-Cities Programme², as well as additional port-city profiles collected for this purpose. For each port-city, scores were assigned to each policy, ranging from A (best practice) to D (policies that in comparison to those of peer port-cities lag with respect to effectiveness, seriousness, comprehensiveness and variedness). In addition, policy outcome indicators were identified, covering port development, port-city development, transport, research and development, spatial development, environment and communication as described in Table. The collection of the policy outcomes and policy scores was conducted for a selection of 27 large world port-cities from OECD countries, plus Singapore and China, in order to represent the major ports and port-cities of the world.

Table 3. Main port-city policy instruments

Policy areas	Policy instruments
Port development	<ul style="list-style-type: none"> Long term strategic port planning Modernisation of port terminals Port information systems Industrial development policies on port site Development of new port functions Port labour relations Upgrading port workers' skills
Port-city development	<ul style="list-style-type: none"> Creation of maritime clusters Attraction of port-related headquarter functions Economic diversification policies Creating synergies between port and other clusters Coordination between ports Cooperation with neighbouring port-cities
Transport	<ul style="list-style-type: none"> Intermodal access of hinterlands Modal shifts of hinterland traffic Dedicated freight lanes/corridors
Research and innovation	<ul style="list-style-type: none"> Innovation policy to improve port performance Fostering local research related to the port sector Attraction of port-related research institutes Attraction of innovative port-related firms Logistics related innovation systems
Spatial development	<ul style="list-style-type: none"> Port land use planning Common master plan for port and city Waterfront development Urban regeneration of old port and industrial sites Integral coastal/river management
Environment	<ul style="list-style-type: none"> Emission reduction policies Climate change adaptation policies Renewable energy production in the port Energy efficiency policies Waste reduction policies
Communication	<ul style="list-style-type: none"> Port communication and information Maritime museums Waterside leisure and recreation Cultural projects related with port Port as part of global city-brand

Source: Merk and Dang, 2013

Table 4. Main port-city outcome indicators

Policy areas	Outcome Indicators
Port development	Port throughput 2009 (million tonnes) Port throughput containers 2009 (million TEUs) Growth port throughput (1971-2009) Growth port throughput TEUs (2001-2009) Value added port area (million USD) Efficiency index Maritime connectivity (degree of centrality) Maritime connectivity (clustering coefficient) Diversity maritime connections (diversity in vessel movements)
Port-city development	Metropolitan GDP per capita 2008 (USD, constant real prices, year 2000) Growth metropolitan GDP per capita 2000-2008 (USD, average annual growth) Metropolitan population 2008 Metropolitan population growth Port related employment (including direct and indirect port-related employment) Port-related labour productivity (ratio of port related employment and value added port area) Unemployment rate (2008)
Transport	Motorway network density (km/1000 km ²) Railroad network density (km/1000 km ²)
Research and innovation	Total patent applications in region (TL3, 2005-2007) Patent applications in shipping sector (2005-2007) Number of articles in port research journals (1995-2011)
Spatial development	Land surface of port (km ²) Urbanised area (km ²)
Environment	CO ₂ emissions per capita (tonnes per inhabitant, 2005) Population exposure to PM _{2.5} (annual average 2005)
Communication	Number of Twitter followers (31/1/2013)

Source: Merk and Dang, 2013

On the basis of these data, using the principal component analysis, the effectiveness of port-city policies was assessed by confronting policy outcomes with policy instruments in five different policy areas: port development, port-city development, transportation, environment, and a last category that includes R&D, spatial development and communication.

Governance key determinant of success

The results of our study confirm that governance is a key determinant of success. Sound policies can make a difference to port-cities, but in some areas more than others. The most effective port-city policies are transportation and R&D-policies. Port policies are effective in stimulating high port traffic performance. Performance in this context is characterised by high standards in traffic volumes, port efficiency, and port connectivity as a central and diversified node. Policies focused on transport and research and development (R&D), are found to be effective in stimulating port growth and port-city development. Port-city prosperity

mostly relies on high value-added and employment level generated by the port. Such features are likely to be prone to high transport density network and innovation, but also to negative externalities as CO₂ pollution. Policies aimed at creating port-city synergies are found to be relatively ineffective in achieving both high port performance and city prosperity. City prosperity seems to be directly fuelled by port activity via port-related value-added activities and employment, but not so much by port-city policies. Spatial and communication policies also have mixed results in this respect (Merk and Dang, 2013).

Our analysis on the policy mix is confirmed by findings from the instruments for which policy evaluations exist. Our inventory and assessment of port-city policy instruments (Merk, 2013) reveals that various policy instruments related to transport have proven to be effective, which is often not the case for policy instruments in other fields where the perception of policy effectiveness is often based on anecdotal evidence and selective observation. Examples of transport policies with sound scientific evidence on effectiveness include programmes to replace old port trucks and extended port gate hours, to redistribute the arrival times of truck to port terminals throughout the day.

Our studies thus suggest that policy effectiveness in port-cities could possibly be increased by focusing even more attention to transportation policies, one of the most effective policy areas. Port-cities with average to least performing policy packages would benefit from moving their policy efforts towards the benchmark within the policy areas where they are the least performing, or focusing on the policy areas where public intervention is most effective, such as port development, transportation and R&D. However, there are limits to generalisations : there is not one universal policy recipe.

Limits of universal policy recipes

The typical port-city does not exist; rather, there is only a collection of port-cities with various characteristics and heterogeneous opportunities. In the synthesis report of the OECD Port-Cities Programme (Merk, 2013) we have observed a mismatch between benefits of ports and their negative impacts. Substantial benefits from ports exist, but they come with considerable leakages to other regions, whereas most of the negative effects of ports are localised, including environmental effects and most traffic impacts. Despite this common denominator, concrete impacts and implications differ depending on local circumstances, on the character of the port-city interface and the functional composition of the port and its city. Large-scale industrial development on or close to port sites requires a huge amount of bulk goods, generally associated with fairly limited job intensity, a variety of environmental impacts and strong local economic linkages. Container traffic has similar low job intensity, fewer local economic linkages and environmental impacts

related to shipping and hinterland traffic, but less polluting impacts, because the connected economic activity is less industrial. Maritime business services generally generate high value added and limited environmental impacts overall, but are connected to large ports or large metropolitan areas. Cruise shipping is less space intensive than most other port functions, but the economic value it generates is fairly limited unless it is linked to a port-related waterfront. However, it can have relatively severe environmental impacts (emissions, noise) especially if terminals are close to city centres, which is frequently the case.

Choosing an effective strategic policy must be informed by a clear assessment of existing local assets. Economic history is to a large extent determined by path dependency, and heroic, if not always successful, attempts to change existing trajectories. Not every port-city or every maritime nation can or should stake its economic development on the growth of its maritime cluster, if only because there can only be a few leading global maritime clusters in the world. Various port-cities have invested in heavy industrial development, which provides them with certain assets but also involves sunk investments that can limit alternative economic development. Similarly, not all port-cities can develop a successful waterfront, because success is defined by how well it can divert visitors, high-earning residents and investors away from other urban waterfronts. Only rarely, as in Bilbao and Bremen, have radical conversions of the economic destiny of a port-city had unqualified success. Looking for an effective mix of policies is a delicate balancing act between building upon existing strengths and developing new assets and capabilities. However, there are a few generic critical conditions for effective port-city policies.

Critical conditions for effectiveness

An analysis of critical conditions for effectiveness of governance in port-cities starts with three observations that are almost trivial. First, successful port-cities can only be successful if they have a competitive port: without this they cannot even start to generate value added from the port. Second, effective port-cities are those that manage somehow to use the port as driver of urban economic growth; we will describe how this could be done. Finally, a port-city can also be considered successful if it has managed to mitigate the negative impacts from its port.

Competitive ports

Recent studies have emphasised how important ports are in global supply chains. Their effectiveness depends ultimately on how they link up with these chains both by sea and by land, and also how port operations are aligned with shipping and hinterland transport. Four complementary areas competitive ports can pursue have been presented throughout our OECD Port-Cities Programme: maritime

connectivity, effective port operations, strong hinterlands and cultivating local goodwill. Ports with good practices in one domain tend to perform well in others, as in the case of Rotterdam. The continuing increase in ship size calls for better hinterland connectivity, whilst the trend towards port concentration makes local goodwill an important part of sustaining ports' functions close to cities. However, much depends on local circumstances. Some factors are exogenous, such as geographical location and to some extent nautical access, but even these are subject to change for example in the case of the future navigability of the Arctic seas. Port authorities have an important role to play in improving ports' competitive position, with the help of other actors, including national governments and cities. The area is relatively well researched: the determinants for competitive ports are known and identified, even though it is not always clear what this should mean in terms of concrete policies. Our study indicates that, in general, port policies have a positive impact on value added and economic performance.

Generating local benefits from ports

Three main economic policy models for port-cities are applied: maritime clusters, industrial development and urban waterfronts. These have different orientations, but are often simultaneously pursued in the world's largest port-cities. Some of these functions are easier to combine than others. Maritime clusters and urban waterfronts can reinforce each other, whereas a successful marriage between industrial development and maritime clusters is not as easy to achieve, due to the fundamentally different logic that informs them. However, port-cities such as Singapore and Hamburg have managed to combine the three strains, through a judicious choice of policies. The room for manoeuvre for public policies should not be overestimated in the market-driven environment of global shipping. Many of the linkages between producers, customers, suppliers, labour markets, training institutions and intermediary services that compose a maritime cluster or other port-related development form through necessity and a response to market signals that governments can hardly foresee or influence. It is not certain that policy intervention is always an effective or necessary component of maritime cluster growth. Moreover, not every declining sub-sector can be saved. While renewal of declining maritime clusters has been possible in certain (e.g. Norway) where niche specialisation and cost-reduction through targeted outsourcing helped to breathe new life into an ailing shipbuilding sector, policy focus on declining sectors is not always desirable. This is of particular relevance to industrial development policies. Many port-cities in developed countries have been confronted with outsourcing of heavy industries and refineries. A proper understanding of needs and possible transitions is thus a prerequisite for any policy formulation.

Policy initiatives can be effective if their underlying rationale is grounded in a response to a real and problematic deficiency in the status quo. Underinvestment into emerging markets, where potential for growth has been identified but is not

being exploited due to private sector reluctance, might indeed be remediated by the provision of public funds for R&D. An obvious lack of qualified labour in industries could be at least partially resolved by publicly promoted partnerships between training institutions and maritime firms. Firms with similar needs that do not interact or represent their interests collectively as part of shared marketing or lobbying strategies, might collaborate more effectively through complementary spatial planning frameworks or publicly created networking platforms. When a key component, such as the registration of ship-owners, of the maritime cluster is in decline and this is bringing down with it the firms dependent on the demand generated by that component, targeted regulatory or fiscal intervention at the national level may slow down or reverse such a decline. Successes include Quebec's "Innovation Maritime", which has carried out 200 R&D projects for the maritime sector with government grants; and publicly sponsored educational partnerships through the industry-led Deltalinqs platform that have helped to turn Rotterdam into a leading centre for maritime expertise.

Policy initiatives must be adapted to the maturity of the sector. Developmental support, such as incubator infrastructure or the provision of venture capital, can be vital for emergent clusters, as in the case of Los Angeles' PortTech industrial park, which has helped set up a clean port energy cluster. However, this cannot help clusters that have already matured or are in decline. Similarly, it can make sense to assist with internationalisation of markets where clusters have matured, or to institutionalise inter-sectoral interactions where such linkages have begun to emerge, but global competition can imperil markets that are not mature enough to handle expansion, and interactions between sectors with little need of collaboration cannot be forced.

The composition of economic functions is highly relevant to all three strategic policy options. The most successful maritime clusters, such as London, Singapore and Hong Kong, are those that have developed into well-rounded and diverse clusters. Their diversity attracts new businesses because they can be guaranteed to find high-quality services in any maritime-related branch. Some maritime port-cities, such as Rotterdam, have developed policies to benefit strong sub-sectors within their maritime cluster, but would need to strengthen underdeveloped sub-sectors in the cluster (Merk and Notteboom, 2013). Development of new industrial functions in port areas is hugely dependent on the existing industrial infrastructure that determines the potential for exchanging residual products. Mapping current and potential links can help identify gaps in commodities or infrastructure that can help create new economic opportunities. The mix of economic functions is also key in determining if urban waterfronts can attract visitors and create economic wealth.

The policy mix should be coherent: policy instruments should neither overlap nor work at cross-purposes. Networking mechanisms can generate overlap: too many different networking platforms can result in intra-sectoral competition and

the fragmentation of available financing. If the effects of one policy on another have not been carefully gauged, instruments can cancel one another out. In India, benefits to the shipping sector from the introduction of the tonnage tax in 2004 were largely nullified by increases in indirect taxation through the services tax in 2007, which reduced prior gains in foreign direct investment in India's shipping sector. Co-ordination between instruments is closely related to co-ordination between actors. Stakeholders in the maritime sector must be clear about their priorities and intentions, and policy makers must seek to incorporate these priorities through a consultative process. The alignment between local and national policies is particularly important in this regard.

Mitigating negative impacts

A variety of types of policy instruments can mitigate negative port impacts, from regulation to market-based incentives, information and technology upgrades. Many of the policy choices made will depend on the local situation, but the most convincing examples of policy performance involve a coherent package of inter-related instruments, such as those used in Southern California for the San Pedro Bay Ports Clean Air Action Plan. Mitigating negative port impacts requires the interplay of different levels of intervention, ranging from the local on up. Given the nature of the shipping industry, some environmental impacts of shipping are best tackled at the global level. Self-regulation of ports can work, but in most cases, external pressure is needed. Some port-city policies entail joint benefits. For example, reducing port-related traffic congestion has positive environmental effects; and modal shifts of hinterland traffic not only improve environmental performance but can also reduce traffic within the city. Policy trade-offs, for example between security and commercial concerns must also be taken into account.

Potential of peer-to-peer learning

"The fox knows many things, but the hedgehog knows one big thing", the ancient citation which formed the basis of Isaiah Berlin's classification of writers, has much relevance to the state of current discussions on port-cities. There is a gaping divide between the hedgehogs – with their models of one typical port-city trajectory – and the foxes – that stress the uniqueness of each port-city. Port-cities all over the world would benefit from bridging this dichotomy of universality and an eternity of unique cases. The conversation between hedgehogs and foxes is long overdue: such a discussion might help to put place-specific knowledge into a larger context and get conceptual models to take a richer set of real-life observations into account. Ports and cities play an essential role in this: their search for policy innovations bridges the two premises of uniqueness and universality, by assuming that studying and understanding – not blindly copying –

instruments applied elsewhere could provide inspiration for tailor-made local solutions. The challenge for the coming decades – and the current monograph is just one step - is to enhance and explore this enormous potential of peer-to-peer learning.

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Notes

(Endnotes)

- 1 By way of counterpoint, the lack of comparative studies is not unique to port-city studies, and might be explained by the fact that real international experts are very rare, with most academic experts having deep knowledge only on a maximum of three countries. A way to solve this would be to stimulate international consultants to write, but most of them seem to be more comfortable with not sharing their knowledge.
- 2 Case studies are publicly available on www.oecd.org/regional/portcities
- 3 For an overview of sources of these policy outcome indicators, see Merk and Dang 2013