Chapter 1

Ports and their cities: An introduction

Ports and cities have a strong historical association, although the link between port and urban growth has attenuated over time. The various types of port-city face their own specific challenges; much depends on local circumstances. However, the question remains: are ports still drivers of urban growth, and how can they help to achieve such growth?

Ports and cities: A strong historical link

Ports are at the origin of many cities. Many cities started as trading posts, with the port as the natural interface of land with its maritime connections. This allowed small towns to become cities, and fuelled urban development, thanks to the prosperity associated with trade. Old city maps show the strong interlinkages between ports and urban development, and economic historians such as Fernand Braudel have stressed the importance of port-cities in the birth and development of the global, capitalist market economy. Ports are often still closely connected with their cities, and even when they have disappeared, they can continue to influence the city, because their heritage lives on, for example in urban form. This link has often been strong and persists in many emerging economies. A striking example in recent history is the case of Shenzhen, a small fishing village that became one of the world's largest metropolises and ports in a few decades, thanks to export-driven growth made possible by a free-trade zone and extensive port development.

Many of the largest cities have the largest ports. This is particularly the case in Asia, where Shanghai and Osaka-Kobe rank not only in the 20 largest metropolitan areas worldwide but also among the 20 largest ports in the world. Other Asian metropolises with very large ports include Guangzhou, Shenzhen, Tianjin and Hong Kong. The link between metropolitan size and port size can also be seen in North America, with New York and Los Angeles as prime examples, and to a lesser extent in Europe, which has a more limited number of very large metropolises, some of which, including London and Barcelona, also have large ports (Table 1.1). Not all the largest metropolitan areas have large ports, however. Buenos Aires and Rio de Janeiro, for example, are very large metropolitan areas with relatively small ports. Some of the world largest metropolitan areas have river ports, such as Chicago and Paris, and there are also examples of large metropolises that have no port, such as Delhi and Mexico City. The cities with the largest ports are not only the largest cities in the world, but are also the cities with the most global business connections.

Table 1.1. Overlap of the world's largest metropolises and ports

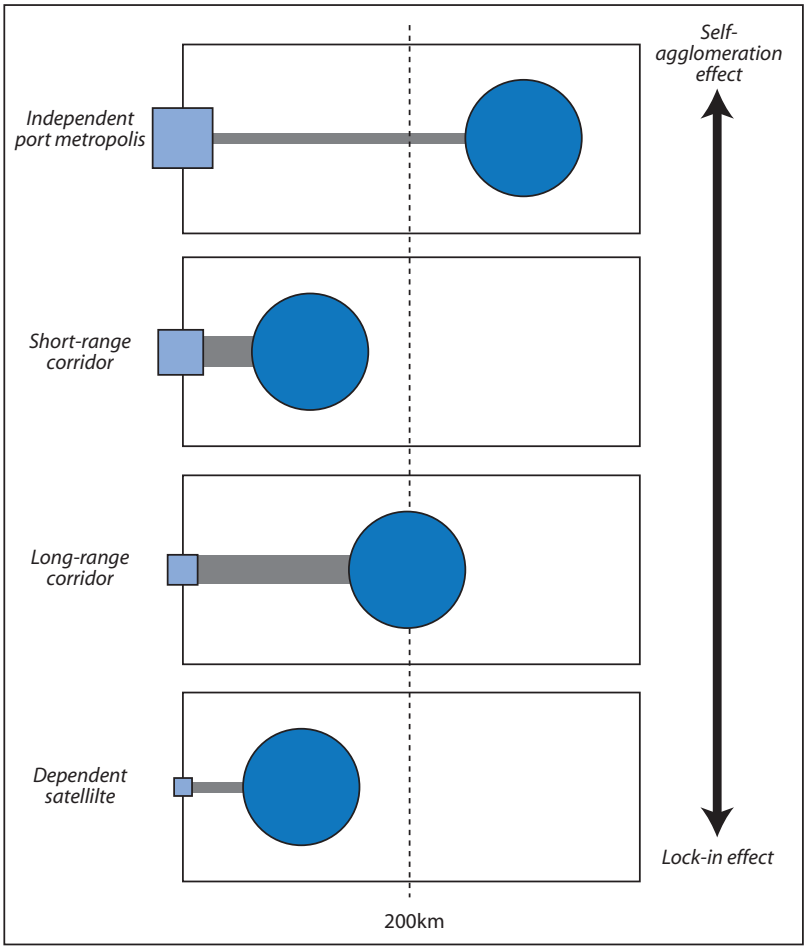
	Top 20 metro-areas	Top 40 metro-areas	Top 60 metro-areas
Top 20 ports	Shanghai, Osaka-Kobe	Guangzhou, Shenzhen, Tianjin, Hong Kong	
Top 40 ports	São Paulo-Santos, New York, Los Angeles/Long Beach	Madras	
Top 60 ports	Tokyo	Bangkok	
Top 80 ports	Mumbai		
Top 100 ports	Kolkata, Karachi	London, Jakarta	Barcelona
Top 125 ports	Manila, Istanbul		Ho Chi Minh City, Chittagong, Miami/Tampa, Philadelphia

Source: Own elaborations based on data from UN Habitat and American Association of Port Authorities.

Although many large metropolitan areas do not have a port, their fate is often strongly dependent on the quality of their connection with ports. The smaller and the closer the port-city in relation to the inland metropolis, the more it can be considered to form part of this metropolis, whether in the form of a dependent satellite, or linked by short-range or long-range corridors (Figure 1.1). Dependent satellites are small and close by, including,

for example, Civitavecchia in its relation to Rome, and San Antonio in relation to Santiago, Chile. Short-range corridor relations exist when an inland metropolis is located close to a relatively large port-city, such as in Santos-São Paulo, Port Klang-Kuala Lumpur and Incheon-Seoul. Long-range corridors are observed when inland metropolises are farther away from a relatively small port-city, *e.g.* Le Havre-Paris, Port Said-Cairo and Constantza-Bucharest. Finally, there are also constellations in which the inland metropolis is far distant from a port (more than 200 kilometres), in which case the port-city has the room to develop into an independent metropolis. This is the case for St. Petersburg (with Moscow as the inland metropolis), Durban (Johannesburg) and Odessa (Kiev) (Figure 1.2). Land-locked countries are dependent on other countries' ports, which can become problematic if they depend on one port, but is less challenging when they have links with many different ports. An example of such a country is Austria, which exports and imports through at least six ports located in different coastal zones: Rotterdam, Antwerp, Hamburg, Koper, Trieste and Constantza (Merk and Hesse, 2012).

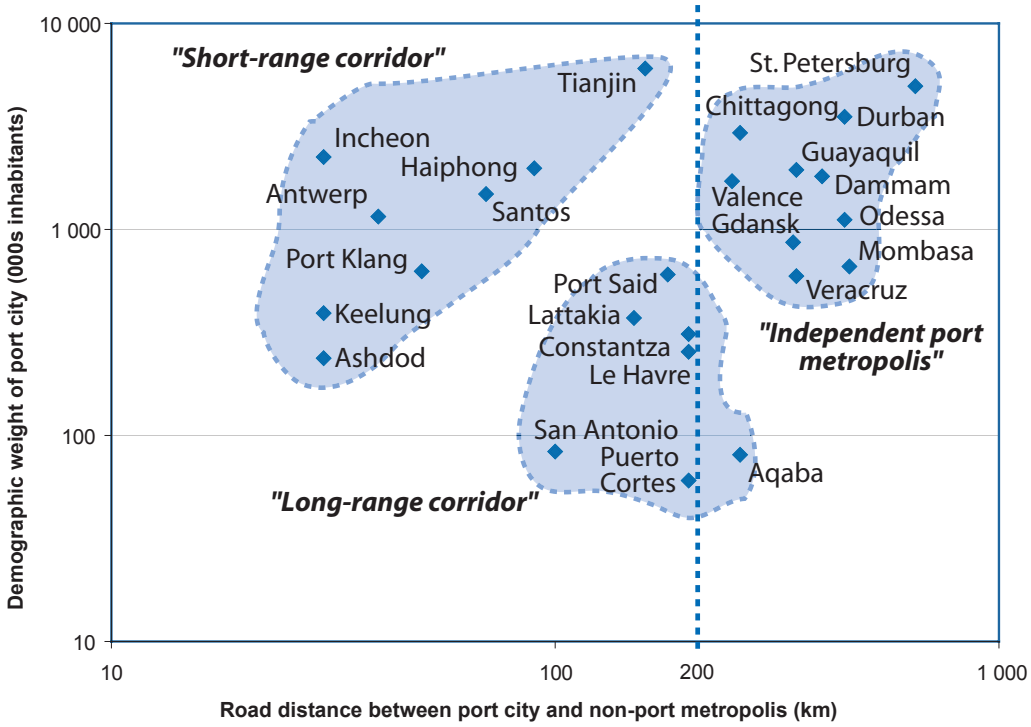
Figure 1.1. Typologies of inland metropolis-port relationships



Note: the circle represents the inland metropolis, the square represents the port-city. The larger the population of the inland metropolis, the larger the size of the circle, the larger the size of the port-city, the larger the square.

Source: Merk, O. et al. (2011), "The Competitiveness of Global Port-Cities: The Case of the Seine Axis (Le Havre, Rouen, Paris, Caen), France", *OECD Regional Development Working Papers*, No. 2011/07, OECD Publishing, Paris, http://dx.doi.org/10.1787/5kg58xppgc0n-en.

Figure 1.2. Ports in relation to inland metropolitan areas



Source: Merk, O. et al. (2011), "The Competitiveness of Global Port-Cities: The Case of the Seine Axis (Le Havre, Rouen, Paris, Caen), France", *OECD Regional Development Working Papers*, No. 2011/07, OECD Publishing, Paris, http://dx.doi.org/10.1787/5kg58xppgc0n-en.

There are large ports that are not located in cities, but there are usually very specific reasons for this: because they are close to natural resources or global shipping routes, or because of a deliberate decision to decongest urban ports. Ports located close to natural resources, such as coal, oil and ores, include Port Hedland (Australia), Richard Bay (South Africa), Corpus Christi (United States) and Novorossiysk (Russia). Large trans-shipment hubs close to intercontinental shipping routes include Salalah (Oman), Freeport (Bahamas), as well as Gioia Tauro (Italy), Algeciras (Spain), Port Said (Egypt) and Marsaxlokk (Malta), all in the Mediterranean Sea. Finally, the non-urban gateway ports that were in many cases deliberately created away from large cities in order to decongest the urban ports include Felixstowe (United Kingdom), Laem Chabang (Thailand) and Lianyungang (China).

Links between port and city growth have become weaker over the last decades

Urban population growth is only one of the determinants of port growth. Port growth also depends on GDP per capita growth, the growth of external trade and how resource-intensive production is. Various studies have observed that port volume growth is steeper than the GDP per capita growth and external trade growth, a ratio expressed in port to GDP growth multipliers and port to external trade growth multipliers. In addition, the container growth rate depends on the containerisation rate of cargo traffic, which has dramatically increased in recent decades, as an increasing share of freight is now being transported by containers. The container port growth to GDP growth multiplier in North-West Europe (the range between Hamburg and Le Havre), for instance, over the period 1990-2010 was 3.0. This means that an average annual GDP growth of 1% was associated with an average container-port growth of 3% (McKinsey, 2011). Finally, port growth is dependent on how well a port is linked to the hinterland. The most important ports for some countries are not their own ports, but foreign

ports better connected to their country, such as the Belgian port of Antwerp in the case of France. Hubs and regional networks are thus of prime importance.

Although port and urban growth often go hand in hand, there are metropolises in OECD countries where this is no longer the case. Port decline can accompany urban growth; and population decline can combine with port growth. This can be concluded from comparing population growth and port volume growth in recent decades, from 1970 to 2010 (Table 1.2). In the majority of cases, population growth and port growth are still associated, in particular in the Asian port-cities, where both population growth and port volume growth have been spectacularly high, and where a distinction between strong and moderate population growth would be more appropriate (Table 1.3), excluding some Japanese cities that experienced population decline. Large North American cities, such as New York, Los Angeles, Houston, Seattle and Vancouver, have also witnessed simultaneous population and port growth, but several North American cities have shown population growth combined with port decline, as in Baltimore, Boston, Philadelphia and Montreal. Almost all of the North American cities where population has declined are cities without a port. In European cities, there are several examples in every category: growing cities with growing ports (Barcelona), growing cities with declining ports (Stockholm), stagnating cities with growing ports (Rotterdam) and stagnating cities with declining ports (London). All in all, a variety of trajectories exist, with some of the leading OECD metropolises having lost most of their port functions and some of the leading ports struggling to become successful metropolises.

Table 1.2. Port-cities and their population and port growth in Europe and North America (1970-2010)

	Population growth	Population decline/stagnation
Port growth	New York, Los Angeles, Houston, Seattle, Vancouver, Barcelona, Valencia, Dublin, Helsinki, Athens	Rotterdam, Hamburg, Antwerp, Amsterdam
Port decline	Baltimore, Boston, Philadelphia, Montreal, Stockholm, Oslo, Lisbon, Bordeaux	London, Copenhagen, Naples, Liverpool, New Orleans
No port	Chicago, Paris, Madrid	Berlin, Rome, Milan, Budapest, Detroit, Buffalo, Cleveland

Source: Own elaborations based on data from UN Habitat and *Journal de la Marine Marchand,* editions from 1970 to 2013.

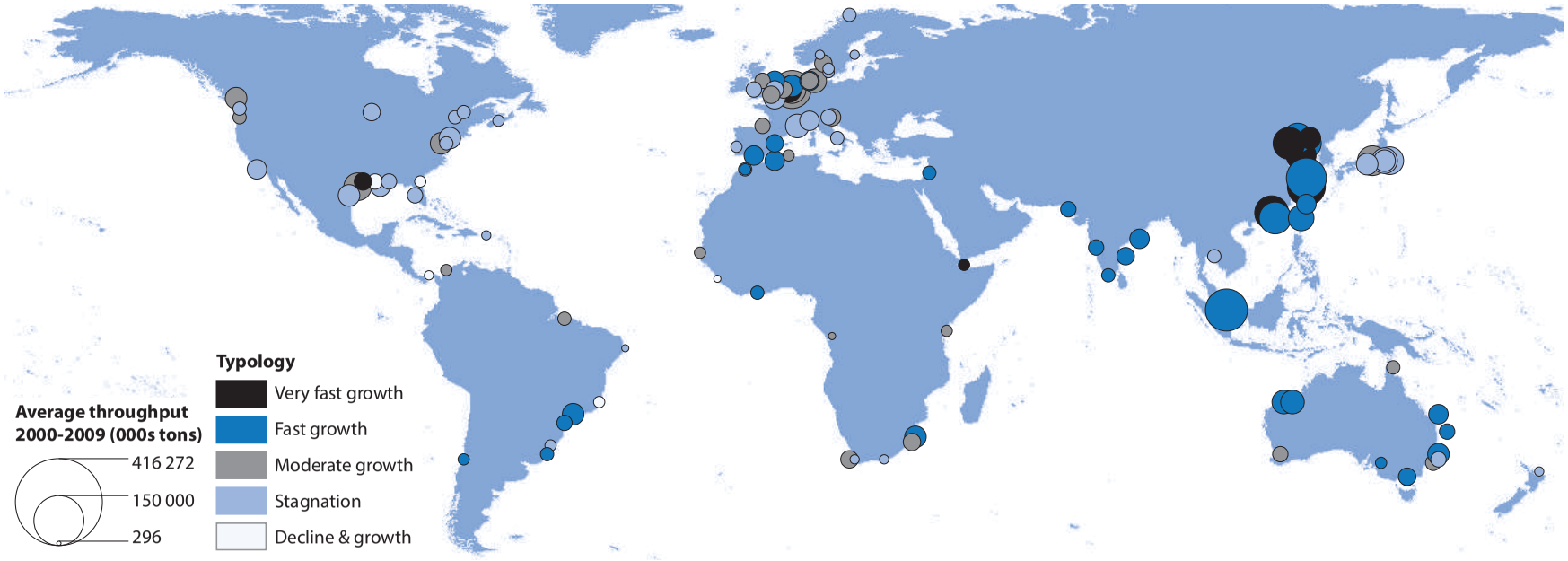
Table 1.3. Port-cities and their population and port growth in Asia (1970-2010)

	Strong population growth	Moderate population growth
Strong port growth	Shenzhen, Dubai, Shanghai, Singapore, Mumbai, Kolkata	Hong Kong, Busan, Nagoya
Moderate port growth		Kobe
No port	Delhi, Beijing	

Source: Own elaborations based on data from UN Habitat and *Journal de la Marine Marchande,* editions from 1970 to 2013.

These trends also reflect the shifting economic balance across continents in recent decades. In 1972, approximately 40% of all world port activity took place in Europe, 20% in North America and 20% in Asia. These shares had dramatically changed by 2009, when more than half of world port activity was taking place in Asia, around a fifth in Europe, and a tenth in North America. Ports in Asia, in particular Chinese ports, have shown very fast growth rates over the last four decades, whereas ports in North America and Europe have shown more mixed growth patterns, characterised by stagnation or a combination of stagnation, decline and moderate growth (Figures 1.3 and 1.4).

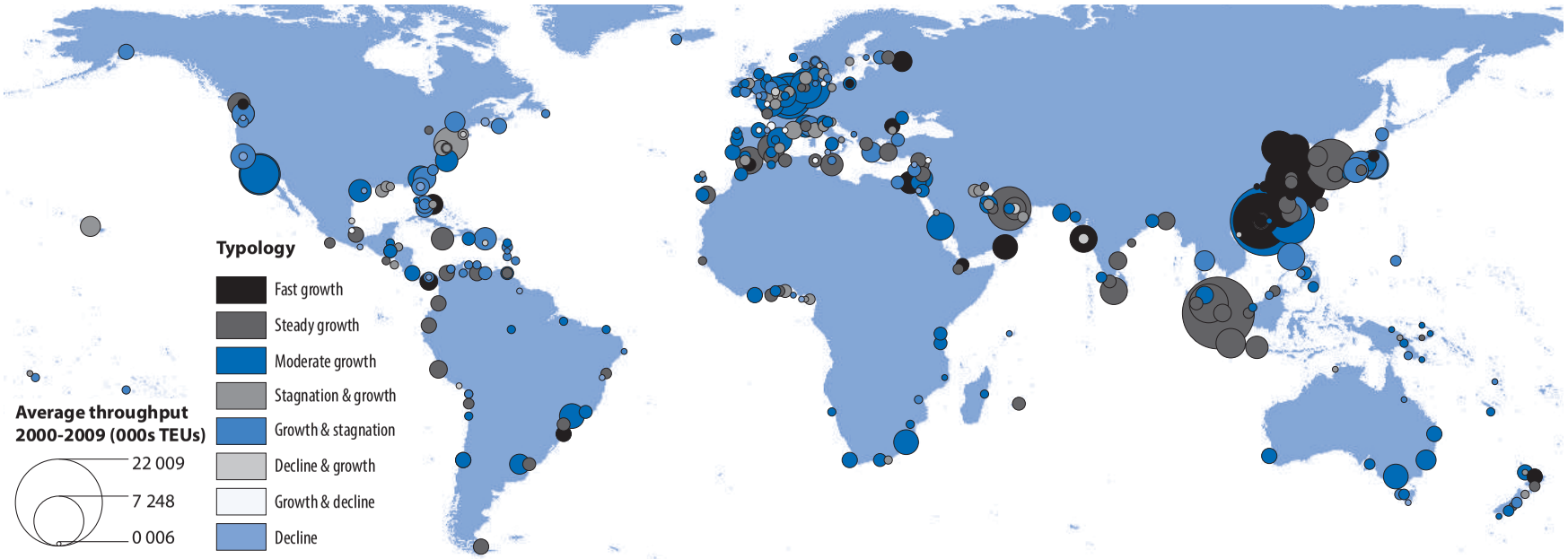
Figure 1.3. Port trajectories 1970-2009



Note: the category "decline and growth" indicates a succession of port decline and port growth over the four decades.

Source: Own elaborations based on data from *Journal de la Marine Marchande,* editions from 1970 to 2013.

Figure 1.4. Container port trajectories 1970-2009

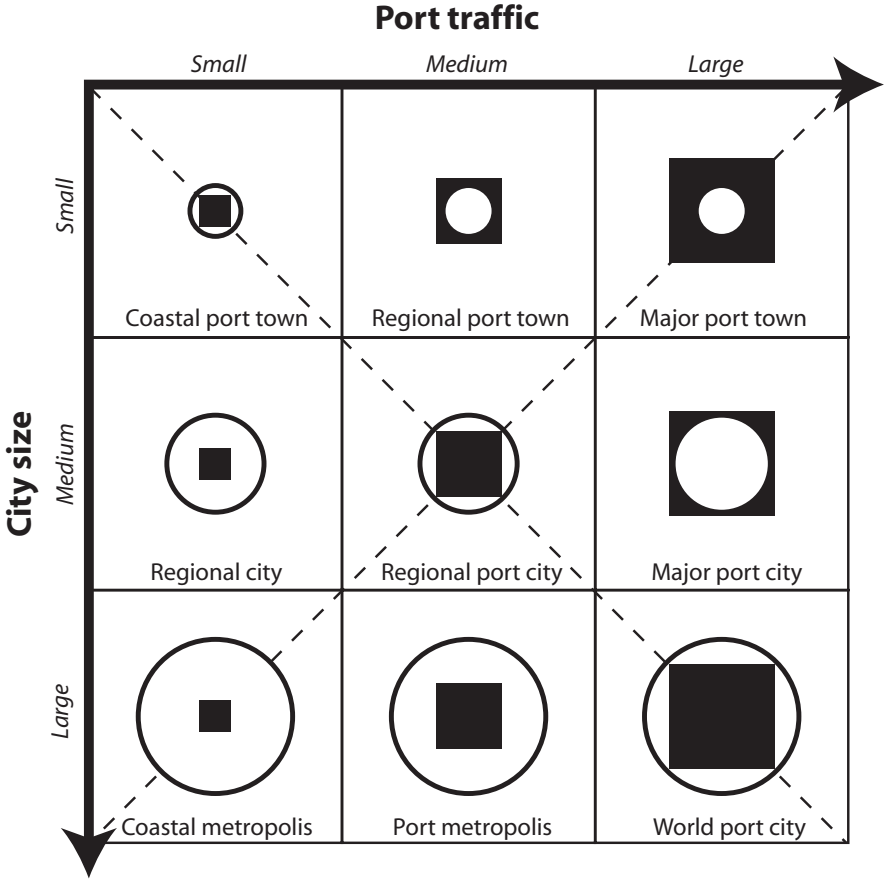


Source: Own elaborations based on data from *Journal de la Marine Marchande,* editions from 1970 to 2013.

Each port-city faces its own particular challenges

Different types of port-cities, dependent on port size and city size, range from coastal port towns to world port-cities (Figure 1.5). World port-cities are large cities with large ports; examples include New York, Hong Kong, Tokyo and Singapore. In a port metropolis, the urban function is large, whereas the port function is smaller but nevertheless considerable, as in Cape Town and Buenos Aires. When the port function is even smaller in a large metropolis, it can be considered a coastal metropolis (Stockholm, Baltimore and Tunis). However, the opposite phenomenon also exists; in these cases, the size of the port is relatively larger than the city. These could be called major port-cities, such as Rotterdam, Le Havre and Genoa, and major port towns, *e.g.* Freeport, Gioia Tauro and Laem Chabang. This study focuses on port-cities, in which either the city or the port is very large (a port metropolis or major port-city respectively) or both are large (world port-cities). There are clear differences between continents in this respect. North America's cities are chiefly on the coast, connected to the land by bridges, and the largest European cities are concentrated inland, but with many coastal gateways. Asia has a large coastal urban concentration, with low hinterland coverage.

Figure 1.5. Typology of port-cities



Note: the circle represents the city; the square represents the port. The larger the circle, the larger the urban population. The larger the square, the larger the port volume.

Source: Ducruet, C. and S.W. Lee (2006), "Frontline Soldiers of Globalisation: Port-City Evolution and Regional Competition", *Geojournal*, Vol. 67, No. 2, pp. 107-122.

Different port and urban growth patterns lead to distinctly different impacts and policy challenges (Table 1.4). The main challenge of port-cities with growing ports and a growing population is the development of new port sites. Here, the pressing issues 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. Growing cities with ports that face declining traffic 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. The cities in which the population is shrinking and the port growing 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 are in decline need to find new sources of growth. Transformation of port areas there may require less new housing development and cultivate leisure or business areas instead, as well as attempts to attract new services and port niches.

Table 1.4. 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)

The following chapters will assess these challenges, and analyse policies to deal with them. Despite the variety of different port-cities, they share many similar challenges. The core question is how ports, often the source of a city's historical development, can continue to add value to a metropolis. Can they still foster the prosperity and well-being of the metropolis today? The reality of port-cities remains complex, without a typical port-city. Their variety provides a rich range of experiences and examples to compare and from which to learn. Port-city relations evolve over time, and various authors have attempted to capture different stages of the dynamics of port-city interaction. The following chapters will make use of these sources to assess the impact of ports on their cities and suggest possible ways to improve on them.

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