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Published in:
Proceedings IAME 2017

Publication status and date:
Published: 01/01/2017

Document Version
Publisher's PDF, also known as Version of record

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Citation for the published version (APA):
Vroomans, J., Geerlings, H., & Kuipers, B. (2017). The influence of different political-economic regimes on port clusters in transition. In *Proceedings IAME 2017*

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Jos Vroomans¹, Harry Geerlings² and Bart Kuipers³

The influence of different political-economic regimes on port clusters in transition

Abstract

Ports and their respective port cities, are often seen as clusters and therefore the concept of a cluster, with all its features like linkages, the different cluster actors, the private and public role of these actors and the way these roles and their interacting changes, is a useful tool to describe and understand the composition and development of different ports.

The literature on cluster theories has evolved and provides useful perspectives and concepts like the business life cycle, the degree of heterogeneity and shared values, that give the researcher the possibility to make statements about the vitality and prospects for port city regions. The interrelationships within the port cluster can be related to different political-economic systems in which these developments take place. This paper explores the position that there is a distinction to be made between Coordinated Market Economies (CME) and Liberal Market Economies (LME). Due to developments in the last decades this eventually resulted in an Anglo-Saxon port-city cluster of Rotterdam, and a Continental port-city cluster of Hamburg.

Keywords: clusters, port-cities, business life cycle, heterogeneity, shared values, political-economic systems

1. Introduction

The concept of localised growth in the spatial economy (Gordon and McCann, 2000), is a subject that has been of interest of scholars of different disciplines throughout the twentieth century. Starting with Weber, with his multidisciplinary background, but approaching this phenomenon mainly from a least cost model for explaining location (Weber, 1929), economy, geography and sociology have been contributing to the understanding of the location of economic activity in space (Krugman, 1991). And although for Krugman it has all to do with concentration, there are different approaches to be recognized in this concentration

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of activities. In the end many of them affirm that this concentration generated imperfect competition. A situation where the firms that were concentrated, benefitted from, which as such formed the basis for the cluster's existence. These concentrations are based on differences. Differences in economic performance, labour market performance but also differences as an outcome of differentiation due to government policies, scale economies and agglomeration economies (Clark *et al* 2002). These approaches of concentrated activities can be summarized as Models of Pure Agglomeration, Industrial Complex models and the Social Network models (Gordon and McCann, 2000). Porters (1990) approach of the spatial agglomeration from the managerial perspective where he uses the term clusters, could be seen as an integration of these three approaches, whereby he strongly emphasizes the interrelationship between the different factors he distinguishes to come to a more competitive advantage. This approach was extended by Porter when he introduced the concept of Shared Values as a distinctive characteristic of clusters (Porter & Kramer, 2011). This aspect of clusters, has hardly had any attention from scholars with the exception of Nijdam (Nijdam, 2010), and De Langen (2004). New cluster approaches in port studies offer new chances for port research, since these new developments could provide improved analytical tools to study port clusters or, as this paper will use, intertwined port-city regions. These approaches will be discussed in sections 3,4,5 and 6.

Besides these new approaches, the former studies of port regions, port-city relations or port clusters, neglected the influences of culture -seen as the socio economic and socio-political context- as factors that could be of importance for the development of port clusters. Although some researchers do pay attention to aspects of culture (Langen, 2004), (Nijdam, 2010), for them at that moment it was not seen as a variable that could be of importance. Port city regions are fine examples of cluster developments that can be studied within a cultural context. This will be discussed in section 7.

2. From Industrial districts to clusters

By overviewing theories on spatial concentrations, Weber can be seen as one of the founding fathers of the study of location, but in fact it were his ancestors in economic studies who already paid attention to spatial concentration of human activities. Alfred Marshall, in his book *Principles of Economics*, published in 1890, first characterised clusters as a "concentration of particular branches of production in certain localities" (Marshall, 1920, p. 222). Marshall himself had the opinion that this description (localized industry) might perhaps be not accurately (1920, p. boek IV chptr X par. 1). For this phenomenon, he forged the term Industrial districts: "...groups of skilled workers who are gathered within the narrow boundaries of a manufacturing town or a thickly peopled industrial district" (Marshall, 1920, p. 225).



Researching the concept of clusters one cannot underestimate the contribution of Porter (1990). This scholar, well known for his contributions in the study of competition and competitive advantages (Porter, 1980), situates the cluster as an organisation to achieve (national) competitive advantage. The cluster is “a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities” (Porter, 2002). For Porter, the cluster is the most important unit of economic activity, one which is often ignored (he states the Federal level in the US) (Porter, 2009). An economy consists of “...a series of regional economies that trade with each other and the rest of the world with its own particular pattern of cluster specialization” (Porter, 2009, p. 2). For that he created his “diamond” (1990) as pictured in Figure 1, which consists of:

1. factor conditions (human resources, physical resources, knowledge resources, capital resources and infrastructure),
2. demand conditions (home buyer needs⁴),
3. related and supporting industries (that are internationally competitive by themselves!) (Porter, 1990, p. 100), these suppliers communicate information and innovation from firm to firm, so creating a self-reinforcing information network,
4. Firm strategy, structure and rivalry: the context in which firms are created, organized and managed as well as the nature of domestic rivalry (Porter, 1990, p. 107).

And as separate influencing factors:

5. government (creating or fostering convenient conditions, like infrastructure, formal education, antitrust policies, etc.).
6. chance (political developments, major shifts in demand, breakthroughs in technologies)

It is the interplay between these factors that determine the strength of the cluster in its competition with other clusters in the industries abroad. For in the end “the fundamental goal of economic policy is to enhance competitiveness” (Porter, 2009). The driving forces for the cluster are not only geographic industry concentration but, and this is typically Porter, domestic rivalry. “Two elements.... have especially great power to transform the ‘diamond’ into a system, domestic rivalry because it promotes upgrading of the entire national ‘diamond’, and geographic concentration because it elevates and magnifies the interactions within the ‘diamond’” (Porter, 1990, p. 131).

⁴ ...the home demand gives local firms a clearer or earlier picture of buyer needs than foreign rivals can have” (Porter, 1990, p. 86)



For Chapman, this is the most important difference between the cluster concept and the industrial complex model of agglomeration is in “its acknowledgement of the significance of intangible information-based networks...” (Chapman, 2005, p. 606).

Paying attention to this last factor, Porter observes that in e.g. Germany, senior executives, having a technical background, have a strong managerial focus on product and process improvement which leads to success in technical and engineering content. But he also acknowledges less tangible aspects that influence the way that firms are organised and managed: attitudes towards authority, norms of interpersonal interaction, attitudes of workers toward management and social norms of individual or group behaviour (Porter, 1990, p. 109). For Porter, as a scholar in business and management studies, location and the role of clusters has been too much neglected in the discipline of management studies. For him the firm is located in space and this locational factor influences firm’s strategy’, management, R&D, etc. Shortly speaking: business policy. This approach is for Porter a way to “reveal the public role companies have” (Porter, 2002)

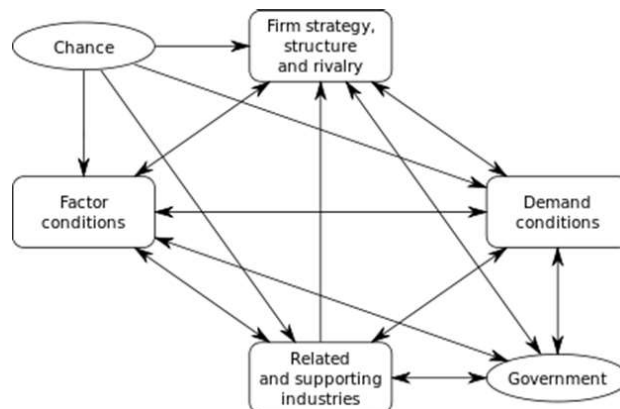


Figure 1 – Porters Diamond: The determinants of national advantage

(Source: Porter, 1990)

The factor “Government” should enhance this by stimulating (and even initiating) the next issues for the strategic agenda:

- a. Choosing locations
- b. Engaging locally
- c. Upgrading the cluster
- d. Working collectively (Porter, 1998)



The strength of the cluster is defined in the relations between firms, related industries, institutions and government. These relationships are enhanced by the quality of the complementarities and commonalities that these actors within the cluster possess in relation to each other, as depicted in Figure 2.

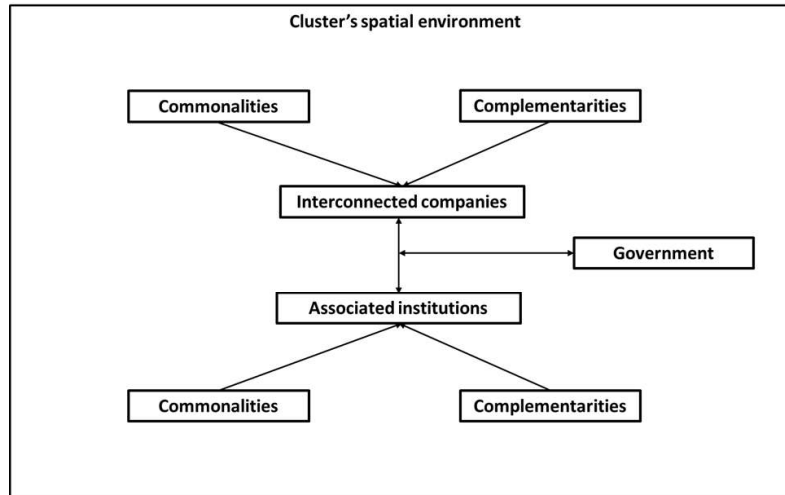


Figure 2- A model of relationships in the cluster

So companies and associated institutions both have their commonalities and their complementarities and the interaction between the two is influenced by the degree that government tries to impose its policies to the benefit of the cluster as a whole. This government influence varies according to the political economic model, as will be discussed in section 6 of this paper.

3. New perspectives concerning cluster theory

The cluster models as mentioned above are foremost static in their approach, they describe a certain situation. Recent literature has also paid attention to the forces inside the cluster that influence growth and decline or shape these concentrations of activities (Chapman, 2005), (Neffke & Henning, 2013), (Menzel & Fornahl, 2009).

This more dynamic approach can be seen by the next concepts:

- a. the life cycle of the cluster (Menzel and Fornahl, 2009), (Chapman, 2005);
- b. heterogeneity and locked-in situations (Menzel and Fornahl, 2009), (Frenken *et al* 2007);
- c. skill relatedness (Neffke and Henning, 2013);
- d. the concept of shared values (Porter and Kramer, 2011).



These concepts, which can be seen as elaborations or sometimes consequences of the cluster approach, help to understand how concentrations of activities in ports can be studied. They provide tools to analyse the phenomena that arise when these port activity concentrations occur. Especially ports and their relationships to the cities in which they more or less are located, are perfect examples of how these relationships change.

These elaborations on the cluster approach provide the researcher with tools that can give insight in the assumed differences between the various ports. Differences that also occur because of the dominant political economic system in which these port activity concentrations were developed. To discover these influences, it will be clear that they are not very obvious if studied from the perspective of the most basic models (industrial district of Marshall), but which become more visible when researched from the perspectives of these more recent approaches. Approaches that consider the often-neglected historical perspective by which regions, that were formerly strong and competitive, may now be vulnerable because of their somewhat unilateral composition.

4. Life cycles, heterogeneity and locked-in situations

Like products, businesses and even industries can be described by life cycles (Menzel and Fornahl, 2009)⁵ Life cycles know different phases. The standard life cycle can be described by the introduction phase, the growth, the mature phase and the decline. This is also the case in port clusters. A crucial element is that every life cycle comes to an end and the viability of the port cluster is its capability to renew current industries (prolonging the existing life cycle) or to created new businesses. For port-regions this expresses the situation whereby new activities based on current industries are initialized. For Rotterdam e.g. this is the situation with the initiatives in LNG or bio-based fuels. One might argue that this is a matter of perspective, LNG is other stuff compared to oil, but basically it is still in the business of energy. Once again, a chemist will say that oil as a resource cannot be compared to gas, but from the perspective of importing and handling crude resources, one might say that it is an extension on existing, labour extensive port activities. And in this case, the same, low value added one. The relationship between being part of a cluster and the business life cycle, has been researched with an interesting outcome. Menzel attributes great qualities to the effect of being part of a cluster: “Companies in clusters grow stronger and innovate faster than those

⁵ Menzel and Fornahl (2009) have compared the different life cycles of companies that are clustered or that are non-clustered with the “abstract or normal life cycle”. This comparison shows interesting features of clusters that are of importance when assessing port-regions.



outside clusters” (Menzel and Fornahl, 2009, p. 205). But at the same time, being part of cluster also has its disadvantages as shown in Figure 3.

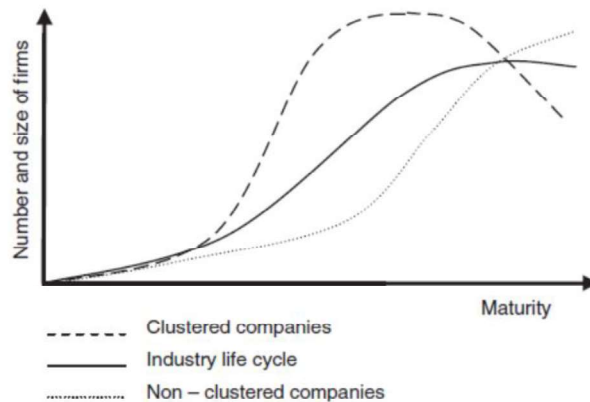


Figure 3 - Clustered and non-clustered companies during the industry life cycle.

Source Menzel and Fornahl, 2009)

In Figure 3, the advantage of being a part of the cluster is to be seen in the earlier phases when the growth is more rapidly than non-clustered firms. But this figure also shows that in the longer term non-clustered companies survive better in terms of number and size (as Chapman describes as a result of the locked-in situation). The way to influence this “standard life-cycle” and to prolong the survival of the firms depends on the ability of the cluster to “adjust to a changing environment and that ability depends on the diversity of knowledge in the cluster” (Menzel and Fornahl, 2009, p. 210).

This diversity, or heterogeneity should not be too strong in the beginning of a cluster (as critical mass is than not reached for a take-off). But later, too avoid the locked-in situation, heterogeneity is needed. In their paper, they call this the cluster paradox (2009, p. 216), which can better be seen as a balancing act between specialisation/concentration -which is by definition a feature of the cluster and its heterogeneity- to prevent decline. Frenken describes this as related variety ((Frenken *et al* 2007). When heterogeneity is absent, there is the risk of getting locked-in, as described by the Teesside chemical industry case (Chapman, 2005). Here, Chapman concludes that the region would have been better prepared if the Teesside economy had been more diversified. On the other hand, he remarks that there was a commercial fragmentation within the industry that prohibited an optimisation of transaction costs. So within the industry, it would have been better if the individual enterprises had been part of a greater enterprise or if there was a greater intracorporate integration. For that it is



interesting to remark that in Germany, co-sharing -at least financially, but also in terms of information- is a typical phenomenon for the local economy.

The cluster as described by Porter is based on specialisation. This specialisation is its strength but can, as the outside world changes, become a weakness and in the end be a trap, as shown by Chapman when he describes the Teesside situation where the specialisation encouraged a locked-in situation (Chapman, 2005). This is also a position Van Oort takes when explaining the interplay of specialisation and variety (Van Oort *et al* 2015). He finds a specialised economy as vulnerable and the phenomenon as a cluster would decrease economic innovations. This is perhaps too exaggerated as it is the competition within a cluster and its need for complementarities that enhances innovation. In this criticism, there is too much attention for the commonalities in the cluster and much too less for the complementarities. The cluster is a learning environment and as such the answer is in the presence of knowledge, created by commonalities (and enhanced by competition) and the dissemination thanks to diversification, as Neffke has shown (Neffke and Henning, 2013). For Neffke and Henning, diversification has a strong relationship with the firms' core activities in terms of skill-relatedness. These industries tend to diversify stronger in new industries that have ties to the firm's core activities compared to industries without such ties.

Proximity is certainly of value in this process. And although Visser (2000) takes a strong position in distinguishing cluster from networks in terms of acquiring and diffusing knowledge, the port-city relationship can be seen as a position on a continuum of social networks. Port-cities that, because they are within each other's proximity, need to be considered as clusters with its commonalities and complementarities.

As heterogeneity is the driving force, there is a strong resemblance with the weak ties of Granovetter: weak ties bring in new knowledge which enhances heterogeneity and as such are indispensable (Granovetter, 1973) (Granovetter, 2005). Companies learn from each other and its this learning is based on their proximity possess three features:

- a. Direct interaction between firms
- b. Monitoring and observing other firms
- c. Social contacts of employees of a firm with other firms

And as in Granovetter's strong and weak ties, relations with firms outside the cluster (weak ties) enhance learning more than within the cluster (strong ties). By describing and analysing a cluster, the relationships between the actors in their interaction and in their intra-action, are of crucial importance. By studying the composition of the cluster and the nature of the relationships, one should not only take aspects as commonalities and complementarities into account, but also pay attention to the dynamic (and historical perspective taking into account)



concepts as cluster life cycles and its composition in terms of the degree of heterogeneity, as shown in Figure 4.



Figure 4- Determinants of the composition of the cluster

These determinants result in a configuration whereby the cluster's performance is affected as shown in Figure 5.

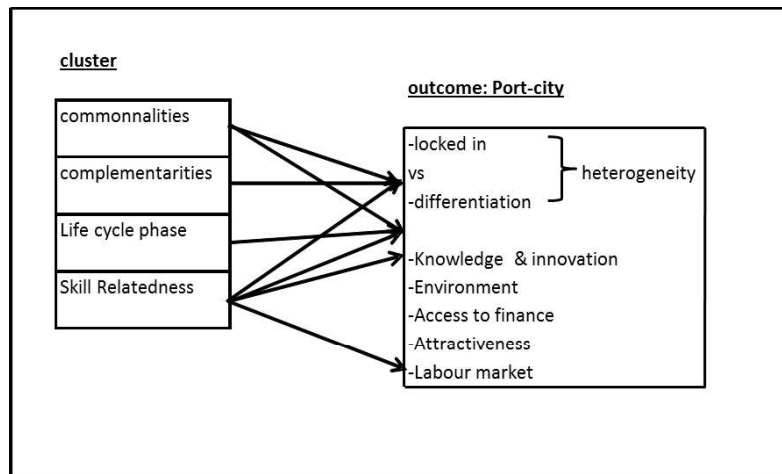


Figure 5- A dynamic approach for researching port city clusters

As said in section 2, these relations and life cycle phase of the cluster, must be studied in a political economic context. This context can be approached from a cluster based perspective: the shared values that form the origins of the network.

5. Shared values as a dynamic for cluster development

In the discussion about clusters, Porter introduced the term Shared Values as a force that attributes to the competitiveness of the cluster (Porter and Kramer, 2011). It was an attempt



for showing the way to connect business and societies. For port cities an important perspective, since it is this breach which is so characteristic in many port cities. A breach that not only had a spatial (see Figure 8), but also a societal consequence. Porter defines shared values as “policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the environment in which it operates (Porter and Kramer, 2011, p. 6). Too long, companies have taken their environment for granted and often left them with the negative externalities of their business while granting the positive revenues for themselves, which often means, for shareholders outside the region. Shared values connect competitive advantage and social issues by not only reconceiving products and markets (is the product good for the customer?) or redefining the productivity in the value chain, both issues that are need to be done to create shared value, but also as a third one: the enablement of cluster development. By that, Porter sees an important role for academic programs, trade associations, the surrounding communities and government. This role of government is dependent of the political economic environment in which this government operates. This will be dealt with in section 7.

The concept of shared values has a resonance in a concept introduced by Fukuyama (Fukuyama, 1995): a belief system, the way people associate with each other. If this belief is profound, one can assume that the shared values will be more present than vice versa. This belief system is necessary to enhance trust between the partners in a given system. Geerlings (1997) elaborates on that by stating that a system, that might enhance this interaction between people (or actors in a system), could be described as “economy of touch”: “...the informal contact that influences the management structures and decision making processes” (Geerlings, 1997, p. 97). He considers this concept as crucial for the relationship, even alliances, between government and the private sector.

Merk bridges the concepts of spatial clusters and trust. Discussing the diverging priorities of ports and urban systems he, in line with the classification of Gordon and McCann (2000) (although Merk contributes it to a later publication of McCann), considers the aspect of mutual trust as crucial for the social network model (one of the three within the classification of spatial concentrations). If the element of trust is an important feature of social network models, the aspect of shared values as a basis for mutual trust is an important concept. For it is the existence of shared values that is the basis for initializing and sustaining trust between the actors within a network like the port city cluster.

Trust, based on shared values, could then be the precondition for the cooperation in the cluster, that is: the port city region and its relationships. If ports prosper, the city could benefit as well. And vice versa, a healthy city can benefit the port as well since that creates an



environment where people want to settle. People with skills that are of use in an ever changing port environment that is in need of high skilled employees.

The components of shared values can be depicted as in Figure 6:

Business relations
Company's investments in society
Economy of touch
Trust

Figure 6- components of shared values in a cluster

As stated at the end of section four, if shared values are the influencing dynamics behind cluster development, Figure 6 should be completed as shown in Figure 7.

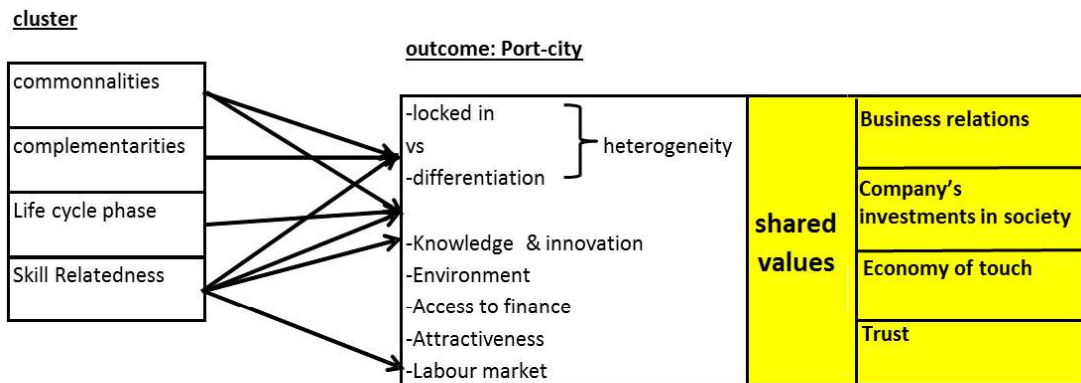
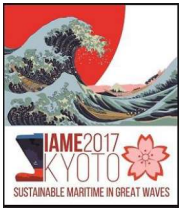


Figure 7- A dynamic approach for researching port city clusters

6. The cultural context as a condition for creating shared values

Within models of political economic systems, culture plays an important role (Meyer Junior *et al* 2006). Literature distinguishes various models of these systems that are “glued “by the culture in which they are embedded. Within the LHHR, one can distinguish three kinds of political economic, or capitalist, systems: 1) the Coordinated Market Economy and 2) the Liberal Market Economy (Hall and Soskice, 2001) and 3) the Latin variant of CME, more or less “Etatism”. The last one shows the diversity within the CME’s as shown by Amable (2003). For this paper, this variant will not be discussed. These systems are the result of different spheres in which firms must develop relationships to resolve coordination problems.

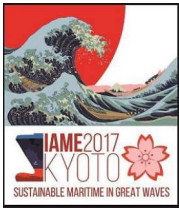


Hall and Soskice call their approach a “relational view of the firm” (Hall and Soskice, 2001, p. 6). For them the quality of the relationships that the firm establishes internally (employees) and with their environment (suppliers, clients, stakeholders, governments, etc.), is critical in the way that this is needed to resolve coordination problems. These relationships need to be developed in five different aspects (or spheres as they call this):

1. The sphere of industrial relations (for Hall & Soskice: the problem facing companies how to coordinate bargaining over wages and working conditions with their labor force)
2. The sphere of vocational training and education (securing the workforce with suitable skills)
3. The sphere of corporate governance (access to finance)
4. The sphere of inter-firm relations (here coordination problems stem from the sharing of proprietary information and the risk of exploitation in joint ventures).
5. The sphere as a set of coordination problems of firms vis-à-vis their own employees (information sharing: giving power away).

Using the differences in the way that firms solve their problem, they come to different types of economies, as mentioned: the Coordinated Market Economy and the Liberal Market Economy and variations on these two. The differences between these types of political economies generate differences in corporate strategies (Hall and Soskice, 2001, p. 16). The relationships are established in an environment governed by institutions: “a set of rules, formal or informal, that actors generally follow, whether for normative, cognitive, or material reasons” (Hall and Soskice, 2001, p. 9)). These institutions define the way organisations (“...durable entities with formally recognized members, whose rule also contribute to the institutions of the political economy” (ibid, p. 9), behave. From this perspective, LME’s are i.e. characterised by arm's-length relations, high levels of competition, formal contracting and complete contracts. The relationships have a clear cut between the actors. Firms rely completely on the market that determines how these relations should develop. On the other hand, within CME there are institutions that coordinate and support the interactions between the actors (firms and city representing institutions) and support them in their endeavours. These institutions aim for reducing uncertainty that actors might have in valuing other actors behaviour. These institutions can be business and employer organisations, trade unions, networks of cross-shareholding and legal and regulatory systems.

This distinction between LME and CME -and in a way as a mixed form, the Latin system-, shows differences in the way that trust can be established. And as such, also the differences in what way, and how much, shared values, based on mutual trust, are developed. We follow Hall and Soskice by stating that “...the differences correspond to the level of institutional



support available for market, as opposed to non-market coordination in each political economy”. This approach need not be restricted to firms and their relations, but as a logical consequence, can also be applied to a spatial articulation of such relationships, i.e. to assess the relationships between actors in a cluster. And although Merk hesitates to link spatial clusters to particular locations, linking particular locations to political economic systems and their cultural embeddedness is an interesting approach that could contribute to the discussion of how the various port-regions have developed and will be able to cope with transitions in future. This link was already made before (Vroomans *et al* 2016). Studying port city relationships from this perspective by linking them to the characteristics of political economic systems means taking the starting point that these systems could be apparent in Hamburg (CME) and Rotterdam (LME).

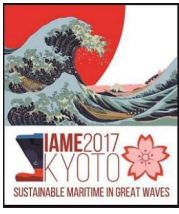
A study that contributes to this perspective should pay attention to

- a. how the different port actors establish their relation with their employees (sphere 1). Interesting in this is the presence of family run companies in CME’s;
- b. how port firms, and port city jointly coordinate and initiate vocational training and education (sphere 2);
- c. the financing of port firms’ activities (sphere 3);
- d. the relations between port firms, port authorities and city governments (sphere 4)
- e. the intrafirm relationships (sphere 5).

To operationalize these spheres one can have a look at the way how:

- an economy of touch has developed as a means of interacting between cluster actors;
- the interaction between firms, port authorities and city’s government is organised and if joint activities are undertaken to create positive conditions for port firms to act and to create opportunities for the city to implement benefits for the society (knowledge, employment, attractive city environment;
- cross-shareholding is present in the ports of the different political systems
- social networks are developed;
- ownership of dominating or crucial port firms, is organised;

Since companies have developed globally and their offices are branches of foreign companies or headquarters of original domestic companies, the relationships between them and their environment, get more important (Dicken, 2009). By studying ports as examples of clusters, differences in the development between various ports can be studied from the perspective of



the differences in political economic contexts. This paper will make a first attempt by proposing operationalisations to enable the researcher to describe and analyse port city relations from this perspective. Before doing so, the concepts that we described in sections 2-6 must be related to ports and their port cities.

7. The development of the port cluster

Ports in Western Europe, especially Rotterdam in the '50's and '60's, were growing fast due to increased world trade, and the further innovations in processing crude oil, resulting in huge petrochemical complexes. For Rotterdam there was the extra impulse, thanks to their position towards the Ruhrgebiet that needed coal and iron to rebuild post war Germany. In the '70s and '80's ports slowed down in their growth, although from the early 70's container transport increased at a fast rate further facilitating world trade

Famous and so very often used as a model to explain the spatial development of ports, is the Anyport model of Bird (Bird, 1963). In his model Bird explains how port activities, due to expansion and negative externalities, are driven outwards to form large areas where transport modes have better accessibility and where related industrial activities cluster to be served by the terminal facilities. This development further spurred the separation of port activities and the activities in the city. Due to increased negative spill overs (sound and air pollution) but foremost for the quest for space, the port moved seaward, a process already started in the 50's as described by Bird (1971). This movement of activities from the city to the seafront was later followed by a relocation of other activities in inland ports. Notteboom has elaborated on this model by distinguishing a new phase (Notteboom and Rodrigue, 2005). He introduces this by stating that the model has some weaknesses 'in view of explaining contemporary port development' (Notteboom and Rodrigue, 2005, p. 298). He refers to the rise of seaport terminals and the inland dimension as a driving factor in port development dynamics. In the '90's, the city underwent a transformation in two respects: in spatial terms more attention for redevelopment of the waterfront (Hoyle and Pinder, 1992) which often led to gentrification and the need for new activities to cope with unemployment which in turn led in an attempt to attract advanced producer services, especially port-related (Jacobs *et al* 2011). The effect of these dynamics -that were described in more detail in a paper for the IAME 2016 conference (Vroomans *et al* 2016)- can be modelled as in Figure 8 and might be seen as an elaboration of Bird's Any Port model combined with and Notteboom's Regionalisation model (Notteboom and Rodrigue, 2005), and the attention for the new service industry (Jacobs *et al* 2011):

1. the historical site
2. the extension due to scale, resulting in extensive port activities and the port industrial complex: moving downstream



3. the regionalization phase: moving inland
4. APS, commodity traders and HQRS

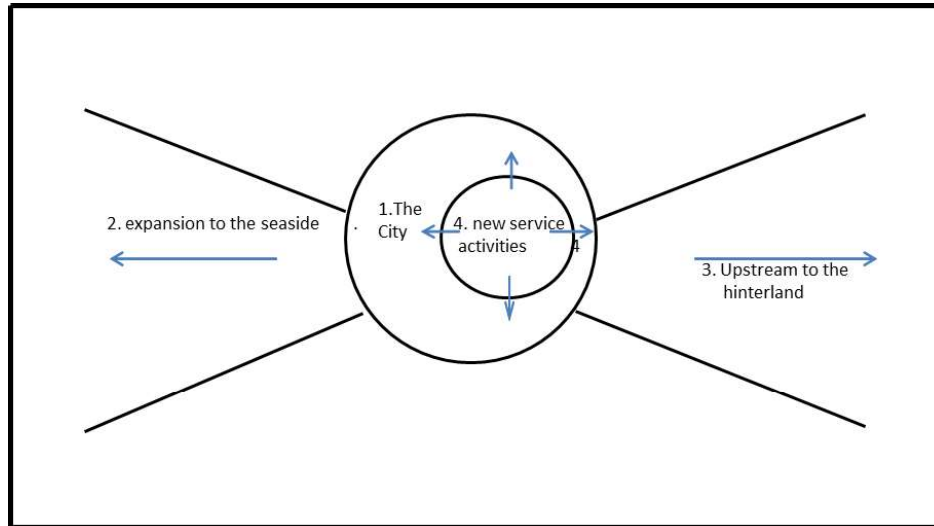


Figure 8 – The Butterfly: Opposite dynamics leading to new functions for the port city’s centre

Centrifugal forces that separated the port activities from the city in downstream and upstream directions. For a port like Rotterdam, this can be spatially translated in:

1. The City
2. Botlek, Europoort, Maasvlakte I en II
3. Moerdijk, Brabantse stedenrij, Venlo
4. New activities located at Weena, Westblaak, Scheepvaartkwartier, Rhoon, Rotterdam Alexander and other scattered locations in the urban environment.

For a port like Hamburg, the extension “2” has a completely other position towards 1, and so does the incorporated port industrial cluster. These activities are flanking the city, you could even say, within the city if one includes the district (Bezirk) Harburg as part of the city of Hamburg. This is particularly due to the fact that the Free and Hanseatic city of Hamburg sets political limits to the degrees of freedom of expanding port activities. It simply cannot go outside its municipal and state boundaries. It also relates to a much lower level of industrial investment in Hamburg, characteristic for phase 2. The share of industrial added value in the Port of Hamburg is only 20%, compared to 50% for the port of Antwerp and 38% for the port of Rotterdam in 2013. Regionalization “3” is probably more related to activities in “1”, illustrated by the high loco quote of Hamburg (Merk, 2014) so the bonding between port and customer might have another character.



So the development of the port city cluster had spatial and functional outcomes. Functional in terms that certain activities disappeared and other activities developed in the city. But, as said, the characteristics and the degree that this happened, was different in the various ports. In terms of heterogeneity and life cycle development, concepts from section 4, some port cities were better able to respond of the centrifugal forces by acquiring new activities. As for Advanced Producer Services in “4”, Hamburg has the highest concentration of leading maritime services in Europe (number two of the world (Verhetsel and Sel, 2009)), partly thanks to German shipping companies that made the city their home base so paving the path for other services. And so it is for a number of headquarters and regional headquarters for financial and legal service providers the centre of location. Clustering is needed for rapid growth and creating a basis, but heterogeneity is needed to be able to adjust to changing environments. The ability to generate new activities can benefit port cities since they can be the location that suits these activities: close to existing industrial and commercial activities, likely inclined and capable of improving infrastructure (spatial, social). How’s that for the most important port cities in the Le Havre Hamburg Range? Merk (2014, p. 81) and also Lam (2011) show those activities in the maritime cluster, where a port has a competitive advantage in (Table 1).

Table 1 – Maritime cluster composition in main port-cities

Source: Lam and Zhang 2011

Maritime advantages	Hamburg	Hong Kong	London	New York/ New Jersey	Oslo	Piraeus	Rotterdam	Shanghai	Singapore	Tokyo
Port	○	○					○	○	○	
Marine insurance			○		○				○	○
Financial service	○	○	○	○	○	○		○	○	
Ship registry	○	○	○		○	○			○	
Shipowners, Operators & Managers		○	○		○	○	○		○	○
Ship classification society			○		○					
Ship agency and forwarding			○				○	○	○	
Ship brokers			○		○	○				
Legal services		○	○			○				○
Ship building & repair	○	○					○		○	
Marine personnel				○			○	○		
Research , education & training	○	○	○		○		○	○	○	○
Information and communication technology (ICT) Services		○	○	○		○	○		○	
Regulators: Maritime Organisations / Associations/exchange market, etc.			○		○		○			○
Governmental support	○							○	○	
Maritime culture and heritage	○		○	○	○	○	○			

Note: “○” denotes maritime clusters have the competitive advantages in the particular aspects.

Looking at the ability to attract advanced marine producer services, the position of Rotterdam compared to Antwerp and Hamburg, is less convenient. Besides paying attention to new life cycles that are reinventions of the old ones (like bio mass instead of oil) and so creating those enveloped curves, Rotterdam also will have to pay attention to the creation of new life cycles e.g. by stimulating the location of high skilled advanced marine producer services. Various



reports from consultancy agencies confirm this situation. Comparing cities on their maritime services, Rotterdam is not included in the top ranking as e.g. Table 2 shows.

Table 2- Ranking port cities on maritime services and operations

Source: Menon, 2012 (Menon Business Economics, 2012)

Rank	Ship-owners and shipping operations	Maritime finance	Maritime law and insurance	Maritime technology and competence	Overall rank
1	Oslo	Oslo	London	Singapore	Singapore
2	Singapore	New York	New York	Hamburg	Oslo
3	Pireaus/Athens	London	Singapore	Shanghai	London
4	Tokyo	Singapore	Hong Kong	Oslo	Hamburg
5	Hong Kong	Hong Kong	Oslo	Tokyo	Hong Kong

Showing a more detailed variety is provided by Table 3.

Table 3- Advanced marine producer services in Rotterdam, Hamburg and Antwerp

Source: World-ships.com ⁶

activity	Hamburg	Rotterdam	Antwerp
Marine equipment	252	120	39
Ship owners	3221	528	56
Maritime Organisations	30	39	23
Consultants	42	47	14
Maritime lawyers	30	26	9
Insurance	21	14	5
Port agents	15	16	52
Maritime education	8	5	5

Rotterdam, which has a long history as the largest port in the world, and still as the largest port in Europe, was apparently not “capable” of attracting some AMPS compared to Hamburg. In financial services and ship registry it does not match Hamburg according to these figures. This is in line with the results of the study where maritime world cities were

⁶ Consulted; 23/01/16



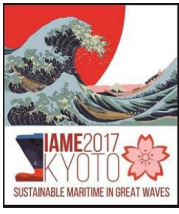
ranked (Verhetsel and Sel, 2009) (Verhetsel and Balliauw, 2015). In both studies Hamburg outranks Rotterdam by far as it comes to connections with other cities. Connections that were

measured in terms of service level and the Globalisation and World Cities method (GaWC-classification method). They conclude that “For policy makers the important suggestion of this study is that, to become an important maritime world city, attracting at least some headquarters and a range of regional offices (author: like Antwerp does), is necessary. In the end this should result in a transition from a main port to a world city” (Verhetsel and Balliauw, 2015, p. 57). Comparing the ports of Hamburg, Rotterdam and Antwerp, one might wonder if the position of Rotterdam, being the largest port in Europe in terms of tonnage or TEU’s, so much depending on the oil industry, will be able to cope with the changes in future. There are developments that affect the ports and their related port cities:

- the coming transition from bio-based fuels to other sources of energy;
- the decreasing growth in container transport thanks to changes in world trade relationships;
- the emerging new trade routes avoiding the passage through The Channel but using the Mediterranean ports of Piraeus, Marseille, Gioia Tauro, etc.

It would be relevant to see if the heterogeneity, especially in AMPS, is larger in Hamburg (and Antwerp) compared to Rotterdam. Rotterdam is excellent in transporting and overhauling cargo, crude oil and natural resources (iron and coal). Besides that, the petrochemical industry in Rotterdam is strongly represented. But these activities are characterised by rather low added value and do not create enough (high skilled) employment, in the port city region. Above that, these activities are sensitive for the developments mentioned that could be ahead of us. For that, one can say that the Rotterdam economy is vulnerable. Hamburg, ranking high on the mentioned classification methods, could be in a better position to cope with these transitions. Comparing the port cities in their development can be done by their life cycles but also by comparing the variety in industries in the subsequent years.

Skill relatedness, and life cycle approaches deepen the understanding of relationships. If Dicken provides the kind of relationships to be researched within the port-city cluster and pleas for analyses of international firm-place relationships in regard to the nature of varied and divergent forms of capitalism (Dicken, 2009, p. 288), the approaches of Menzel et al., Neffke, Visser and Chapman, provides us with the instruments to do so.



8. An operationalisation of port city relationships in perspective of different political economic systems

In this paper, the idea that the port can be an initiator for creating new industries from which the city can benefit, is definitely supported. It is about commonalities, complementarities, life cycle phases (resulting in heterogeneity or locked in situations) and skill relatedness. If shared values do play an important element in the competitiveness of the port city region, to detect its influence, an operationalization is needed. As can be expected, this is a complicated exercise to perform. Porter's definition contains the elements "policies and operating practices that enhance the competitiveness of a company that advance the economic and social conditions of the environment" (Porter and Kramer, 2011). Economy of touch (Geerlings, 1997) based on "a belief system" (Fukuyama, 1995) is also a concept to be used. "Trust", the relation between individuals is an even more difficult one to operationalize. The characteristics of the variety of capitalist systems as described by Hall and Soskice (2001), are of help to provide a framework and postulate some hypotheses to analyse the differences between port city relations and the effect on their spatial and functional outcomes. For clarity, we restrict ourselves to the two systems Coordinated Market Economy with the port city of Hamburg as its representative and the Liberal Market Economy with Rotterdam as its representative. Many see the Dutch market system as an example of the so-called Rhenish culture, another description for a Coordinated Market Economy. But during the '90's, the successive governments favoured a liberal approach to regional development and industry policies, in a way that, compared to Germany, the transition to a more liberal economy was the result that can be seen. This is also to be seen in such general indicators like stock market capitalisation, trade union densities, company financing (Hall & Soskice, 2001), length of tenure and skill profiles (Estevez-Abe, Iversen, and Soskice, 2001).

By researching the intensity of the presence of the items stated under A, B, C and D in Table 4 one can relate that to the characteristics of the political economic systems as described above and formulate hypotheses. To measure these different indicators, annual reports of companies (1-6 and 8), statistics (7) and interviews with representatives of selected port firms, representatives of city governments and non-governmental institutions (8-16), can be used.

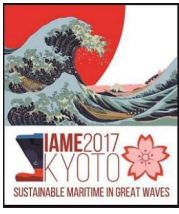
Table 4- Operationalisation of Shared Values in the contexts of different political economic systems

Shared values		Political economic system	
		Liberal Market Economy Rotterdam	Coordinated Market Economy Hamburg
		Hypotheses	
A.	Business relationships		
1	# suppliers	In Hamburg the relationship supplier-customer between maritime firms is more characterized by few suppliers that have long-term relationships with their customers.	
2	terms of contract	In Hamburg, the terms of a contract between maritime companies are more less detailed and formalized.	
3	co-sharing	In Hamburg there is more co-sharing between the maritime firms in the port and port city	
4	access to finance	In Hamburg German banks are more involved in the governance of the maritime company where they invest.	
5	ownership	In Hamburg, more maritime companies are owned by domestic owners.	
B.	Company's investments in environment		
6	Education: -financing; -apprenticeships -assignments	In Hamburg more maritime firms are involved in the financing of university and vocational training for city's educational institutes and creating and offering more apprenticeships assignments.	
7	Labour market: -wages; -job switches -specialization in skills	In Hamburg there is more specialisation in skills of employees; higher wages and less job switches in port and port city's maritime companies.	
8	Financial contributions to revitalizing city center	In Hamburg there is more investment form maritime companies in city projects.	
9	contribution CEO's port firms to city's development	In Hamburg, personal involvement of CEO's of large companies in terms of (personal or financial) contributing to the city, is larger.	
C.	Economy of touch		
10	# and level of (in)- formal, personalized meetings; # and level of institutionalized meetings;	In Hamburg there are more interactions on top level between maritime companies and between the companies and city government and it's representatives (e.g. Port Authority) on a personal level libid but on a institutionalized level	
D.	Trust		
11	Business on handshake	In Hamburg, more deals are closed based on personal commitments and trust (later formalised in a contract).	
12	Intra organisational expectations about behaviour	In Hamburg the knowledge of the firm's values and way of doing business is more widespread within the company.	
13	Inter organisational expectations about behaviour	In Hamburg firms are better informed about the intentions and interests of other indigenous firms.	
14	Informal meetings	In Hamburg there are more informal meetings between the port actors: firms, public organisations, city's government.	
15	Institutionalized communications	In Hamburg there are more institutionalized channels of communication	
16	Knowledge	In Hamburg knowledge about governments intentions are better understood thanks to more intricate social networks.	



9. Political economies and port-city development, final remarks and conclusion.

Cluster development can be described in life cycles, as was stated in section 4. The sustainability of these clusters in this turbulent global economy is strongly dependent on the heterogeneity of the cluster: the variety of industries within the cluster area. This heterogeneity in combination with the life cycle of their most important industries, is important in view of the cluster's viability in the future. Studying the differences between the ports and their respective relation to their port cities, can start at having a look at the clusters' life cycle and its heterogeneity. From this perspective, once again, the fact that Hamburg has a lead in certain advance maritime producer services and is developing a prosperous port city, is another development compared to the path that Rotterdam has taken. Rotterdam, as the largest European port, still very much in businesses that generate tons, but less added value. This paper advocates for a study that looks at these differences from the perspective that these differences were not only a result of path dependency: i.e. Rotterdam as gateway for coal and ore for Germany; and Hamburg as a trading city, member of the Hanseatic tradition. But also that differences in the behaviour of cluster actors in terms of market and business coordination, have led to different outcomes where the port city has benefited from in different ways. In some port cities, the port's activities and the public space -literally as well as functionally- are more separated than in other port cities. A short historical, view using different models, shows this process which cumulated in a situation as described by the "butterfly-model (as shown in Figure 8). This situation has affected the city. New activities needed to be found. The way that the existing port cluster has the vitality to create new activities to lengthen their life cycle or the way that the port city is able to create completely new life cycles for new activities, is partly based on the degree of heterogeneity in the region. Success in activities can lead to self-satisfaction that creates locked in situations that prevent the off spring of new activities. The way that actors behave within a system (as a cluster, or the port city region) and how they interpret their role and the values they contribute to their personal and business goals, could differ between the main ports in Western Europe. This could affect the valuing of the importance of the co-existence of port and city. Do port actors see the co-existence of port and city as an important element for their actions and do public officers acknowledge and value this bond in the same way? And how is this articulated? These are the questions that must be answered to understand if port cities are able to survive the spatial and functional separation of port and city.



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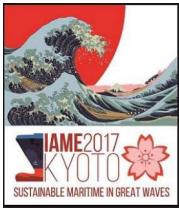
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Paper ID 105

VROOMANS, J., GEERLINGS, H., and KUIPERS, B., 2016, Understanding Governance Perspectives and Handling Dynamics: the role of cultural dynamics in the port-city relationships. Conference of the International Association of Maritime Economists.

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