The Luxembourg air freight-hub

Market niche development, supply chain-insertion, global positionality

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The Luxembourg airport hosts the fifth largest air freight-hub in Europe, which has been steadily developing over the last four decades. Ten percent of the world's B747-400 freighter fleet is being operated here. A total of 3,245 people are employed in two cargo-centres as well ascarriers and freight forwarders. Three issues seem to be of interest in this particular case: first, the somehow accidental historical trajectory that started in the late 1960s/early 1970s, based on specific circumstances in the regulatory environment, a niche position relative to major competitors in Western Europe and the successful insertion of firms (and thus the place) in global value chains and distribution networks. Second, as a result of the establishment of this specific network-place, it has gained an important relative position in the urban system that exceeds the significance of the material place by far (city and region comprising about 120,000 inhabitants, the country overall 480,000). Third, the Luxembourgish government has dedicated the logistics sector a focal point of its future economic development policy. Against this background, the paper critically discusses the potential for maintaining this position, given the volatility and vertical rather than horizontal structure of the global air freight chain that might not easily fit for cluster-policies focusing on regional impact. Places such as Luxembourg are neither airport city nor airport region, but intermediate in the very sense of this term. They are thus facing the risk of becoming victimized by changing corporate value chain-strategies.

1 Introduction

This paper examines the case of Luxembourg as an air freight-hub in the context of its economic geography, particularly regarding the ability of the place to become part of global commodity chains. The capital of the Grand Duchy is situated in central Western Europe and comprises a population of less than 90,000. Given that it is a relatively small city, it is characterised by an extraordinary degree of regional and international connectivity. By focusing on air freight logistics, the paper aims at reconstructing the rise of Luxembourg airport to the fifth largest air freight-hub in Europe. The more recent logistics performance of the place indicates that the city gained its current status not only from banks and European institutions (and here due to massive tax advantages), but also from becoming a node in global networks.

The contents of this paper are fourfold: After expressing the aim of the paper and my argument, I will shortly put the issue of the paper into theoretical context, mainly consisting of globalisation, commodity chains and the related role certain cities may play. I will then present a case study on Luxembourg and air freight. Finally, I will discuss these findings in the light of my argument.

What is my argument? First, Luxembourg became part of the global commodity-circuit thanks to successful chain-insertion and based on strategic positioning. Following a historical trajectory of airport and air traffic development, it is not only the firms that achieve a certain competitive position in the global logistics network/air freight commodity chain, but it is the place, understood as the complex interplay of location, infrastructure, market niche-development and corporate strategy, after all supported by increasing government intervention. However, the advantage of Luxembourg might be limited, and there are certain challenges for the government regarding the economic success and the sustainability of the cluster.

The empirical basis of the paper comes from ongoing research on Luxembourg as a city within networks, subject to comparison alongside in Antwerp in Belgium. In addition to statistical data assessment, several expert interviews have been held with key corporate and government players during the first half of 2009, which this paper draws upon.

2 Theoretical underpinnings

Theoretical corridors that are being addressed include globalisation and global production networks (Coe et al. 2004), the concept of the global commodity chain (Bair, 2005) and the ways certain actors – and in this case places as well – can become “inserted” into the chain. In order to conceptualise the related role of cities, I will make particular reference to Sheppard’s notion of “positionality” (Sheppard, 2002).

A starting point is my contention that research on global commodity (or value) chains has become increasingly popular, yet often omits physical issues such as infrastructure, accessibility, land etc. – if you want “place” as a whole –, compared to its focus on governance and institutions. However, as it is strikingly evident, the significance of cities for flows (and vice versa) is fundamental. Along the historical path of urbanisation, this relationship has changed dramatically. Being a central place in the very sense of the word, cities have later specialised in organising flows: as a gateway city, connecting foreland and hinterland, and as an intermediate city, focusing on connecting other places, rather than being central on its own (cf. Hesse, 2008).

My question is to what degree cities, in particular the city of Luxembourg, are involved in the management of commodity chains. Regarding port-city relationships, Hall/Robbins (2007) have conceptualised different forms of chain involvement (see Figure 1). *Insertion* means that it provides agents in supply chains with access to critical resources such as technology, markets, capital, knowledge and expertise. Once agents *integrate* activities within the supply chains, they aim at reducing overall costs and providing services more efficiently. This is often done through vertical and horizontal integration, in order to effectively extend control over the chain. *Dominance* is the ability or power to extract value from localized (logistics) activities on a sustained basis, e.g. by assuring control over scarce resources or assets, or by further exploiting economies of scale. The traditional seaport can be considered the prototypical case of dominance, at least of integration, whereas the modern hub appears to be only loosely coupled to creating value. I will return to this point later on.

		Logistics chains	*Value chains*
Port *(i.e. on- or near-dock/terminal facility*	**Insertion**	Attract lines through concessions, leases	On- or near-dock value-added activity
	Integration	Improved on-dock information systems	Integrate on-dock w/ overall supply chain information systems
	Dominance	Specialised and dedicated terminal	Unique on-/near-dock processing facilities
Port-city *(i.e. immediate port hinterland)*	**Insertion**	Local road connections	Export promotion
	Integration	Backhaul cooperation	Local cluster strategy
	Dominance	Transport industry cluster strategy	Develop immobile capacities
Nation *(i.e. beyond port-city)*	**Insertion**	Long-distance (rail) service and infrastructure	Inward investment attraction
	Integration	Regional corridor strategies	National cluster strategy
	Dominance	Transshipment hub	Strategic trade policy

Fig. 1: Supply chain insertion, integration, dominance (after Hall/Robbins 2007).

3 The Luxembourg air freight-sector

The city of Luxembourg is the capital of the Grand Duchy and hosts about 90,000 inhabitants (120,000 in the region) and more than 140,000 jobs. The relatively small size of the city is compensated for by an increasing “stretch” of job holders beyond the borders. According to a recent study, the significance of metropolitan jobs in Luxembourg appears to be rather unique (Sohn/Walther 2008). “Metropolitan jobs” mainly include corporate services firms (comparable to the FIRE-sector as in the U.S.) and comprise about 45 % of the labour force just in the city of Luxembourg. This workforce developed quite dynamically in recent years.

What composes the quasi-metropolitan status of Luxembourg? Unlike the usual cases, it is neither derived from mere size, the number of corporate headquarter functions on site (albeit there are plenty of global firm offices represented) nor from gateway-functions. Rather, it is the international significance of the city, as it is indicated by the share of migrants in the city’s population (about 40 %) and by the strong banking- and financial services-sector that was attracted to be located here by a favourable fiscal environment. Also, European institutions have massively reinforced the internationalisation of Luxembourg. The city can thus be considered subject to processes of “metropolisation”, not necessarily being a metropolitan region as such. Consequently, these processes contribute to the “city-ness” rather than “town-ness” appeal of the city. Not surprisingly Luxembourg is posted in the GaWC-classification of world city-formation at the Delta-level “*Di”,* indicating *relatively strong evidence* for world city formation. It thus compares to cities such as Dublin, Helsinki, Lyon or Vienna – cities that are far bigger …

Regarding the airport: Luxembourg-Findel hosts the fifth-largest air freight-hub in Europe, handling freight since the late 1960s/early 1970s. Findel is the home base of the largest ‘freight only’-air carrier worldwide, operating ten percent of the global fleet of B747-400F airplanes. Based on this trajectory, the Luxembourgish Government aims at supporting the development of a logistics “cluster”, besides the airport also in road and intermodal affairs.

The spatial setting of Luxembourg as an airport-location is characterised by major competitors surrounding, particularly Paris-CDG, Frankfurt and Amsterdam, also London-LHR (see Figure 2). The former U.S.-airbase Hahn, not included in the map, is being used by air freight companies as well. Luxembourg took off as an air traffic- and air freight-locale almost accidentally, thanks to the supply of infrastructure (i.e. due to the runway of 2.8 km, later on extended to 4 km) and its favoured location in the heart of Western Europe. A second issue from the very beginning were specific conditions of non-regulation, i.e. the offer of certain “Freedoms of the Air” that made slots and foreign market access possible. Also, an early model of developing Luxembourg as a “hub” for passenger travel failed, which shifted attention further towards freight.

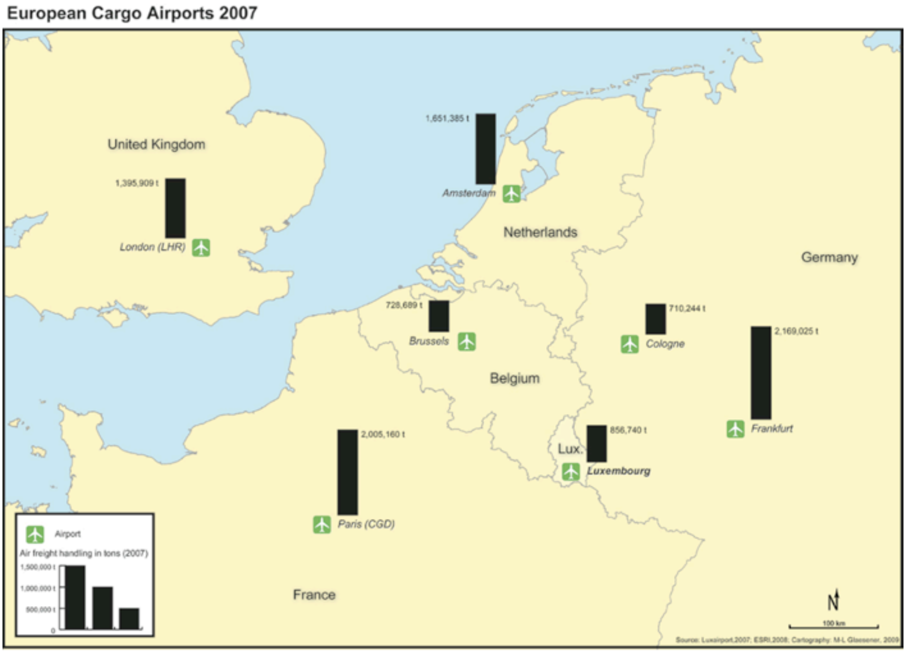

Fig. 2: European cargo airports.

Key corporate players that took this advantage comprise a couple of corporations each specialised in its area of business, but altogether joined in the interest of “making the place”: the operator of a warehousing and cargo centre; several global air freight-carriers operating their own fleets; the airport owner and operator, also several specialised freight forwarding firms. In 2008, about 3,245 people were employed in the air freight-sector in Luxembourg, which compares to a third of logistics occupation nationwide. Freight volumes handled at Findel airport have increased from less than 2,500 tonnes in 1970 to about half a million tonnes in 2000 and to almost 900,000 tonnes in 2007 (see Figure 3). The latest rise in freight handlings mirrors the impact of accelerated globalisation since the late 1990s.

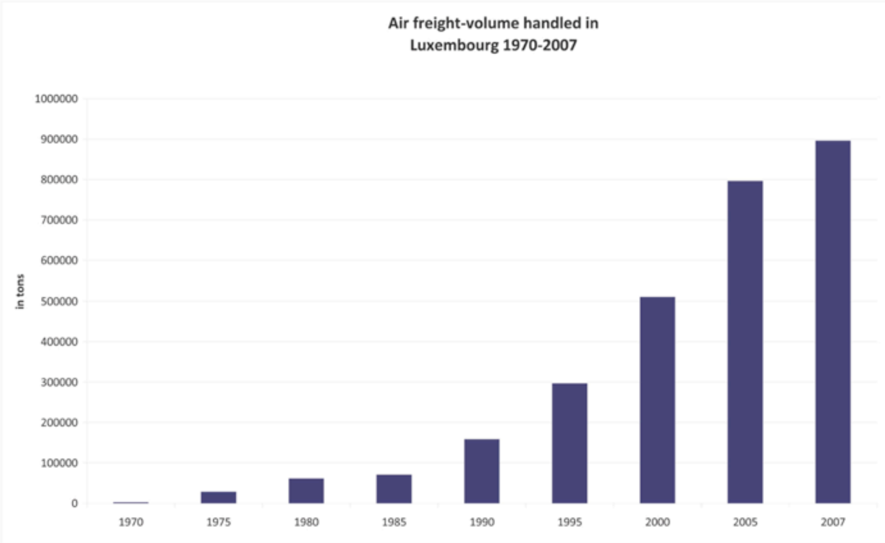

Fig. 3: Air freight-volume handled in Luxembourg 1970-2007.

Globalisation literature reveals that the local and the global are mutually intertwined; the local scale is distinguished by its massive physical space and network infrastructure. The contrasting dimensions of passenger and freight related activities are inscribed in the layout of the airport and handling facilities, the cargo centre exceeding the size of the passenger terminal by far. At the global scale, only the largest carrier operates a world wide web of connections to more than 90 destinations. The business once commenced with managing the oil drilling-commodity chain in Nigeria (bringing facilities, maintenance etc. from Aberdeen/Scotland to Western Africa). It serves air freight-deliveries between Asia and Europe, from North and Latin America to Europe etc.

A huge variety of commodities are handled in Luxembourg, almost impossible to break down to some key commodities. However, what is listed here – general cargo, meat and fruits, perishables, livestock, artworks – seems to be representative both for the global extent and the high degree of specialisation pursued by the agents. About 20 % of the shipments are handled in Luxembourg for through put, 4/5 are being exchanged with customers in all Western Europe. The chain is mainly buyer-driven, with a strong role performed by the middlemen (air freight-forwarders) who provide access to customer markets and allow carriers to bundle the consignments.

4 Discussion: Why Luxembourg? How about place and chain?

Luxembourg gained its current position regarding air freight almost accidentally, based on specific circumstances in the regulatory environment, a niche position relative to major competitors in Western Europe and the successful insertion of firms (and thus the place) in the global commodity chain. Insofar, this adds to the city's portfolio: being a somehow central place for Europe, and an off-shore place for the financial economy. Among the different modes of chain-involvement, I suggest it is the case of *insertion*, rather than *integration* or even *dominance*. Insertion renders the city, functioning as a hub and being intermediate, neither central nor even gateway.

It is confirmed by interviewees that politics initially played a role in placing Luxembourg on the air freight map, yet remained absent for a long time, even though the state had been in favour of these developments (as a shareholder, by offering tax incentives and a business-friendly climate, with direct access to decision makers). However, only recently the government is strongly supporting logistics as a matter of cluster development and promotes a related profile.

Regarding corporate management, time-space relations are essential for the success of the firms (and thus the place), in different regards. First, a sophisticated system of aircraft-turnover is being practiced, in order to achieve best possible load factors etc., and also to cope with constraints such as landing restrictions after midnight, flight delays etc. Second, the cargo-centre is operated in a 24/7 mode. Third, an average freight load of about 120 tons of commodities can be un- or reloaded within 2 hrs, thanks to the layout of the cargo-centre and the short door-to-door distance (200 m) between aircraft and lorry.

The issue of time-space-management leads us to *positionality*. In the words of Eric Sheppard (2002, 324): "Defining the status of [...] cities by their position within transnational networks, rather than by place-bound characteristics like size, corporate headquarters, or dominant economic activities, one can see that the role and trajectory of such cities is bound up with their positionality." Luxembourg appears prototypical for being well positioned related to the commodity chain:

- locally by providing plenty of space and direct access to infrastructure;
- regionally by being situated in the heart of Western Europe;
- globally by being placed in between different time-zones.

5 Conclusion

Two points. First, there are certain threats or challenges for the commodity chain-business and thus for the place to remain inserted:

- Peak oil and climate change may have the potential to work as a major constraint to the business in the near future, since almost half of the operating costs of air freight-carriers may account for fuel costs.
- The logistics business appears to be extremely fluid, volatile. Chains are not stable but contested, subject to increasing competition. Mere insertion implies the risk of losing a competitive advantage under changing framework conditions.
- The vertical instead of horizontal management of the chain may hinder the potential to establish a full-fledged regional cluster that is desired by economic development.
- Finally, hubs tend to depend upon the routing & scheduling decisions made by major shipping companies, which leaves them situated at the very end of the power chain. There is the risk of a further de-centralisation of the air freight-carrier network away from Luxembourg to other places in Southern Europe, as it was observed in one case in 2008.

Second, the question is whether Luxembourg may represent a case of an "airport-city" or "airport-region"? Answering this question is highly depending on what we understand as a "city" or a "region". According to a relational understanding of place developed in human geography, globalisation includes "variegated processes of spatial stretching and territorial perforation". These processes "add up to the displacement of … nested territorial formations … by a world of heterogeneous spatial arrangements in terms of geographical shape, reach, influence and duration." (Amin 2004, 33)

In this emerging new order, spatial configurations and boundaries are no longer territorial – at least not necessarily. Based on this point of view, Luxembourg is far from being considered an "airport-city" or "-region". Rather, this place is part of economic networks that are stretching across the global scale, making accessibility and flexibility the determinants of spatial development, and not the other way around.

List of figures

References

A. Amin. Regions Unbound. Towards a new politics of place. Geografisker Annaler 86 B (1): 33-44. 2004.

J. Bair. Global Capitalism and Commodity Chains: Looking Back, Going Forward. Competition and Change 9: 153-80. 2005.

N. Coe, M. Hess, H. Yeung, P. Dicken, J. Henderson. Globalizing regional development: a global production networks perspective. Transactions of the Institute of British Geographers 29: 468-84. 2004.

P. V. Hall, and G. Robbins. Which link, in which chain? Inserting Durban into global automotive supply chains. In: J. Wang, D. Olivier, T. Notteboom, B. Slack (eds) Ports, Cities, and Global Supply Chains: 221-31. Aldershot: Ashgate. 2007.

M. Hesse. The City as a Terminal. Logistics and Freight Transport in an Urban Context. Aldershot: Ashgate. 2008.

E. Sheppard. The Spaces and Times of Globalization: Place, Scale, Networks, and Positionality. Economic Geography 78 (3): 307-30. 2002.

C. Sohn, and O. Walther. Métropolisation et intégration transfrontalière: le paradoxe luxembourgeois. Espace & Sociétés Nr. 134. 2008.

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