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Chaotic Restructuring or Flexible Adaptation?
Structural Change and the Finnish Port System 1945-2000

1. Focus of this paper

The history of Finland 20th century in the nutshell is a history of rapid economic growth and high-speed structural change. Finland is one of few laboratories, where you can analyse, how sudden and subsequent waves of economic restructuring have reshaped social, political as well as logistical landscapes of a small peripheral country. We are looking at a country with strong growth in export and import, where composition of foreign trade changed substantially.

The essential question in this papers is change. Change in economy, maritime transport as well as in foreign trade. I will look and discuss what kind of impact these changes had in Finnish port system or in the network of ports in this country.

The focus of this paper is centralisation and decentralisation of foreign trade in Finnish ports. An analysis of this problem is interesting and important at least for two reasons:

1) From 1920s there was a repeated discussion in government as well as in the Finnish Port Association about question, how many ports are useful and sustainable in the age of technological advancement. Decentralised system was often described in these debates as inefficient and expensive from the perspectives of national economy, state and industrial development.

2) International theories of port development from 1960s have argued, that technological change in the shipping, in the port equipment as well as in the hinterland transport networks combined with concentration of transport capital and population will impose centralisation on port systems. There is strong argument, that containerisation equals concentration. This technological predestination combined with economic determinism has been supported as well as criticised in earlier research
To answer this question, I look to the cargo flows in different ports. How did individual ports and the Finnish port system adapt to the structural and seasonal changes in Finnish economic life? How ever increasing consumption of energy based mainly on imported fossil fuel affected the division of labour between different ports? How major structural changes of economy and composition of foreign trade affected port network? What kind of impact did the major changes in hinterland transport infrastructure as well as in technology in ports have to the success or decline of individual ports?

My analysis is based on port by port statistical data. First I will describe central features of structural development of Finnish port network before second world war. Then I will look more closely to the fortunes of major ports in Finland. In the last chapter I will give the calculations of the import and export shares of major harbours in 1970-2000. In concluding chapter I give answer to my question and try to explain the development of Finnish port network after Second World War.

2. Finnish Port system before the Second World War

There has been a structural imbalance in Finnish port system. Import concentrated to few harbours but export was more diversified to many ports and smaller loading places. Imports harbours involvement in export was very limited in beginning of 20th century. This imbalance have caused waste of transport capacity and have harmed shipping companies as well as railways, when empty rail wagons and idle cargo ships have moved between import and export ports.

There were two zones of export harbours. In north from Tornio to Rauma and east from Loviisa to Koivisto. In between these zones were import harbours Turku, Hanko and Helsinki. Inside these zones were two important import port: in north Vaasa and in east Viipuri.

In 1920s and 1930s Viipuri and its outer port Uuras were like miniature of the whole Finland. Uuras was the greatest export harbour in Finland and the largest timber export harbour in Nordic countries. Timber was mainly loaded from barges on roadsteds. Ships took only a minor part of their cargo from piers, which were quite primitive. Uuras had
gained it position as a major export port due to good waterway connections to hinterland before it got railway connection in 1926.

Viipuri was third import harbour in Finland. Import came to main consumption centres Helsinki, Turku and Viipuri were inhabitants had enough purchasing power. These towns had quite early good railway connections to hinterland. Helsinki was number one among import harbours without question between the two world wars. Its share of import value increased gradually. In the last year of peace 1939 it was 54,7 percent.

Helsinki had ware houses of wholesale companies and co-operatives. Also coffee roasteries were in this capital of Finland. Helsinki kept its position as number one due to expensive imports. E.g. nearly all cars were imported to Helsinki. In bulk cargoes it began to lose its central position in 1930s. Fuel i.e. coal and oil products import became to some extent more decentralised during this decade.

Even though tobacco import was not economically or voluminously central, it gives an example, how concentration of production dictates cargo flows. There were tobacco factories in Helsinki, Turku and Pietarsaari. Therefore these three towns divided between themselves all tobacco import between the world wars. Actually such a small town and otherwise minor port as Pietarsaari biggest importer of tobacco in 1930s. Same kind of concentration due to location of big flour mills characterised import of grain. Cereal was mainly imported to Vaasa, Viipuri and Helsinki.

Export was more evenly divided between harbours before the Second World War. Kotka was number one in value of export in 1920s and 1930s. Kotka’s proportion of export was 1930s about one quarter at the same time when Helsinki had about half of all import value.

The export of forest sector delivered a more diversified export network. Even small rivers and saw mill had their own loading places. Timber (lumber) and sawn timber export was more evenly divided between ports than cellulose and paper export. Diversification of cellulose export took place gradually in 1930, when new factories were opened. At the same time and for same reason export of paper concentrated more and more to Kotka. Its share was nearly 70 percent of paper export in 1939. Mild winters and easy ice-conditions benefited export from Kotka.
The fortunes and export volumes of winter harbours fluctuated substantially. Turku and Hanko exported a minuscule part of cellulose and paper in mild winter of 1925, but in severe ice-winter 1926 their combined share of cellulose export grew to 22 percent. In that year it was in paper export even bigger, 26,5 percent.

These ports competed with each other in special trade of butter export. Hanko dominated butter export in 1920s, but an export terminal of major butter export co-operative moved to Turku in 1930s. Hanko lost all trade of this product. Turku took three quarters of butter export. Helsinki was also important in this trade but between the World Wars never biggest. Turku was important in an unimportant agribusiness, because export co-operative for eggs operated also there. Turku had over 90 percent share of the total export of Finnish eggs in 1930s.

Diversification of Finnish port system was obvious before second World War. Cheap labour was available, for spring drives in waterways and from road loading. Therefore rivers were still important for export harbours. During winters many ports were closed, so during busy summer seasons even quite elementary loading places were used to export. Underdeveloped road traffic and centralised rail network concentrated import to ports, which had minuscule role in export service. These harbours were better equipped with piers and warehouses.

Volume of import was diversified, when Helsinki lost substantial shares of growing coal and fuel import to other ports. Diversification was the norm also in export, but behind this overall picture happened concentration of several services. Kotka took greater part of the paper export in 1930s and Turku got the lead in butter and egg export.

3. Turmoil of the Finnish Port System

Finnish decentralised port network changed fundamentally after the Second World War. Firstly Finland lost the war and therefore also eastern part of the country as well as Petsamo area in north to Soviet Union. Two major harbours, Viipuri and Uuras, were not any more available for Finnish maritime import and export. Secondly Finland developed from an agrarian society to modern industrial and service society in less than 40 years.
Heavy investment in housing, transport infrastructure, electricity, new factories as well as creative destruction of many sectors have characterised these years of rapid social and economic change.

After second world war special winter harbours lost their advantage, when Finland build new icebreakers. This process was postponed due to Second World War. Finland extradited some old icebreakers to Soviet Union as partial payment of war reparations. Due to heavy war reparations state had no capital or other resources to build new icebreakers in 1940s. More effective icebreakers came into service in 1950s. Structural change in the seasonal fluctuation of maritime happened, when new generation of world class icebreakers started to open sea routes in the end of 1960s and beginning of 1970s. Also private merchant fleet developed during these decades. New vessels with stronger ice-sheathing enabled all year-round traffic. From the beginning of 1970 all important ports in Finland have been open all year round maritime traffic. (slide 3)

Restructuring of Finnish forest sector started in the years of depression in 1930s. Cellulose and paper export increased at the same time when export of timber and sawn timber plummeted. Gradually chemical forest industry strengthened its position. Paper export grew, when new mills were opened and old ones were modernised. Development was uneven, because export of less processed forest products and raw material bounced several times back. Actually record year of Finnish lumber export was achieved in 1961.

After that year the days of timber spring drives by cheap labour were over. Abundant investment in high way infrastructure created potential for rapid growth for road transport. One part of this expansion was change of raw material transport. Transport of timber shifted on trucks and “green gold” was directed to saw mills and cellulose factories. (slide 4)

This shift closed many archaic loading places with long and important history. After record year 1961 the nearly disappearance of export of unprocessed timber diminished the number of Finnish ports (or actually loading place) from 91 in 1961 to 58 in 1966. After that the number of active ports have floated in years 1971-1989 between 52 and 59. Some of ports were used only sporadically. During that period of time 76 Finnish ports were used for cargo handling.
Finnish port system have transmitted nearly unbroken growth of foreign trade after the Second World War. (slide 5) To handle this endlessly enlarging traffic port authorities, shipping companies as well as stevedoring have introduced new technology into ports. Loading and discharging was revolutionised also in Finland. First came proper piers and quays, then cranes, forklifts, ro-ro ships, containers and computers. Casual labour was transformed to permanently hired staff of shift workers. This made dock work rare but well paid. Heavy investment to new machinery as well as infrastructure gave clear incentive to centralise maritime export and import.

Finland was after Second World War quite poor country. Its living standard was low. Little private capital or funds of any kind was available. Even though substantial investment was made not only in transport networks but also to industrial development. Finnish government was actively industrialising the country after second world war. New industries were introduced by state-owned companies. Decisions to build two oil refineries to green field sites in small towns of Southern Finland and a steel mill near the middle of Finland created new centres of maritime traffic.

These major changes and transformations have transmuted flows of traffic as well as contents of maritime traffic. The extent of this permutation is clear, when we look closer port statistics. Crude oil and coal are so voluminous commodities, that changes in these two articles explain rise and fall of Finnish import ports (slide 6). Out of blue Sköldvik (nowadays also known with its Finnish name Kilpilahti) became the biggest import port. Its position is based solely on the state-owned (nowadays partially privatised) Neste corporation oil refinery and chemical factories connected to that industrial establishment. Same story with minor dimensions can be seen in the numbers of earlier oil refinery town Naantali (slide 7).

Helsinki has kept its position as the biggest importer of coal quite unchallenged. Only occasionally Inkoo with huge stand-by power plant have won Helsinki. Raahé has gained its position with one steel mill of state-owned (nowadays only dominated) Rautaruukki corporation. Its import was and still is overwhelmingly coal (slide 8).
Destinies of Pori and Turku have been mixed and unstable. New power station attracted coal import to Pori and closure of steel mill diminished import to Turku. More stable developing Kotka has been (like Pori) mainly an export harbour. Transit traffic to Soviet Union and Russia gave substantial but unstable boost to Kotka and Hamina ports from late 1970s. Steadily growing old import harbour Helsinki was put to second place first by Naantali and then by Sköldvik, because the volume of crude oil was so overwhelming compared to other import commodities (slide 9).

Most important Finnish export articles were lumber, sawn timber and products of chemical forest industry. Timber trade was extremely volatile, but the trend was upwards. Cellulose production increased rapidly, but it was more and more used in domestic paper mills. Paper export grew quite steadily, while cellulose trade stagnated (slide 11). Export of lumber tumbled down and many harbour districts lost substantial amount of their traffic (slide 12).

Volatility of timber trade is also visible, if look individual ports. Hamina (once) and Helsinki (twice) lost two thirds of their timber export in ten years. Boom and bust happened also in other harbours, but major players Pori and Kotka as well as medium sized Rauma were comparatively stable (slide 13).

Kotka lost its dominant position in export of paper, board, cellulose and pulp. Proportionally Hamina and Rauma were the biggest winners and Pori major loser. The two successful challengers took the lead in 1990. Even though forest sector companies tried to concentrate their logistical solutions export of paper products became more diversified than before the Second World War. This was partly due to all year round shipping also in Northern ports of Kemi and Oulu (slide 14).

The overall picture show, that concentration is not the trend in Finnish Port System, when we look, how export is divided port by port. Actually in the beginning of new millennium old export harbours like Kotka, Rauma, Pori and Kemi are challenged by such import ports like Helsinki, Sköldvik and Turku. Helsinki and Turku have taken advantage of their strong ferry traffic also in export trade (slide 15).
Modernisation of Finnish port traffic was more about new packing methods for timber, ferry traffic suitable for truck trailers or big ro-ro units for paper export. Lo-lo traffic has not overwhelmed other modes of shipping. Containerisation came later and was not so dominant, but its importance have grown substantially in the end of last millennium. Finnish pattern of diversified port traffic is also here obvious. Helsinki has more and more container traffic, but its share of this trade did diminish during years 1991-2000 (slide 16 and slide 17).

4. Specialisation and concentration equals diversified port system?

Kari Jalkanen was unhappy of the results of his research results, which did not fit to the anyport concentration theories he tabbed in the beginning of his doctoral thesis. He’s major argument is, that ports of call were in Finland decided by exporters and importers and not by shipping industry. Export industry owns shipping companies, which operate under the control of customer/owner. Still, I argue, that this argument is only partially valid because only stevedoring companies of major export ports are dominated by forest sector corporations. In major import ports like Turku and Helsinki shipping companies own stevedoring business. Importers like big wholesale corporations (in Finnish scale) have pulled out.

Specialisation of harbours and concentration of trade in several commodities was more obvious in tobacco and in oil product import in 1920s or in export of eggs and butter in 1930s, than today. Some commodities are still heavily concentrated to few harbours. This specialisation or service for one oil refinery, steel mill or major forest sector corporation explains success of many major league ports in Finland. Helsinki and Turku have more diversified base nowadays, but this statement have to be modified. Closure of one steel mill affected Turku’s imports heavily in 1970s and coal power stations of Helsinki Energy creates demand for substantial part of import to Helsinki.

Political decisions about locations of new industrial establishments have caused much of equalisation of the traffic flows. Paper mills (in Kemi and Oulu), oil refineries (Naantali and Sköldvik) and steel mills (in Raahe and Tornio) have created new centres for maritime transport and trade. Investment in port facilities are comparatively cheap in Baltic Sea
area, because there are no tides. Therefore municipal authorities have also had the guts to invest to new container infrastructure and equipment.

In the end of the day the restructuring of the Finnish Port System have been quite chaotic. Sudden changes in composition of export commodities and creation of new industrial sectors by state have kept the Finnish Port System in permanent upheaval and turmoil. Competition of municipally owned port companies and authorities have created convenient environment for shipping companies as well as traders of import and export commodities. This is downright evident in competition of Kotka and Hamina harbours or contest of Pori and Rauma ports.

On the other hand, this development of the port system have served the economic growth of Finland quite nicely. When Australia is an island nation then Finland is nearly an island nation or at least a peninsula country. This country needs competitive and smooth port services. The adaptation of the Finnish Port System to very turbulent environment have at the same time quite flexible and at the same time very successful without concentration trend in imports or in exports.
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Finnish Port Transport History Project
Major ports of Finland
(Members of Finnish Ports Association)
Domestic Cargo Traffic by Different Modes of Transport

- Floating
- Ships
- Rail
- Road

Mrd trkm


Finnish Port Transport History Project
Import of crude oil and oil products

Finnish Port Transport History Project

1000 tn


10000 12000

Sköldvik Naantali Helsinki Kotka Turku

10000 tn

Finnish Port Transport History Project
Export of Chemical Forest Industry

Miljötn


Paper and board
Cellulose and pulp

Finnish Port Transport History Project
Export of Lumber (raw timber)

1950
1960
1970
1980
1990

Hamina
Kokkola
Oulu
Pori
Helsinki
Kotka
Vaasa

1000 m3

Finnish Port Transport History Project
Export of sawn timber

Finnish Port Transport History Project
Major export ports of chemical paper industry
(paper, board, cellulose and pulp)

Kotka Hamina Rauma Helsinki Kemi Oulu Pori
miljon tn


Finnish Port Transport History
Project
Big export ports

Finnish Port Transport History
Project
Major ports of Finland
(Members of Finnish Ports Association)
Share of import of largest ports

Finnish Port Transport History Project
Share of the largest export ports

- Seven largest
- Three largest

Finnish Port Transport History Project