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Chapter 1

Partition, Independence, and Maritime Networks in South Asia*

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Abstract

This research project is an attempt to quantitatively evaluate the impact of Partition of India on maritime networks in South Asia. As the interim report, this paper explains the current stage of data collection, empirical strategy, validity of the event for a study, and the tasks left for the next year. By the late 19th century, most of the regions in South Asia had been governed by British Empire. As the British colony, these regions shared similar administrations, institutions and commercial practices. After the Second World War, decolonization in South Asia brought the Partition of India and Independence of countries. These subsequent events can be seen as disintegration of regions and offer a potential scope for studies on the impacts of these institutional changes on maritime transport networks. With new database of vessel movements among ports within South Asia and the rest of the world for 1890-2000, we explain how the maritime transport networks evolved in South Asia. We compare the trends of ship calls for regions, countries, and ports, specifically before and after 1945. Applying the methodology developed by Redding, Sturm and Wolf (2011), who explored the airport competition and the impact of division of Germany, we analyze the competition among ports in maritime networks with partition and independence of countries in South Asia.

* This is an interim outcome of a part of the research project on “Dynamics of Regional Structure in South Asia” at Institute of Developing Economies-JETRO. Due to its nature as an interim report, the results and analysis are at preliminary stage.

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1. Background

In 20th century, Indian subcontinent experienced a unique event, *Partition and Independence*. This can offer potential scope for economic studies with particular interests on determinants of economic geography. Three strands of studies in economics can explain such determinants. One first set of studies explain determinants by random growth. The second explains them by the fundamental endowments, and the third explains possible multiple equilibria characterized by increasing returns. Quantitative studies of the impacts of the event can test the possible explanations from these literatures.

For such studies, shipping route distribution and population geography are the potential research fields. Under the previous research project, the construction of population database of India for 20th century has been completed. Geographically, it includes Bangladesh, Myanmar, India, and Pakistan. Due to the huge volume of the census, the priority was put on the Bengal region as well as on parts of India and Bangladesh. The analysis showed that population geography drastically changed after 1947 and 1971 in East and West Bengal. Similarly, we expected changes in trends of trade and maritime networks. As our database constructed from Lloyd's list historical archives is very extensive, we explored changes in trends on the level of each country. According to our preliminary results, changes in maritime networks distribution were drastic after the partition of India in 1947. This may be in line with the third literature on multiple equilibria: drastic change in economic geography.

In section 2, research agenda with maritime networks is discussed. Section 3 offers abstract of our data from Lloyd's list. In section 4, estimation strategy is discussed. In section 5, the scope of the analysis in the next fiscal year is discussed including the possible extension of the research scope.

2. Historical evolution of Shipping network

Partition in British India brought some of the intra-regional trade into international. All of the trade between India and Pakistan became international trade. In particular, East-West Pakistani trade was still intra-national but was inevitably maritime shipments. These changes are characterized by two factors affecting new trades within the Indian subcontinent after 1947; 1) international trade among new independent countries, and 2) intra-national trade in each country. Both factors can have different trends in each country and among countries. There are also subsequent events such as Independence of Bangladesh and Socialistic State of Burma. The former event had a direct impact on the Pakistani Trade as it lost one wing in the East. The latter faced

trade sanction and isolation. International trade of Burma changed its trend thereafter. These events offer us to conduct a series of event analysis. Having the legacy of British colonialism and strong connectivity in trade during the colonial period, Burma, current Myanmar, should be incorporated to our study. This can be recognized similarly to the above framework and can add similar analysis as fifth factor.

2.1. Trend analysis of the above mentioned two categories

The analysis is based on aggregated vessel calls by port by origin, port of destination, type of ship, etc. Such information can decompose which trade drove the growth or decline at each port and country. Such a historical evolution of shipping route networks in South Asia, itself, is a relatively new field of research, given the scarcity of empirical analyses of maritime networks throughout the world (see Ducruet, 2015 for a review).

The innovation brought by this paper to the literature is to shed new light on the economic history of international trade in South Asia and to fill out missing knowledge on maritime transport in 20th century Global History. While the studies on international or domestic trade use bilateral information, vessel movement data has the combined advantage of enabling the application of network-analytical methods and to reveal industry-specific factors (i.e. ports and shipping) that are often not taken into account in the more aggregated trade statistics, which do not detail exact transport modes. Desirably, the comparison of maritime networks to trade data should be performed.

2.2. Quantitative analysis of port competition

Another perspective is a quantitative analysis of maritime networks in South Asia on the competition among the ports. Redding, Sturm and Wolf (2011) examine the airport competition with division in Germany. They estimated the share of airport passenger traffic of Germany with a variety of fixed effects only by Difference in Difference method. Their question was whether German division affected the ranking of airports in Germany. There are only 15 samples which can be divided into 4 in East and 11 in West. Their study found that there was a shift of hub airport in Germany from Berlin to Frankfurt. While it would be trivial for non-economists, this is a matter of quantitative study which tests the multiplicity of location equilibria.

This paper quantitatively examines the impacts of political and territorial events on the level of port traffic and shows the possible multiple equilibria. For instance, main results underline competition among Indian ports, Kolkata's declining trend,

Chittagong's reach to the world's top 100 ports, etc. Without partition, Chittagong may be still at a rural port in India.

3. Data

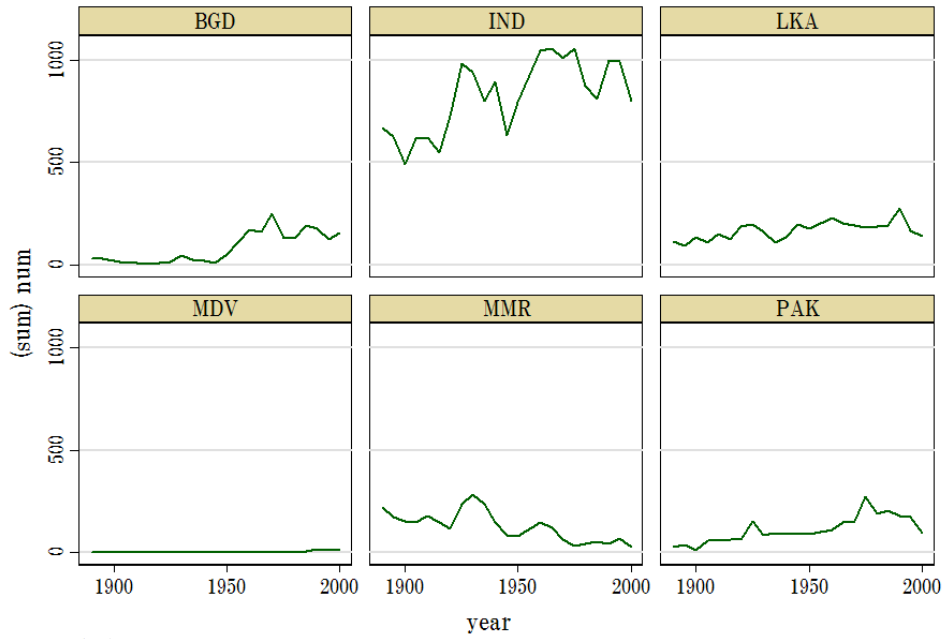
Our data is the vessel movements among ports from 1890 to 2000. The data was extracted from the *Lloyd's Shipping Index* of the *Lloyd's List* corpus.¹ The data contained are the vessel characteristics, port of origin, port of destination, and the date of the last voyage. Due to the inaccuracy of OCR technique on the vessel sizes, we restrict ourselves to analyze the route information only, regardless of the size (or carrying capacity in tons) of ships. As the Lloyd's list was a periodical journal, the frequency was high and the construction of the entire database is still under progress within the World Seastems project funded by the European Research Council². In order to provide comparable snapshots of maritime activity in the region overtime, journals published around April-May were selected every five years. The choice of the starting year 1890 is motivated by the fact that from that year, the corpus expanded to a global coverage of world fleets. As terminologies, we name "call" a voyage from a port to another. In order to classify the difference in regions, we use "domestic" for within the region of a current country, "regional" for within South Asia including Myanmar, and "international" for the outgoing routes with the rest of the world.

Among the six regions which are now different nations, Figure 1 shows the total number of calls. Indian ports exhibit the highest volume in terms of the frequency of calls. As we have expected, there is a sharp increase in Bangladesh after the partition, a noticeable increase in Pakistan, while Sri Lanka maintained a similar level of activity. The Maldives appeared only in 1965 and after 1985. Myanmar went through a declining trend and this became much prominent after 1950.

Figure 2 shows the composition of international and intra-regional calls. The latter always surpassed the first in all cases. Interestingly, Indian ports witnessed a wider gap between the two traffic types compared with other countries.

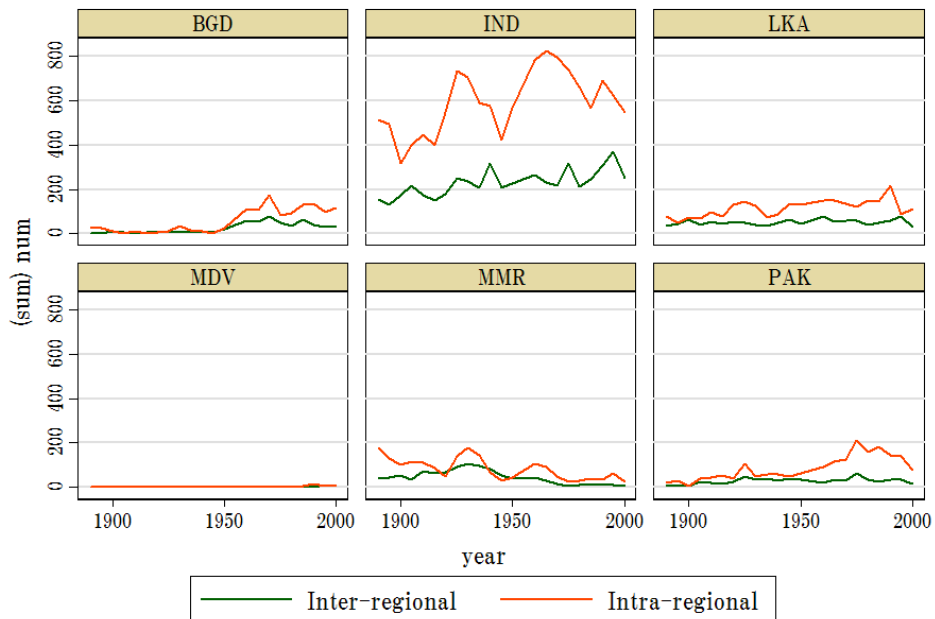
¹ See Ducruet (2015) for a detailed description of this corpus.

² www.world-seastems.cnrs.fr



Graphs by country1

Figure 1. Total number of calls by country



Graphs by country1

Figure 2. Total number of calls by country and by destination

In the following year, our study will cover the events in each country and examine the local changes in each trend. It shall also include the decomposition of international calls by the destinations and possible measurement errors of the data.

4. Estimation Strategy

We follow the method employed by Redding, Sturm and Wolf (2011), which examined the division of Germany and its impact on the hierarchy of airports. Similarly, we apply this method to the hierarchy of ports. The following equations are the ones to be estimated. First estimation is the basic model and the second includes the time trends. Other possible variables may be included if needed.

$$share_{pt} = \sum_{p=1}^N a_{pd} + \sum_{p=1}^N \beta_{pd} time_t + \epsilon_{pt}$$
$$share_{pt} = \sum_{p=1}^N a_{pd} + \sum_{p=1}^N \beta_{pd} time_t + \sum_{p=1}^N \gamma_{pd} trend_t + \epsilon_{pt}$$

While the observations for the above shown equations are at the individual port level, regional aggregation at the current national level can also show the rise and fall of regions. So the estimation may be two steps; national level and port level. It would also add the decomposition and distinction of international, regional and domestic routes. As the domestic routes in some small countries did not appear, the classifications may be enough to have international and regional.

5. Discussion and research direction

Further review of the historical studies in Transport Geography and other related fields shall be done. Based on that, our descriptive analysis of our data and subsequent estimation can be interpreted properly. The outcomes from this project can reveal how regions had shown different trends before and after partition. When we expect South Asia becomes more regionally integrated in the near future, the research results would suggest some basis for the prediction that future may be similar to or different from the past.

Interaction between shipping routes and population geography

For further study, the link between the two dataset, shipping routes and population census, can examine the possible interactions of population and trade with a unique event. People migrate to the place where there are employments. In this sense, population density can be a proxy of economic activities and associated spatial distribution of population, population geography, can be a proxy of economic geography. As long as we consider domestic regions, the regional structures may be stable. However, partition defined the new set of domestic regions. Hence, it is the question how such impacts changed regional structures. With linking the scope of population geography, shipping route database can allow us to explain the interactive

relations between the traffic and population at ports. Koopmans, Rietveld and Huijg (2012) can be one reference of studies in the interaction of population geography and developments of transport networks in the Netherlands for 19th to 20th century. By exploiting the impact of partition and subsequent independence, it may be possible to find causal inference of the relations and the impacts on the composition of occupations as well.

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