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Institutions, bureaucratic and logistical roles of dry ports: the Brazilian experiences

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ABSTRACT

Many research works on dry ports, associated dry ports with enhanced seaport efficiency, relieving congestion without (significant) capacity expansion. Also, they posited how dry ports being essential elements in the competitive position of seaports, as they acted to facilitate access to (overlapping) hinterlands. However, those focusing on how institutions could strengthen (or dissipate) the bureaucratic and logistical roles of dry ports had remained scarce, especially on developing economies. Hence, through investigating the recent development of dry ports in four Brazilian states, the paper investigates how institutional framework affects the bureaucratic and logistical roles of dry ports in emerging economies. The paper posits that the Brazilian institutional framework in place has acted as causal factors in strengthening the bureaucratic roles of dry ports while at the same time dissipating their logistical roles. Through establishing the causal relation between these forces, the paper provides important insight on the impacts of institutions on transportation and regional development in different geographical regions.

1. Introduction

The rise of emerging economies was marked by a transformation in transportation and logistics towards integration of functions along the supply chains, as well as the functions of seaports. This entailed an increasing sophistication of logistics, coupled with institutional reforms, to improve seaport management and operation. Together with technological improvements, nowadays, fast delivery (and thus lower costs) to shippers is fully expected and thus cargoes are expected to spend minimal time in seaports. Indeed, the sustained increase of international trade and the establishment of multimodal supply chains in the past decades had posed significant challenges to seaports, with intensified competition between them contributing to the blurring of boundary lines demarcating specific forelands and hinterlands. Responding to such challenges, scholars suggested seaports to establish dry ports so as to control multimodal supply chains (for example: Slack, 1999; Notteboom and Rodrigue, 2005). Furthermore, the ability of inland regions to compete in international trade largely depended on their capacities to communicate with the international market *via* efficient physical cargo movement and information flow. To achieve that, some activities initially carried out within seaports were shifted to dry ports (in many cases, situated in inland locations), complementing international and domestic transportation services through providing intermodal connectivity, as well as a wide range of services related to cargo processing, storage, consolidation, distribution and customs brokerage. This was especially visible in the major economic powerhouses, notably the European Union (EU) and North America (cf. Rodrigue et al., 2010). On the other hand, a proliferation of dry port facilities in emerging economies was also observed. For instance, since 1993, the number of dry ports has tripled in Brazil, currently handling around 30% of its containerized cargoes. In Brazil, dry ports are generally understood as bonded warehouses of public use where cargoes under customs control can be moved, stored and cleared. This was exemplified by the involvement of several public agencies in the day-to-day operation of Brazilian dry ports, notably the Federal Revenue, Sanitary Inspection Agency (Anvisa) and the Ministry of Agriculture (MAPA).

Given such development, academic attention on dry ports had risen recently, as reflected in the past decade (for example: Slack, 1999; Ng and Gujar, 2009a,b; Ng and Tongzon, 2010; Notteboom and Rodrigue, 2005, 2009; Rodrigue et al., 2010). Nearly all of the stated research works had observed the existence of both 'bureaucratic' and 'logistical' roles of dry ports in both advanced and emerging economies. The former being related to, say, document-handling, declaration of commodities, sanitary inspections and payment of custom duties, bonded storage and processes for bonded transfer of cargoes, to name but a few. On the other hand, logistical role referred to the ability of dry ports to act as efficient nodal points along multimodal supply chains which allowed

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improvement of cargo flows and reduction of transportation and logistical costs.

Indeed, considerable dry port-related research works, which often focused on advanced economies, associated dry ports with enhanced seaport efficiency, relieving congestion without (significant) capacity expansion. Also, they posited how dry ports being essential elements in the competitive position of seaports, as they acted to facilitate access to (overlapping) hinterlands (cf. Slack, 1999; Notteboom and Rodrigue, 2009; Rodrigue et al., 2010; Roso and Lumsden, 2010). However, research works focusing on how institutions could strengthen (or dissipate) the bureaucratic and logistical roles of dry ports had remained scarce, especially on developing economies. There were some exceptions, though, notably Ng and Gujar (2009a,b), Ng and Tongzon (2010), Ng and Cetin (2012) and Padilha and Ng (2012) who investigated the implications of public policies on Indian and Brazilian dry ports, respectively. Nevertheless, they mainly focused on the competitiveness and spatial characteristics of dry ports, rather than their specific roles as mentioned above. Hence, through investigating the recent dry port development in Brazil, the paper investigates how institutional framework affects the bureaucratic and logistical roles of dry ports in emerging economies. The authors propose that the institutional framework in place – either with reference to the entire nation and polity, or particular related arrangements regarding the setting of dry ports, has acted as a causal factor in strengthening the bureaucratic roles of dry ports while at the same time dissipating their logistical ones. Through establishing the causal relation between these forces, and their unique outcomes in Brazil, the paper provides us with important insight on the impacts of institutions on transportation and regional development.

The rest of the paper is structured as follows. The theoretical background, study area and data collection can be found in Sections 2 and 3, respectively. Sections 4 and 5 analyze the institutional environment of Brazilian dry ports, discussing how institutional arrangements have hindered the integration between dry ports and seaports (and their terminals), thus creating limbo for dry port development. Sections 6, 7 and 8 combine the above analysis to discuss the bureaucratic and logistical roles of dry ports in Brazil. Finally, Section 9 concludes the paper with policy implications and provides suggestions for further research.

2. Theoretical background

The importance of institutions in economic development was well-established (North, 1990; Williamson, 2000; Hall, 2003; Acemoglu and Robinson, 2008). These were rules, procedures and patterns of behavior – the rules of the game in a society (North, 1990) shaping political, social or economic interactions. By giving and enforcing credibility to paths of change, the formal rules, compliance procedures, and standard operating practices that structure the relationships between actors in various units of the polity and economy (Hall, 1986) affected the way societies evolved over time and hence served as the key to understanding changes.

Institutions in place aimed to promote efficiency among transacting partners, minimized distributional conflicts, and monitor compliance. Any new conditions that were perceived to cause structural contradictions were addressed within the established framework via path-shaped and -dependent re-organizations. Hence, any changes within the sphere of the economy would be limited (or incremental), as the societal norms and traditions restricted established political, economic and social structures from moving too far away from original forms by embedding them into long term institutional characteristics (Williamson, 2000). In this respect, new (historical) institutionalism posited that institutions posed systematic constraints on individual and collective choices, promoting certain actions and (preferred) outcomes and pushing non-institutional actors towards particular strategic calculations, so as to fit into the new environment (cf. Steinmo et al., 1992; Hall and Taylor, 1998; Ng and Pallis, 2010).

Hence, arrangements forming the construct within which a particular sector of the economy, or even a specific industry, operated represent a sub-set of the institutional framework. Such arrangements might profoundly impact on the way that the particular economic sector (or parts of it) would/could evolve. Nonetheless, they were just a fracture of the broader institutional framework, with the latter being deterministic (at least in the short term) on the details of such arrangements. Simply speaking, these arrangements existed in cultural and political contexts that defined their existing form, though institutions might be forced to change by exogenous pressure that were neither sector-specific nor implied by changes in the broader structures of societies. In other words, the quality of institutions could influence the ability of a country, region or sector to prosper, setting it apart in the developmental spectrum. Quoting Hall and Jones (1999):

> "...differences in social infrastructure (institutions and government policies) across countries cause large differences in capital accumulation, educational attainment, and productivity, and therefore large differences in income across countries..."

However, the nature of institutional influence on societal changes could vary. According to Coase (1992) and de Soto (2000), efficient institutions could add value to established social assets and wealth-creation by encouraging economic players to invest and specialize. On the contrary, inefficient ones could increase transaction costs, e.g., corruption, time wastage, insecurity among economic agents, etc., thus reducing the incentives as stated earlier. Notably, whenever the institutional framework became weak in any regions, they would become vulnerable to manipulation by dominating groups within the society. Here Jessop and Oosterlynk (2008) pointed out that when economic forces seek to redefine specific subsets of economic activities, say, subjects, sites, and stakes of competition and/or as objects of regulation and to articulate strategies, projects and visions, they tended to manipulate power so as to secure results that were (perceived as) beneficial to them. Their view was supported by Martinsons (2002) who argued that some governments' inability to offer a strong, appropriate institutional environment might divert the attention of economic actors to informal and relationship-based (in some cases, leading to inefficient) practices.

Nevertheless, changing institutions might involve dislocating political and economic forces, thus affecting the prevailing balance of power. Acemoglu and Robinson (2008) argued that by reforming institutions without altering the balance of power in society or the basic political equilibrium could simply lead to the replacement of one instrument by another. Also, as pointed out by Hall (2003), institutions changed infrequently but when they did, it often led to dramatic shifts cutting across spatial scales within the particular sector or society. In the past four decades, significant changes in international trade and logistics had forced institutional restructuring within seaports, as traditional operators failed to deliver the levels of flexibility, efficiency and investments required by users (cf. Slack, 1999; Ng, 2009). Such a new environment had led to increasing uniformity in logistical infrastructure and sectoral arrangements, and seaport system was reformed to adopt the new ownership, regulation and management in line with the so-called 'generic solutions' or 'international best practices' (cf. Ng and Pallis, 2010), like the *Port Reform Toolkit* (World Bank, 2000, 2007). Essentially, these changes directed towards the increasing roles of private sectors, and away from direct public management, with