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Article

Policy Instruments and Coordination Mechanisms in China's Intermodal Hubs

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Abstract: The research evaluates 867 policy interventions of China National Intermodal Freight Hub Program (2022-2024) policies to explore how policy instrument compositions can be used to organize coordination results. The highest percentages of supply-side instruments (53.3%), environmental instruments (25.5%) and demand-side instruments (21.2%) were observed. The cross-city analysis reveals that the inland hubs have a much bigger portion of supply-side instruments compared to the coastal centers (58.2% vs. 47.6%; $\chi^2 = 12.47$, $p < 0.001$). Mechanism coding denotes that operational cooperation is relatively under-embedded, 31.0% of measures are aimed at carrier-shipper coordination. Such results indicate a structural imbalance within which an improvement of physical capacity is not systematically accompanied by institutional and operational integration, thus limiting conversion of infrastructure investment into sustainable coordination performance.

Keywords: Intermodal Transport; Freight Hubs; Policy Instruments; Policy Mix; Logistics Coordination; Central Asia.

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1. Introduction

Research Background

There are coordination failures in intermodal freight hubs that cannot be technically solved. Rail–water intermodal transport is shown in official statistics to account for only a small proportion of container throughput in the national rail system even after significant capital expenditure on intermodal transport systems. Nevertheless, most intermodal transport studies have seen policy as binary (with or without governmental intervention) and ignored how instrument settings influence coordination results. And it is these failures that are not reflected in the lack of infrastructure but in the lack of use of terminals and ineffective transshipment - issues that must be addressed through policy rather than market mechanisms. Although some operational inefficiencies may be mitigated by market mechanisms, the intermodal infrastructure has the traits of a public good, and the regulatory framework is cross-jurisdictional, making it necessary to intervene with policies to ensure that actors have aligned incentives and minimize institutional obstacles.

Literature Review

Policy Instrument Theory and Policy Mix Scholarship

Policy instrument theory identifies three types of tools: supply-side instruments (provision of infrastructure, financial support), demand-side instruments (market incentives and procurement), and environmental instruments (regulatory framework and standards). The instrument configuration-recent scholarship focuses more on the instrument structure, or the combination and interaction between instruments, rather than on the individual instrument properties [14]. Nevertheless, intermodal transport studies have mostly considered policy as a binary factor (existence or lack of state aid), disregarding the role of instrument configurations in the coordination results. The notion is specifically applicable to the governance of intermodal transport policy, where the effectiveness of policies can be achieved through not through isolated interventions but through the coordinated implementation of multiple sets of instruments simultaneously.

The supply-side instruments offer infrastructure, financial support, technology and public services. The demand-side instruments encourage the involvement of markets and utilization of services through incentives and procurement. The environmental instruments condition institutional structures, legal norms, and standards within which performers act. The given classification has been used in the context of policies such as environmental regulation or innovation policy, transport governance.

According to recent policy mix scholars, there are two major lessons that are helpful in the context of intermodal transport. Firstly, the effectiveness of an instrument is determined by its coherence and synergy, rather than individual properties of each tool [4]. Secondly, policy mixes are dynamic concepts, and it is necessary to consider how instrument configurations respond to changing situations [14]. Nevertheless, implementation of this scheme in intermodal goods systems has not been developed yet, and most research works deal with such incentives as modal shift instead of overall instrument configurations [13].

Collaborative Governance and Coordination Mechanisms

Collaborative governance theory argues that cross-organizational coordination between public and private players is only possible through institutionalized interaction channels that organize mutual decision-making and interdependence [1]. Coherence in rules and regulations across jurisdictions, sharing of resources between stakeholders, and institutionalization of decision-making are effective ways to achieve effective coordination.

Governing bodies are fragmented by intermodal freight hubs. The operations cover various modes of transportation, each of which is associated with a unique regulatory system, pass through administrative borders, and engage a variety of different organizational stakeholders with competing interests. This fragmentation could be addressed by policy measures to establish coordination principles, provision of resources for joint infrastructure, and incentives for cooperation across modes [6].

Policy instruments facilitate coordination via three mechanisms when viewed through a lens of collaborative governance approach. Connectivity between modes is enhanced by infrastructure coordination, which reduces transfer time and other operational friction. Regulations, standards and administrative procedures are synchronized to lower institutional barriers through institutional coordination. Cooperation among market actors in providing services and sharing information is aided by operational coordination. The efficiency of intermodal hubs can be based on the degree to which these mechanisms act as a system system [8].

Supply Chain Coordination and Performance Outcomes

The supply chain coordination theory focuses on aligning decisions and actions in the supply chain stages in order to improve the performance of the whole system [12]. Coordination between transport means and service providers becomes crucial in logistics

systems in terms of reducing expenses, making the system more reliable, as well as more resilient.

The intermodal hubs are essential points in the overall supply chains. The performance of these hubs is not just about the efficiency of transport but also affects the reliability and responsiveness of supply chains. Incentive mechanisms that facilitate coordination of hubs create spillover gains throughout supply chains. Coordinated interventions increase their effect on the performance of a system through increased connectivity, decreased institutional frictions and increased cooperation in operations [12]. It is important to note that one of the premises of supply chain coordination theory states that the improvement in performance does not necessarily require an increase in capacity, but it can be dependent on the alignment of quality between modes of interface and organizations. This realization makes it more evident that it would be appropriate to look at policy instruments other than infrastructure provision—what diverse tools allow implementing coordination and performance results together.

Research Gaps

The study of intermodal transport focused on technical optimization, network design and environmental performance, but ignored the configuration of policy instruments [2], [3], [13]. There are two gaps. Firstly, policy intervention tends to be seen as a binary variable, instead of being considered as a multi-dimensional interaction between instruments of interventions; and secondly, the processes that connect instrument configurations and coordination outcomes lack specification and thus constrain policy learning across contexts [4], [14].

Such loopholes restrict theoretical knowledge about the outcomes of policy instruments and practical assistance to shape policy in intermodal transport management. These gaps need to be filled by conducting systematic research on what is happening to the policy instruments as they are implemented and under what arrangements do they create coordination results. The launch of China's National Intermodal Freight Hub Chain-Strengthening Program in 2022 by both the Ministry of Transport and Ministry of Finance has a special empirical setting to allow this kind of analysis.

Analytical Framework

The proposed analytical model suggests that policy tools influence the intermodal hub performance in three coordination measures, which include infrastructure connectivity, institutional alignment, and operational integration (Figure 1). The analysis is conducted based on three propositions: (1) instrument choice is based on a problem-structure-instrument logic and, in the case of bottleneck in the infrastructure supply-side instruments are used, demand-side instruments in the case of market failure that thwarts service usage, and, respectively, environmental instruments in the case of institutional fragmentation that causes the presence of coordination barriers; (2) effectiveness of instruments depends on the concept of institutional fit, i.e. Whether there is a match between the characteristics of the instrument and the capacity of governance at the local level; (3) there should be purposeful design of coordination mechanisms, rather than their spontaneous creation as a result of implementing particular instruments. Policy instruments, first of all, create enabling consequences not individually but as an organized process leading to the establishment of coordination mechanisms [4]. Second, intermodal system coordination involves three interrelated aspects: physical connectivity (infrastructure), institutional alignment (governance), and operational integration (market interaction) [8].

This framework then presupposes that policy instruments can have heterogeneous main effects across areas of coordination. Infrastructure connectivity is associated with supply-side instruments more directly since it increases physical and technical capacity. More environmental instruments may be conditioned by institutions through regulation alignment and administration procedures. Instruments on the demand side focus

somewhat more on operational cooperation since, by providing incentives to participate in markets and engage with other actors, they can integrate cross-actor activities. Such a mapping does not necessarily represent the exclusive modes but rather the prevailing modes of functionality of measures and recognizes the fact that some measures may affect more than one coordination domain. The interactions between these mechanisms lead to the development of an integrated coordination system, which defines hub effectiveness. To achieve sustainable intermodal development, there is a need to balance the instrument systems in order to ensure synergy.

There are three theoretical assumptions underlying this framework. To begin with, the policy instrument choice is based on a logic of problem-structure-instrument: supply-side tools are given prominence under conditions of infrastructure bottlenecks; demand-side tools emerge as significant in case of market failures that hinder the use of services; environmental tools become important in case of institutional fragmentation that brings up coordination barriers.

To add another point, the effectiveness of the instruments relies on institutional fit, which is described as the degree of compatibility between the characteristics of the instruments and the governance capacity of the local government, regulatory frameworks, and market conditions [14]. Incentives on the demand side need operative market structures and regulation, but without those conditions, such measures could create rent-seeking without coordination goals being met.

Moreover, coordination mechanisms can be viewed as transmission channels that need to be designed consciously. Connectivity of infrastructure is not just driven by physical investment but also by operational protocols that facilitate smooth modal transfer. Coherence among institutions needs more than just formal regulations; it is necessary to have implementation structures too. Operation cooperation involves not only market encouragement but also trust building and information sharing platforms. These statements suggest that policy mix effectiveness can rely on the coherence between the types of instruments, coordination mechanisms and institutional contexts.

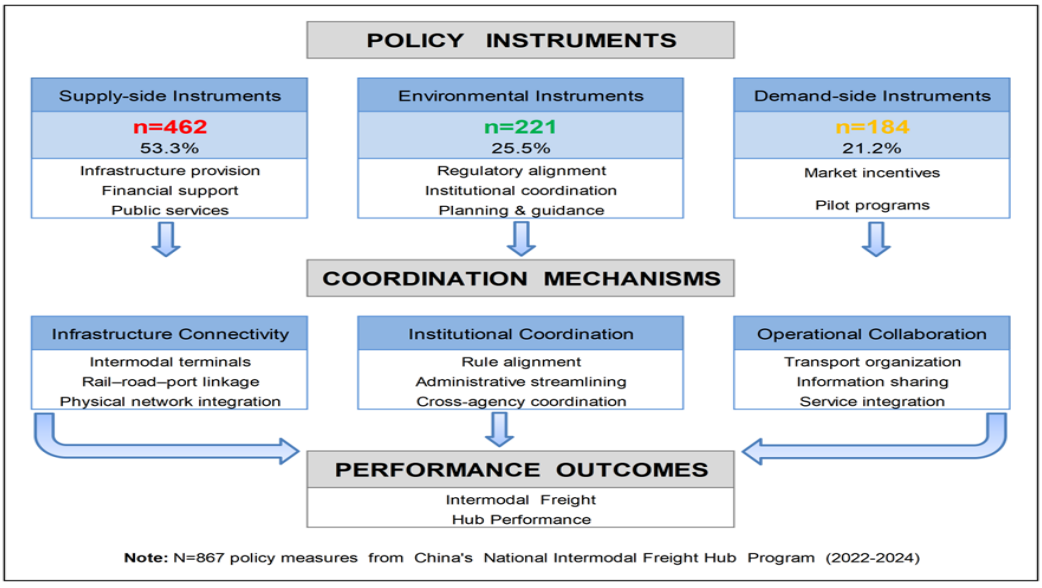

Figure 1. Analytical framework linking policy instruments, coordination mechanisms, and performance outcomes.

Research Context and Questions

The National Intermodal Freight Hub Chain-Strengthening Programme by China National uses competitive selection to identify 37 hub cities that need joint policy assistance on the basis of infrastructure investment, regulatory alignment, and organization of operations. As opposed to individual interventions, this program is a combination of comprehensive policies aimed at reinforcing weak points and improving intermodal cooperation.

The research question answered in this study falls into three categories: (1) What are the structural features of policy instrument configurations as part of China's National Intermodal Hub Program? (2) In what ways can these instruments facilitate the process of intermodal development through coordination mechanisms? (3) What design principles can be inferred as a result of these configurations and used as a foundation to shape adaptive policy learning in other regions? Three contributions of the analysis have been made, namely, empiricism showing systematic structural patterns in policy instrument configurations; operationalization of coordination mechanisms as analytical categories; and a proposal of a conditional transferability model of cross-regional policy adaptation.

2. Methodology

Policy Context and Data Sources

The policy corpus is divided into two document types, namely: (1) national-level policy frameworks, e.g., the Notice launching the program of strengthening the chain of national intermodal freight hubs (the "Notice on Launching the National Intermodal Freight Hub Chain-Strengthening Program") (Ministry of Transport & Ministry of Finance, 2022) and implementation guidelines; and (2) implementation plans at the city level of all 37 selected hub cities (2022–2024) obtained via official government websites and the public database of the Ministry of Transport.

From 2022-2024, 37 major freight hub cities/urban clusters were competitively chosen. These cities form the whole policy population of the program period. The documents were considered to be included only if they comprised explicit policy measures concerning intermodal infrastructure, institutional coordination, or operational organization. General policy statements that did not contain actionable measures were not considered. The 37 hubs chosen were specified solely through the official announcement and the following public announcements made in the framework of the program and all city-level implementation plans were gathered on its basis.

All documents have been written in Chinese initially, and then taken apart and translated by the research group according to the procedures set to analyze policies across languages. E.g., a common policy measure is stated as: A typical policy measure is to construct a railway sea multimodal transport terminal with a designated annual container throughput at Ningbo-Zhoushan Port. Document selection was done using three steps i.e., keywords identification of documents referring to either intermodal freight hub or multimodal transport coordination; filtering out action-oriented measures (general measures were filtered out); and full-text analysis to identify measures. The policy measure was described as a distinct intervention with defined implementation responsibility, allocation of resources, or regulatory obligation. Strengthening intermodal coordination was rejected as the general one, whereas establishing a cross-agency coordination committee that has members of the transport, customs, and commerce bureau by the end of 2023 was classified as specific. Team decision was used to resolve ambiguous situations.

Unit of Analysis and Coding Framework

The unit of analysis is a one-off policy measure - a discrete intervention or series of interventions to be implemented based on texts contained in policies. Every measure was

coded according to two dimensions, namely, type of instrument (supply-side, demand-side, environmental) and coordination mechanism (infrastructure connectivity, institutional coordination, operational collaboration).

The supply-side tools are infrastructure investment, financial support, information platform development, and technical support. Tools on the demand side are market stimulation, pilot projects, and incentives to adopt a service. Instruments that address the environment contain regulatory frameworks, planning standards, institutional coordination mechanisms, and standardization initiatives.

Identification and Calculation of Policy Measures

In order to guarantee transparency and methodological replicability in data aggregation, the overall number of policy measures (N) was defined based on the sum total of city-based policies of all chosen hubs and those that were obtained by examining national-level policy documents and formalized as:

$$N = \sum_{i=1}^{37} M_i + M_n$$

where M_i indicates the size of policy measures taken out of city i (i = 1…37), and M_n is the measure taken out of national-level policy documents. Following cross-document de-duplication and elimination of overlapping clauses, the final corpus consisted of 867 unique policy measures.

This formalization will allow understanding that policy instrument configuration must be considered a structurally aggregated construct, not a narrative interpretation, thus improving the methodological rigor of policy analysis.

Coding Procedure and Reliability

The coding process involved three stages. The first step was the formation of an initial coding structure using policy instrument taxonomy and coordination mechanism typology [8], [5]. Second, two coders coded a pilot of 50 measures each and compared their results and revised the operation definitions. There were disagreements in terms of whether 'information platform development' was a supply-side (infrastructure) or environmental (standard-setting) instrument; the framework made it clear that ownership of the infrastructure determined classification. Third, the lead coder coded all 867 measures, and a secondary coder coded 174 measures (20.1%) separately. Inter-rater reliability was found to $\kappa = 0.87$ instrument-type and $\kappa = 0.82$ coordination-mechanism [9].

The differences were eliminated by way of deliberation and consulting the coding manual. To achieve validity, the following approaches were adopted: piloting the framework on 50 scales and refining it afterward, team discussions of unclear cases on a weekly basis, and using external experts to assess 100 coded measures on face validity. The expert attested that the framework was able to measure significant dimensions, with the addition of some improvements that were made.

Analytical Strategy

The process will be carried out in three stages. To begin with, descriptive statistics are used to analyze the general distribution as well as the inner structure of instrument classes. Secondly, cross-city comparison detects trends in the configuration of instruments in different geographic and economic settings. Thirdly, qualitative interpretation connects results to the theoretical framework, exploring the way in which configuration instruments affect facilitation mechanisms. This process-focused method will focus more on explaining the nature of coordination as a process rather than creating strict causalities [4]. Chi-square test of Pearson was performed to determine differences in the proportions of instruments between inland and coastal stations and the level of significance was determined as 0.05.

3. Result and Discussion

Overall Distribution of Policy Instruments

Supply-side mechanisms take over (53.3%, 462/867), environmental (25.5%, 221/867) and demand-side mechanisms (21.2%, 184/867). This distribution is opposite to policy mix typologies that focus on complementarity between types of instruments in which the interaction between different instruments rather than substitution is anticipated (Table 1) [4]. The configuration based on the dominance of supplies indicates the development paradigm of China, infrastructure-driven development. 62% of the supply-focused measures aim at railway-port links and intermodal terminals to tackle the bottleneck, as specified in the national transport plans document. Nevertheless, the low level of demand-side instruments, especially the market incentives to adopt cross-modal services, can be limiting in terms of effectiveness of coordination, as infrastructure capacity cannot ensure the integration of services.

Table 1. Distribution of Policy Instruments

Policy Instrument Type	N	%
Supply-side Instruments	462	53.3
Environmental Instruments	221	25.5
Demand-side Instruments	184	21.2
Total	867	100

The configuration presented is supply-oriented as it demonstrates the infrastructure-led development paradigm of China, which prioritizes solving the problem of physical connectivity bottlenecks above coordination between institutions and operations [10]. Focusing resources on railroad access to ports, intermodal terminals and hub facilities, the policy mix helps to remedy a chronic infrastructure constraint. Nevertheless, a more restricted list of demand-side and environmental tools suggests a lower focus on market incentives and institutional coordination.

In terms of a policy mix, this configuration is a developmental phase where the limiting factor in infrastructure remains the key issue. With the maturation of intermodal systems, further investments in the infrastructure will provide decreasing marginal returns unless complemented with other instruments that address coordination and operational risks.

Cross-City Variation in Instrument Configurations

Comparison across cities shows significant heterogeneity (Table 2). Inland hub cities (e.g. Xi'an, Chengdu, Zhengzhou) have a supply-side instrument average of 58.2% whereas coastal port cities (e.g. Ningbo, Qingdao, Shanghai) have a 47.6 average. Conversely, the demand-side instrument rate is higher in coastal ports (25.1% vs. 17.3%).

Table 2. Instrument Distribution by Hub Type

Hub Type	Supply-side (%)	Environmental (%)	Demand-side (%)	N
Inland Hubs (n=21)	58.20	24.50	17.30	498
Coastal Ports (n=16)	47.60	27.30	25.10	369

The indicated trend is that the instrument structures are responsive to the local environment endowment and the market situation. The inland hubs are the ones that focus

on infrastructure development because they have more connectivity challenges than others. The coastal ports focus on stimulating demand and developing the market because the infrastructure has already been built. Regardless, the general supply-dominant framework remains in place in all regions.

The chi-square tests verify that there are statistically significant differences. The supply-side instrument proportion difference (58.2% vs. 47.6%) is statistically significant ($\chi^2 = 12.47$, df = 1, $p < 0.001$). The demand-side difference (17.3% vs. 25.1%) is also statistically significant ($\chi^2 = 8.93$, df = 1, $p < 0.01$). Nevertheless, the environmental instrument difference (24.5% vs. 27.3%) is not statistically significant ($\chi^2 = 1.12$, df = 1, $p = 0.29$), indicating that institutional coordination is given a uniform consideration depending on the type of hub, which is an indication of greater governance structures that lie beyond regional deviations.

Internal Structure of Policy Instrument Types

A closer look at an instrument composition shows that it has some policies priorities and gaps (Table 3). Construction of infrastructure and financial assistance are common to supply-side instruments, especially with rail connections and intermodal yards. Those which aim at technology upgrading, developing digital platforms, and creating human capital tend to be less common.

Table 3. Internal Composition of Policy Instruments

Instrument Type	Functional Category	N	%	Representative Example
Supply-side	Infrastructure provision	287	33.1	Construct rail-sea intermodal terminals at Ningbo-Zhoushan Port
	Financial support	112	12.9	Establish 500M CNY intermodal development fund
	Public services	63	7.3	Develop integrated cargo tracking platform
Environmental	Regulatory alignment	89	10.3	Harmonize customs procedures across modes
	Institutional coordination	76	8.8	Establish cross-agency coordination committee
	Planning & guidance	56	6.4	Formulate an intermodal development master plan
Demand-side	Market incentives	98	11.3	Provide 200 CNY/TEU subsidy for rail-water transport
	Pilot programs	86	9.9	Launch intermodal demonstration corridor project

The demand-side instruments are oriented to pilot projects and demonstration programs. Although these initiatives have signaling functions, they provide weak incentives to participate in the market over a longer term, which are frequently temporary. Long-term service procurement or user-side incentives, which are direct mechanisms of demand stimulation, are still uncommon.

Environmental instruments are mostly concerned with planning guidance and administrative coordination. The restricted nature of regulatory harmonization, standardization, financial facilitation can be an impediment to achieving greater effectiveness in addressing institutional frictions between modes and jurisdiction.

Temporal Dynamics of Policy Configurations

The data on analysis over 2022-24 shows some subtle changes. Supply-side policies in 2022 were estimated at 56.8% of measures, but in 2024 this dropped to 50.3% and demand-side instruments rose to 18.7% to 24.1%. Environmental instruments did not

change much (24.5% to 25.6%). It is an indication that a gradual rebalancing will take place as infrastructure limitations are alleviated. The fast rebalancing was found in coastal ports: by 2024, their average was 42.8% supply-side instruments (down to 52.3%), compared to 55.1% inland hub supply-side instruments (down to 61.2%). Established infrastructure regions react quicker in terms of adapting policy mixes than those countries that are still tackling connectivity-related constraints.

Enabling Mechanisms and Instrument-Mechanism Linkages

This analysis does not only analyze descriptive instrument distribution, but it also discusses how policies are formally integrated into various coordination systems, showing the governance logic that transforms policy instrument choice into coordination results at the system level (Figure 1). The codes used were based on the main coordination mechanism support of the policy measures.

Environmental tools are the main facilitators of institutional coordination. Out of 221 environmental measures, 143 of them (64.7%) explicitly address cross-agency coordination, regulation harmonization, or standardization. To give one example, the Chengdu implementation plan provides: formation of a municipal-level intermodal coordination committee based on transportation, customs, and commerce departments, which demonstrates that environmental tools form institutional conditions to provide cooperation-based governance. Equally so, 67 environmental strategies (30.3%) deal with regulatory consistency, including unified documentation requirements to transfer railroad-containerized loads onto water (Qingdao implementation plan).

Demand-side instruments are predominantly considered as solutions to the problem of operational collaboration. Nevertheless, out of 184 demand-side measures, there are merely 57 (31.0%) that explicitly tackle the issue of carrier-shippers coordination, service integration, or cross-actors alignment of operational aspects, which suggests that operational collaboration continues to be inadequately institutionalized in the set of policies.

The support of infrastructure coordination is very much dominated by supply-side mechanisms, especially investment in multimodal terminal infrastructure, rail infrastructure, and information systems. Although these are measures that enhance physical connectivity, they are not necessarily steps that will automatically address institutional or operational misalignment.

The mix of policies incorporates coordination mechanisms in an asymmetric way, as there is such structural importance given to infrastructure connectivity rather than institutional and operational alignment. Considering this pattern through the lens of policy integration, it means that there are few cross-domain interconnections between instruments, whereas considering it through the lens of collaborative governance, it would imply poorly institutionalized routines of inter-actor coordination [1], [14]. This imbalance implies that rule-driven alignment has been institutionalized more reliably with cross-actor routines and relational integration at mode interfaces, which can be harmful to coordination efforts on the systems level even though capacity is increased. It points to the fact that coordination ability is unequally institutionalized among mechanism types, which might restrict the transformation of the physical ability to integrated systems. Increasing the size of infrastructure, in the case of a lack of institutional and operational coordination arrangements, might bring about capacity without corresponding integration levels, thus preventing the physical investment into sustainable coordination performance [8].

Policy Mix Synergy and Effectiveness Implications

One of the critical implications is that synergy instrumentalization is necessary to achieve policy effectiveness rather than isolated actions. Continuous intermodal development demands a combined configuration of supply-side measures, environmental

measures as well as demand-side measures to tackle infrastructure, institutional as well as operational coordination at the same time.

The present supply-driven structure, which is well suited to deal with infrastructure limitations, can be rendered inadequate as multimodal systems advance. However, unless supplemented with environmental measures that support the coordination of institutions and measures aimed at the side that will help increase operational cooperation, infrastructure investments are likely to result in unutilized capacity and disjointed operation system performance. Such a conclusion extends the body of research in policy mix by arguing that instrument balance does not only change according to development stage but also institutionally based [4], [14]. There are three theoretical contributions. Firstly, there is a systematic patterning in instrument balance that is dependent on development stage, expanding knowledge beyond the individual properties of an instrument to configurational principles. Secondly, a coordination trap exists when instruments based on the supply side exist without instruments based on institutions and operations - investments in infrastructure create capacity without integrating them. Finally, it is argued that asymmetric implementation of coordination mechanisms contradicts the notion that instruments will necessarily produce an enabling impact. The fact that operational coordination is found to be poorly embedded despite the presence of demand-side instruments means that instrument-mechanism connections need to be engineered, as they disconnect the choice of instruments and their implementation results.

One surprising fact is that environmental instruments remain constant among hubs, regardless of their type and age, which means that institutional coordination mechanisms cannot be changed to accommodate the particular environment. It could be because of path-dependent governance systems or because people are more inclined towards perceiving institutional coordination as a background condition, rather than as a context-sensitive intervention.

Transferability to Cross-Regional Contexts

Policy experiences can be transferred to different regions due to these results. Exemplary data based on the large development reports on Central Asian corridor projects indicate some structural similarities and certain contextual differences, especially when it comes to the approach of infrastructure-driven policies without the appropriate integration mechanisms within institutions. The transport infrastructure allocation of about 70 percent of the total allocated sum in the Transport Infrastructure Program of Kazakhstan (2015–2020) was allocated to rail modernization as well as the developments on the dry ports, which are indicative of a configuration dominated by the supply-side akin to the program of China. The railway electrification and the logistics centers creation are also the focus of the transport strategy of Uzbekistan.

Nevertheless, institutional coordination mechanisms, such as cross-ministry coordination units and standardisation of regulations, are not as deeply institutionalised in Central Asian policy documents as they are in China. Instruments to adopt intermodal services on the demand side also exist but are relatively few. Such a structural difference points to the fact that infrastructure-led policies can be widely promoted, although the systematic implementation of environmental measures to enable institutional coordination differs significantly when it comes to governance systems.

The enabling mechanisms that have been recognized, namely instrumental-mechanism connections, can serve as conceptual guidelines to promote intermodal development in Central Asia based on the transferability concept. But direct transfer of policies would not be correct. The divergence in governance structure, regulation capacity, and the maturity of the market means that instruments need to change to suit the institutional environment of the locality. In this research, a conditional transferability logic has been developed where policy configurations give strategic directions to the regions,

but their utility depends on matching them with the local governance structures, regulatory capacities, and coordination maturity.

4. Conlusion

In The paper has made three contributions toward the literature on intermodal transport governance. Initially, it offers an empirical example of the fact that policy instrument packages in major intermodal projects have regular structural configurations, namely, supply-dominant configurations in which infrastructure connectivity takes precedence over institutional and process coordination. The result is a further contribution to policy mix research showing how the instrument balance changes predictably with the development level and institutional environment.

This is followed by the study operationalizing coordination mechanisms as infrastructure connectivity; institutional coordination; and operational collaboration as analytical categories that connect policy instruments to governance outcomes. This framework allows comparing the way various combinations of instruments form enabling effects.

Lastly, the point of view of conditional transferability improves knowledge of the way policy lessons may be transferred into institutional settings without imposing the idea of universality. The results underline the significance of infrastructure investment alignment with institutional coordination and market-oriented tools in the economies of Central Asia, instead of focusing purely on expansion of capacities.Various hub typologies have specific policy implications. Supply-side instruments are still important when it comes to inland hubs, but must be supplemented with environmental instruments that will ensure coordination framework development prior to the end of infrastructure construction. Coastal ports need to focus on demand-side instruments encouraging market participation, as the existing low representation (25.1%) indicates that opportunities are not utilized. Coordination across all hubs needs to be strengthened by the following measures: incorporating coordination requirements into infrastructure contracts; incentives based on performance that encourage integration across modes; and reduction of coordination costs by creating information sharing platforms.

Central Asian economies must apply a gradual strategy: the starting stage should focus on the development of institutional frameworks concurrently with the creation of the institutional mechanisms, cross-border harmonization of regulatory measures, joint planning systems, dispute settlement models that will allow integrating operational activities further down the road. There should be an anticipatory approach to the process of policy rebalancing instead of a reactive one, moving to institutional and operational levers before coordination failure has become a fact. There appears to be some slow rebalancing (6 percentage point reduction in supply-side instruments over three years), which would imply that policy adjustment reacts slowly to the change in circumstances.

There are a number of limitations that should be mentioned. The first thing to note is that the analysis concentrates on the aspect of policy design instead of the outcome of the policies; the next round of studies ought to investigate whether the instrument configurations determined in this paper can be correlated with positive effects on intermodal performance indicators like rates of modal shifts and cost minimization in logistics. Secondly, the coding system, which is based on the existing theory, includes judgmental decisions that should be verified by surveys of experts or through comparison. Third, the paper analyzes a one-country example, and cross-country comparisons under different governance systems could improve knowledge regarding how institutional environments influence instrument configuration trends. Fifth, the transferability analysis is based on secondary sources; comparative results in Central Asian backgrounds would be more solid on the basis of primary investigations. Also, the analysis considers policy measures as independent entities, possibly failing to consider the interaction between the

measures. Instrument interdependence analysis could provide more information. Examination of gaps between policy design and reality is also a consideration, especially where the capacity to implement the policy is weak or where there is conflict between stakeholders.

Research perspectives are: (1) the process of evolution of instrument configurations through time during the development of an intermodal system; (2) comparative investigation between countries with diverse governance systems; and (3) performance assessment in terms of the connection between instrument configurations and quantifiable performance results, including rate of modal shift, transshipment efficiency, and minimization of logistics expenses.

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