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Moving India:
The Political Economy of Transport Sector Reform

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Abstract

The transport network is in many ways the circulatory system of an economy. Yet India's transportation system remains clogged and underdeveloped after more than a decade of expressed commitments to improve transportation infrastructure by India's political leaders. India's transport infrastructure detracts from the country's competitiveness as a destination for investment and tourism and hampers domestic firms' competitiveness. Despite expressed good intentions, actual changes in the transport infrastructure have been uneven.

This paper approaches transport sector policy as an important example of a larger political economy problem that India faces in accelerating infrastructure development. Like many nations around the world, India has chosen to move from a model of state provision of infrastructure to one in which both private and public sectors contribute financial and human resources to constructing and managing infrastructure and services. The transition requires the state to both build up new capacities as well as retire from some existing activities. We elaborate on the distinction between "getting out of the way" and "building capacity" and discusses some of the implications of this framework for the dynamics of infrastructure development. We then argue that most of the visible changes in India's transport infrastructure are the result of the state simply "getting out of the way" in making the transition from public to public-private provision of infrastructure. Reforms that require more extensive changes in public sector operation have been slower. Finally, we highlight some of the key remaining challenges for transport sector reform and discuss the prospects for progress on some of these reform priorities.

Keywords: Transport Sector reform, Infrastructure development, Public-private provision, Policy research, India.

JEL Classification No.: H11, O17, R42.

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"The acuteness of our infrastructure problems is equaled only by our resolve to tackle them. One of the major planks of this budget is to provide strong stimulus to the infrastructure sector through larger public and private investment in these sectors."
-Shri Y. Sinha, Budget Speech 1998-1999

"The next 10 years will be India's decade of development. To achieve this objective our strategy must encompass the following elements….[including] a sustained assault on infrastructure bottlenecks in power, roads, ports, telecom, railways and airways."
-Shri Y. Sinha, Budget Speech 2000-2001

"Provision of efficient and world class infrastructure is critical for our growth aspirations."
-Shri Y. Sinha, Budget Speech 2002-2003

"But neither in agriculture, nor in industry, shall we be able to attain our objective, if infrastructure, both physical and social, is not rapidly and efficiently developed."
-Shri J. Singh, Budget Speech 2003-2004

"Sustainable growth depends upon the availability of efficient infrastructure. Government is committed to removing the inadequacies in infrastructure facilities through a mix of policy and fiscal measures."
-Shri P. Chidambaram, Budget Speech 2004-2005

"The importance of infrastructure for rapid economic development cannot be overstated. The most glaring deficit in India is the infrastructure deficit."
-Shri P. Chidambaram, Budget Speech 2005-2006

"The National Common Minimum Plan also mandates the Government to augment infrastructure."
-Shri P. Chidambaram, Budget Speech 2006-7

"Among the other objectives of the Plan are …. ensuring access to basic physical infrastructure …. I have kept these objectives in mind while allocating resources to various sectors."
- Shri P. Chidambaram, Budget Speech 2007-8

"Budget 2008-09 is about raising our sights and doing more and doing better."
- Shri P. Chidambaram, Budget Speech 2008-9

"The investment in infrastructure for the growth of economy is critical. I have urged my colleagues in the Central and State Governments to remove policy, regulatory and institutional bottlenecks for speedy implementation of infrastructure projects. I, on my part, will ensure that sufficient funds are made available for this sector."
- Shri Pranab Mukherjee, Budget Speech 2009-10.

Moving India: The Political Economy of Transport Sector Reform[♦]

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N.K. Singh[*] **and Jessica S. Wallack**[**]

1. Introduction

The transport network is in many ways the circulatory system of an economy. Judging from more than a decade of expressed commitments to improve transportation infrastructure by India's political leaders, one might expect that enormous progress has been made to bring India's transportation system up to world class standards. Yet India's transportation system remains clogged and underdeveloped. India's transport infrastructure detracts from the country's competitiveness as a destination for investment and tourism and hampers domestic firms' competitiveness.

A few airports have had makeovers and expansion, but many are shabby and lack the runway, terminal, and cargo handling capacity to keep up with traffic flows. Air traffic control personnel and updated equipment are in short supply. Roads are generally poorly maintained, and the smooth pavement of newly built highways is offset by the delays due to camel carts, tractors, and other forms of transport that share the lanes with trucks and cars.[1] Two or four-lane highways, less than 2% of the network, carry 40% of total traffic, while the state highways and major district roads carry another 40% with 13% of the network.[2] About 15% of all roads are still

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[1] World Bank (2002) reports that 25% of national and state highways are congested, leading to average truck and bus speeds of only 30-40 km/hr. World Bank, (2002). *Challenges for India's Transport Sector*. Washington, D.C.: Energy and Infrastructure Unit, South Asia Region, World Bank.

[2] Planning Commission, Government of India 11th Plan, Section 9.3.2.

single-lane. Ports' turnaround time remains slow by world and regional standards, and the connections between the wharf and inland transport are only just beginning to be improved. Indian Railways has become more profitable, but continues to have a backlog of track repairs running up against increasing freight movement, and its average train speed still falls below global standards. Persistent cross-subsidization of passenger travel with high freight costs distorts firms' choices about plant locations and long-distance transport modes, and accelerates wear and tear on roads.

The global recession and slowdown in national growth have given India's transport infrastructure a short reprieve from the obvious strains demonstrated in the mid 2000s. The general economic slowdown has eased pressure on ports to manage growth in cargo shipments, on railways to handle increased freight, on highways to enable more trucking, on airports to handle more passengers and packages. But congestion has not been removed, nor has it lessened the need for systematic improvement of India's transport network.

India's policymakers have long recognized the importance of transport infrastructure. The Third Finance Commission Report, for example, states, "impetus should be given to the development of communications more extensively. There is the pressing need to open up backward areas, to break down barriers of isolation and stagnation, to develop social services and social sense, and above all, to bring about a feeling of oneness in the minds of people of these regions with the rest of the community." The report goes on to discuss roads and road maintenance as the specific infrastructure for such communication. (Report of the 3rd FC, Paragraph 74). The Planning Commission's contention in the 10th Plan document that the "[the transport system] is not only the key infrastructural input for the growth process but also plays a significant role in national integration … promoting the development of the backward regions and integrating them with the mainstream economy by opening them to trade and investment" aptly summarizes the dual contribution transport infrastructure makes.[3] The 11th Plan document reiterates the

[3] Volume II, p. 931.

commitment to inclusive, efficient infrastructure and emphasizes the need for an integrated approach. Recent national committees and reports include the Rakesh Mohan Committee on Railways in 2001, the Naresh Chandra Committee on Civil Aviation, the Prime Minister's Committee on Infrastructure; more, including a committee on Integrated Transport Infrastructure appointed by the Prime Minister[4] are in the pipeline.

Despite expressed good intentions, actual changes in the transport infrastructure have been uneven. Why? What explains the pattern of changes we have and have not seen, and what does this dynamic imply for the future of transport infrastructure? This paper approaches transport sector policy as an important example of a larger political economy problem that India faces in accelerating infrastructure development. Like many nations around the world, India has chosen to move from a model of state provision of infrastructure to one in which both private and public sectors contribute financial and human resources to constructing and managing infrastructure and services.

The transition requires the state to both build up new capacities as well as retire from some existing activities. Many commentators have called for the Indian government to simply "get out of the way" and let the private sector operate,[5] but today's norm of infrastructure development in conjunction with private investors also requires a widespread institutional evolution, including learning to manage projects explicitly and transparently by contract rather than through internal norms, learning to harness private providers' profit motive for better performance, delegating autonomy for politically sensitive decisions to independent regulators, and redeploying or firing public sector employees among others.

We argue that the latter is likely to be more difficult than the former. Eliminating state roles in transport provision or removing restrictions on private

[4] Most expert committees are appointed by Ministries, but a few are appointed byt eh Prime Minister. These are distinguished as "High Level" instead of the more common "High Powered" committees.

[5] See, for example, Gucharan Das *India Unbound*. [5] Volume II, p. 931.

entry are essentially political choices that do not require extensive implementation or ongoing attention. Bureaucracies and bureaucrats can attempt to resist the changes by protesting, dragging their feet in any lingering approvals that restrict private business activities, but by and large it is difficult for the executive branch to resist a clear order to desist from particular activities. To the extent that this "opening of the gates" is enough to create opportunities for profit, we can expect to see changes in infrastructure and service provision.

Building new capacities to deliver services faster, write and enforce contracts with private partners rather than manage civil servants, or create institutions that balance accountability to the broad public with autonomy from specific interests, on the other hand, involves both a political decision to change the status quo policy and follow up in the form of skillful design of delegation and capable management by the higher levels of the bureaucracy. To the extent that accelerating infrastructure or service provision requires these capacities, outcomes will be slower to change.

India is not alone in this challenge - surveys of infrastructure reforms around the world nearly invariably mention the need for and difficulty of creating an attractive investment climate, improving regulation, strengthening public expenditure management and planning, and other aspects of institutions – but the scale of the country's need for infrastructure improvement creates additional urgency.[6]

Section Two elaborates on the distinction between "getting out of the way" and "building capacity" and discusses some of the implications of this framework for the dynamics of infrastructure development. Section Three argues that most of the visible changes in India's transport infrastructure are the result of the state simply "getting out of the way" in making the transition from public to public-private provision of infrastructure. Reforms that require more extensive changes in public sector operation have been slower. The final part of the section highlights some of the key remaining challenges for transport sector reform. Restructuring the state

[6] See, for example, Estache, Perlman, and Trujillo (2005); Briceno-Garmendia, Estache, and Shafik (2004); Estache (2004; Estache and Serebrisky (2004).

relationship with the incumbent providers, especially Indian Railways, is probably the most important priority. The conclusion discusses the prospects for progress on some of these reform priorities.

2. "Getting Out of the Way" versus "Capacity-Building" Reforms

> *"Learning to regulate fairly, effectively, and at arm's length may be the main challenge governments face in attracting private investment and financing to the transport sector."*[7]

The transition from public to public-private provision of infrastructure involves a spectrum ranging from simple "stroke of the pen" policy changes to deeper operational changes. "Getting out of the way," on one end of the spectrum, simply means lifting restrictions on private entry. This can be politically difficult if there is a powerful incumbent provider that would prefer to avoid competition, and the impact that removing restrictions has on actual private entry and on the nature of infrastructure or services that private participants provide obviously depends on the underlying technologies, opportunities for expected profit, competitive position of the public incumbent (if any), and other factors. As discussed in section 3, opening civil aviation to private entry has created a different pattern of private service delivery than opening inland container depots or state-level ports for private investment. However, once the policy has passed, the opportunity for entry exists.

Opening to private entry and setting up new institutions to guide this entry falls in the middle of the spectrum. Creating a new agency with new organizational processes and rules, like opening an activity for private entry, does not involve a substantial change in the capabilities of the existing infrastructure policy makers or providers. It removes a set of policy choices that one group has and gives it to

[7] Estache, Antonio, Privatization and Regulation of Transport Infrastructure in the 1990s: Successes . . . and Bugs to Fix for the Next Mile (November 1999). World Bank Policy Research Working Paper No. 2248. Available at SSRN: http://ssrn.com/abstract=629184

another group of more "independent" or "technical" policymakers, but it does not necessarily require existing infrastructure providers to learn new skills other than survival in a more competitive context. However, maintaining the independence of this regulator from public or private sector capture and involves more ongoing attention and commitment. A "stroke of the pen" may not be enough to establish an independent regulator. Similarly, maintaining any distinctions between the new agency and the rest of its peers or defending the turf of the newly created agency from those whose role it encroached upon requires continued attention and political will.

Cases where the state needs to alter its approach to constructing and managing infrastructure or build new capacities to attract and influence private provision of infrastructure fall on the other end of the spectrum. The following paragraphs outline some of the new skills the state must learn in moving to private and public-private partnerships.

First, the range of ways to create performance incentives for private providers is more limited than for public providers. The state must devise ways to link performance to financial returns, rather than using its power over managers' careers, overall budgets, turf, and other aspects. This can require a re-design of long-standing fiscal and administrative structures. With roads, for example, tolls are a common way to create a return for investors, but the "return" depends on many factors other than the quality of the road. For example, tolls can only be used in settings where alternative free roads are significantly constrained. Property tax income can reflect the value of additional infrastructure, but only if it is relatively elastic with respect to increases in property values – which is not currently the case in India. Creating this elasticity would require state by state policy change due to the constitutional allocation of powers in Indian federalism.

Second, moving to private or public private provision also requires that the state invest in data collection and analysis in order to better understand risks, convey these risks to investors, and write contracts that allocate risks reasonably. Surprises in projects can be absorbed more easily into more general public investment budgets than and than into private investment plans, and adjusting

public projects midstream is easier than renegotiating public-private contracts. One state government official, for example, reported investing in more detailed (and expensive) soil sampling before floating a tender for private construction of a metro-rail than they would have done if it were a public project where adjustments to accommodate difficult soil types could have been done internally. Similarly, improving data and projections of traffic are essential for providing potential investors with information about returns they might expect from tolls, passengers, etc. Data are presumably desirable for public projects, but appear to have been neglected. The 10th Plan suggested that such a database should be collected under the aegis of the Planning Commission and the 11th Plan repeated the suggestion, but it is unclear what progress has been made.

Third, states that pursue private investment ion infrastructure often must create new mechanisms for dispute resolution. Regulation by contract is a first step toward clarifying responsibilities, but can never fully specify all outcomes. Having a clear process for dispute resolution is essential for keeping the costs of projects manageable since politically or institutionally induced risk increases the cost of scarce risk capital. Governments that can control the knowable unknowns, or reduce the probability of costly events through particular contracts, can significantly reduce the cost of projects and the eventual cost to taxpayers.[8]

Fourth, states must restructure their relationship with public sector incumbents to limit soft budget constraints, special access to regulators or policymakers, and other privileges, while at the same time allowing them to change their human resource policies, investment strategies, and other business tactics to meet the new demands of a competitive market. "Restructuring" typically goes beyond simply privatizing all or part of a public enterprise. For example, ensuring continuity of the public provider's role in serving the poor is one challenge. Public incumbents are also often expected (by both policymakers and the public) to undertake provide infrastructure and services in unprofitable areas, and states must

[8] Mor, Nachiket, and Sanjeev Serawhat (2004). "Sources of Infrastructure Finance," ICICI Research Working Paper.

design some means of compensating for social obligations without allowing them to become an excuse for overall poor performance.

Even the most basic building blocks for implementing public-private partnerships may involve building new technical capacities within the public sector bureaucracy. Preparing a project for tender, defining the rules of the bidding to ensure competition, defining the terms of public and private financing to maintain incentives for quality, are new tasks for bureaucracies used to working with public budget allocations or transfers from higher levels of government.

Finally, improving timeliness, efficacy, and efficiency of public sector services can be as challenging as any of the new skills involved in public-private partnerships. Many management methods for improving performance, such as new hiring and firing procedures, methods for evaluating individual and organizational performance, advanced information technology tools, and functional re-engineering of operating agencies and state-owned enterprises, are restricted in the public sector

"Getting out of the way" is simply a precondition for the "capacity building" end of the spectrum of reforms to take place. The first step in the transition from public to public-private is simply to adopt permissive policies concerning private investment in an industry that was formally reserved for state-owned enterprises. This first step may not be enough to attract private provision of infrastructure services at all, much less private provision of infrastructure that increases access for the poor or remote areas. "Getting out of the way" can be politically difficult, but once it has done and entry has occurred, the only way to reverse the decision is to expropriate private investors.

Creating and sustaining independent regulators or innovative new agencies that set the context for private investors or infrastructure/service providers is likely to be in the second wave of reforms. This requires the government to have not only the political opportunity to change a policy, but the attention span and incentives to continue to defend the new organizations' turf, independence, and/or distinct processes.

The reforms that enable existing agencies to build new capacity are likely to be the last to be undertaken. These not only disrupt agencies' positions and jurisdictions, but affect individuals' work environment and are therefore more likely to encounter resistance. Delegating innovation or learning is also more difficult than delegating new restrictions since these are difficult to specify tasks.

3. From Public to Public-Private: India's Trajectory

Ongoing policy changes have continually opened the transport sector to private sector participation both by lifting restrictions on private ownership and operation and by providing various special purpose vehicles (SPVs) as financial mechanisms for facilitating private investment alongside public sector activities. Table 1 outlines the basic division of responsibilities between public and private sectors.

Table 1

Public and Private Roles in Transport Sectors (as of August 2009)

Infrastructure Mode	**Public Sector**	**Private Sector**
Railways	Indian Railways (overseen by Railway Board) manages track building, maintenance, operation. Operates stations, owns and maintains most rolling stock. Process of unbundling some functions ongoing.	Leases some wagons, executes projects through BOLT/BOT contracts. Private sector can provide food and services for IR Container transport and inland container depot/logistics management opened to private participation.
Roads	Primary responsibility for building & maintaining highways, secondary and rural roads	BOT & BOT Annuity for sections of national highways. NHAI experimenting with contracting for private maintenance. Private sector can develop commercial services along

Table 1 Public and Private Roles in Transport Sectors (as of August 2009)		
Infrastructure Mode	**Public Sector**	**Private Sector**
		roadways. Rural roads building under PMGSY contracted out.
Civil Aviation	Owns and maintains most terminals. Operates ATC Operates "Indian" airline (merger of Air India and Indian Airlines)	Can operate domestic airlines alongside AI and IA, subject to price and safety regulation. Private companies involved in Delhi, Mumbai, Hyderabad, Bangalore airport modernization via partnerships with AAI. Private domestic airlines allowed to fly international routes
Maritime	Major ports overseen by Port Trust Boards, regulated by Tariff Authority for Maritime Ports (TAMP). Minor ports overseen by state government. Inland Water Transport: Inland Waterways Authority of India regulates & develops channels. Shipping: Shipping Co. of India	FDI allowed in ports & port services. Nearly all port services (cargo loading & handling, port maintenance, operation of container terminals, etc.) are open to private participation. Inland Water Transport: private operators Shipping: private operators, increasingly less limited in activities.

Most of the entries in the private sector column are new opportunities that have been created for private participation since 1995. The opportunities for private participation in railways have all come about in the past decade. The most significant change, allowing private investment in inland container depots (albeit with some relatively onerous conditions for land acquisition attached) was passed in 2005. Civil aviation in India was almost completely controlled by the government

after the Air Corporations Act of 1953 nationalized existing airlines and merged them into Indian Airlines (domestic travel) or Air India (international travel). The Act was repealed in 1994. India's central government ports had been owned and operated by Port Trusts under the Union Ministry of Shipping, but India has been moving toward the "landlord model" of private operation in public facilities since the 1990s.[9] The government has also allowed up to 100% FDI in ports and shipping automatically since December 1998 and FDI up to 51% in support services such as operation and maintenance of ports and harbors, loading, and discharging vessels. Port servicing in India is now one of the most liberalized sectors in the world, as most of the port services are open for private sector participation, including foreigners. Private companies can also be involved in port maintenance, as well as construction of new berths and terminals, warehousing and storage, container freight stations and tank farms, and dry docking/ship repair facilities.

3a. Improvements in Services

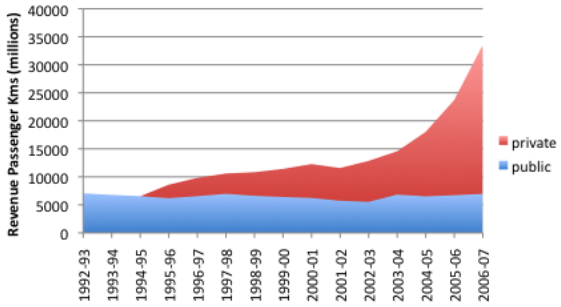
Transport services, which offer a greater chance for profit without substantial state support other than permission to operate, have changed significantly after the government opened these to private operators. India's domestic air fleet, for example, expanded rapidly in the decade after the government monopoly on scheduled air transport services was lifted. There was a flood of entrants in the mid 2000s, including a large group of low-cost carriers credited with "democratizing" air travel. Air traffic increased rapidly, in particular among private carriers. By 2007-8, new private entrants carried more than 70% of passengers and nearly 60% of freight cargo (Figures 1 and 2).[10]

State and central governments' policies on fuel taxation and continued delays in improving airport capacity, air traffic management, and other infrastructure

[9] Under the landlord model, the Port Trusts' function would be limited to facilitation of services provided by the private sector.

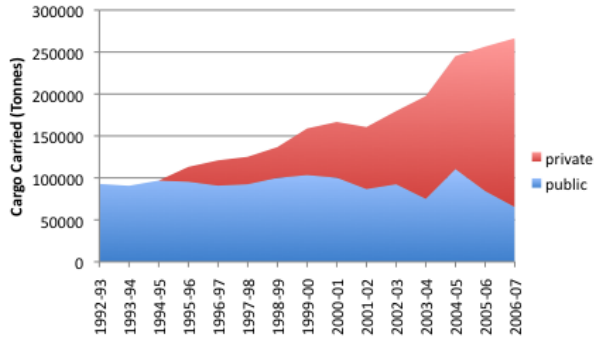
[10] India Air Transport Statistics 2007-08, Table 4.6, Page no 297

Figure 1: Passenger Traffic - Airlines



Source: Calculated from data from Directorate General of Civil Aviation, Govt. of India.

Figure 2: Cargo Traffic - Airlines



Source: Calculated from data from Directorate General of Civil Aviation, Govt. of India.

clearly affect the industry.[11] Some recent mergers between premium airlines and low-cost partners (Jet Airways and Air Sahara, Kingfisher and Air Deccan) were in

[11] India's fuel costs have come down, but remain among the highest in the world due to national and state taxes on ATF, making fuel wastage from circling, idling, and otherwise handling congestion doubly painful. Restrictions on slots and night parking prevent optimal planning of route systems and maintenance operations. Fuel, landing fees, lease charges, and other equipment and regulatory operating costs account for at least two-thirds (by some accounts more) of Indian airlines' operating costs, leaving little room for

part an effort to consolidate access to landing rights and other facilities as much as to improve profitability. Regulatory uncertainty also seems to be a constraint, as the Directorate General of Civil Aviation retains the right to award international routes.[12] Nevertheless, the underlying domestic demand seems to have been enough to attract private investment and private civil aviation continues to whittle away the share of service provided by the public incumbent.

Similarly, major and minor ports have attracted substantial private investment, including international operators, into port services once private entry into cargo handling was allowed.[13] Major ports have attracted private investment from a variety of global players including Maersk (JNPT, Mumbai) and P & O Ports (JNPT, Mumbai and Chennai), Dubai Ports International (Cochin and Vishakhapatnam) and PSA Singapore (Tuticorin). Steady high traffic seems to have been enough to create profitable opportunities once private operation was allowed (Table 2). Traffic through India's ports has increased steadily since independence, with particular acceleration in the early 2000s until the past year's slowdown in exports (Figure 3), and is expected to double again by 2012. About 95% of India's foreign trade (70% in terms of value) currently passes through these gateways, with

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enhancing viability through the business plan.

[12] The government retains the discretion to permit or deny allocation of rights in view of the preparedness of the airlines, viability of their operations and overall interests of the civil aviation sector in the country. "Guidelines issued for airlines flying abroad," *Tribune News Service (New Delhi)*, January 22, 2005. Conflict already has emereged over the assignment of international flights. Air Sahara lodged a protest with the civil aviation ministry when Jet Airways was authorized to make daily flights to London while Air Sahara was only cleared for 2 flights a week. The Ministry used the Available Seat Kilometer formula to assign frequency of flights, which gave Jet an advantage. An alternate formula for assigning flight frequencies which takes airlines' regional strengths into account (used in the U.S. and China) would have awarded more flights to Air Sahara. The Parliamentary Standing Committee on Transport has demanded an independent investigation of the criteria by which the Ministry had granted international flying rights. The allegation implied that the Ministry had quickly awarded the flying rights to improve Jet Airways' ability to raise funds through their IPO. "Parliament Panel Questions International Flying Rights to Jet Airways," *Economic Times* April 30, 2005.

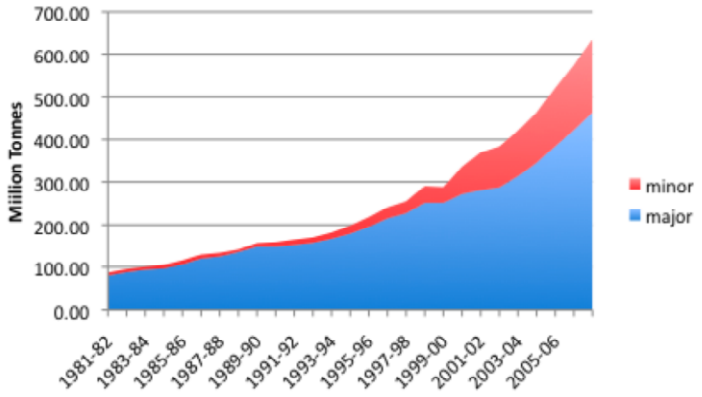
[13] India's policy of allowing private participation in port services has not necessarily brought lower prices. Competition in services is not guaranteed when only a few private players provide port services at a terminal, and several ports officials interviewed for this paper complained of higher handling charges when the private sector became involved, although in one case, handling costs actually decreased when the public sector took over these services.

Table 2: Capacity and Traffic at Major Ports

Year	Capacity million (Tonnes)	Traffic(Million Tonnes)	Capacity Utilization(%)
1990-91	n/a	151.67	n/a
1991-92	169.23	156.64	92.56
1995-96	177.21	215.21	121.44
2000-01	291.24	281.13	96.46
2001-02	343.95	287.58	83.61
2002-03	362.75	313.55	86.44
2003-04	389.5	344.8	88.52
2004-05	397.5	383.63	96.51
2005-06	456.2	423.57	92.85
2006-07	516.15	463.84	89.87

Source: Ministry of Shipping.

Figure 3: Port Traffic



Source: Ministry of Shipping, Government of India, http://shipping.gov.in/

three quarters of the traffic passing through the major ports.[14] State ports have also attracted investment in the port infrastructure itself, although the largest investments are for captive or single-cargo ports linked to large local industrial projects rather than general-use ports.[15]

Private companies also have taken advantage of the opportunity to invest in inland container train operation. Fourteen private companies submitted proposals for container train operation after private entry was allowed. Although start of operations was been delayed due to difficulty in obtaining wagons as well as land acquisition for private inland container depots, several are now operating logistics services including connecting containers from port to rail and forming partnerships with Indian Railways to manage container freight. Customs procedures for handling freight at container depots have be streamlined to some extent following the recommendations of a 2005 inter-ministerial working group chaired by Revenue Secretary K.M. Chandrasekar under the auspices of the Prime Minister's Committee on Infrastructure.

3b. The Shortfall in Infrastructrure Investment

While "getting out of the way" has led to improvements in some services, it does not seem to have been enough to attract private investment in transport infrastructure. These investments typically require more than just a policy opening – they require the state to design tenders and contracts and to guarantee the sanctity of these contracts when the investments are sunk, both of which are at least "middle of the spectrum" reforms.

Airport development, for example, only started to accelerate in the past few years although the Airports Authority of India Act was revised in 2003 to allow privatization of Delhi and Mumbai airports as well as green field investment in new airports in Bangalore and Hyderabad. Moreover, the airports that have been built or expanded have not yet relieved congestion. Civil Aviation Minister Praful Patel was

[14] Rajesh Kumar Singh and Rajkumar Ray, (2009). "'Top global firms eye India port plans'" *Livemint.com*, July 10, 2009. http://www.livemint.com/2009/07/10152115/8216Top-global-firms-eye-In.html

[15] Minor ports are also regulated by state rather than national governments and are exempt from many of the labor rules negotiated with major ports, which may explain some part of investor interest.

forced to answer to Parliament about the timeline for reducing congestion in Delhi's airport as of July 2009 (he answered "by 2010"), and critics pointed out that Bangalore's new airport was nearly at full capacity the day it opened, much less being capable of handling future increases in traffic. As we discuss in the next section, increasing private investment in airports will require India to undertake some middle of the spectrum reforms (such as sustaining the independence of the newly created regulator) as well as deeper organizational changes including reducing the incumbent's role and reworking land acquisition processes.

India's most important steps toward shaping the private investment opportunities that its policies allow fall in the middle of the spectrum – creating new institutions rather than reworking existing ones. The new arrangement for financing and building national highways was probably the highest-impact reform.
First, a new central road fund (CRF), fed by a 1.5 rupee tax on each litre of diesel and high-speed petrol, diverted existing taxes on petrol and diesel into a new "ring-fenced" pool of funds that India has used as collateral for market borrowing to fund highway development.[16] State and national governments also created new institutions designed to facilitate public-private partnerships. The National Highways Authority of India was created by an Act of Parliament specifying that it is separate from (although accountable to) the Ministry of Road Transport and Highway (MoRTH). Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, and Tamil Nadu have created Road Development Corporations and Uttar Pradesh has established a State Highways Authority parallel to their State Public Works Departments. These bodies act as intermediaries for private participation, attracting funds through corporate borrowing as well as leveraging private project finance with public grants.

[16] The fund also supports much of the public sector work on construction and maintenance of national and state highways, development of rural roads, and construction of rail over-bridges. The CRF is allocated as follows: 50% of Diesel Cess is for Rural Roads. The balance 50% of Diesel Cess and Cess on Petrol constitutes one pool of which 57.50% goes to the National Highway Authority of India (NHAI) for development and maintenance of National Highways; 12.50% to Railways for development of under-ways, over-bridges and safety works at unmanned rail-road crossings; and 30% to the State Governments for development of other State roads including roads of inter-State and economic importance.

The National Highway Development Programme (NHDP), launched in 1998, dramatically changed the country's roadways. The first two phases focused on building a 5846 km "Golden Quadrilateral" to connect Delhi, Mumbai, Chennai, and Kolkata as well North-South and East-West corridors between Srinagar and Kanyakumari and between Sichar to Porbandar. The Rs. 58,000 crore investment was fueled in part (about 1/3) through an allocation from the CRF and the rest from market borrowing or multilateral development banks. A third of Phase Three, meant to connect state capitals, widen high-traffic areas, and connect roads built in Phases I and II to places with tourist attractions, economic importance, pilgrimage centers, and rural markets, was complete as of February 2009.[17]

Notwithstanding these achievements, the record on highways suggests that these enabling institutions still have room to develop. The recent pace of new highway construction has fallen far short of expectations. NHAI awarded only 44 projects for 3,809 km in fiscal year 2009-2010, against the plan of awarding 135 projects for 14,384 km over that period. The economic downturn could be behind this slowdown, but many officials also argue that the concession agreements and bidding procedures are too onerous. The BK Chaturvedi Committee, set up to identify ways to accelerate road development, has recommended revision of norms to allow companies with as much as 25% common ownership to bid, introduction of an exit clause for companies to sell their stakes after construction, and relaxation of termination penalties among other revisions to make the process more bidder-friendly. The Cabinet Committee on Infrastructure also agreed to set up an empowered group of Ministers to clear stalled projects. NHAI independence comes at the discretion of the Ministry of Road Transport and Highways, leaving it vulnerable to political interference in awarding contracts and other matters.

3c. Enhancing Regulatory Capacity

Independent regulators have also been created and/or strengthened in civil aviation and ports, although these changes are still unfolding and thus have not yet

[17] Source: Rajya Sabha Unstarred Question No. 513, Dated on 19.02.2009 for the first, NHAI website for July 2009.

had any obvious impact. The National Maritime Development Policy, for example, committed to making the ports regulator, the Tariff Authority for Major Ports, more transparent and suggested that it consult port users before charges affecting them are implemented at the ports.[18] The proposed Major Ports Regulatory Authority Bill[19] would enact some of these provisions as well as extend the oversight of the Tariff Authority for Major Ports to the minor ports.

The Airports Economic Regulatory Authority Act of 2008 established the basis for an independent authority to set policies crucial for a level playing field in airport investment and maintenance, but the chairperson was not appointed until August 2009.[20] The regulatory authority has a number of contentious issues on its plate that will significantly affect carrier costs as well as incentives to invest in new airport capacity. The Act gives the regulator authority to set tariffs and standards for aeronautical services and development fees for major airports in keeping with investments made, economic viability and concession agreements that have been signed. This last provision that they must consider both concession agreements and economic viability and investments creates some ambiguity in handling cases where investment needs are unexpectedly high or industry conditions change. Disputes are to be handled by an Appellate Tribunal.

Thus far there has been no serious discussion of creating a regulator for rail,, the transport sub-sector in which the public sector incumbent is the strongest.

The pattern of regulatory development is consistent with the hypothesis that creating a new body is more politically appealing that modifying an existing entity. The general pattern has been to set up not only a specific regulator, but also a distinct appellate tribunal for resolving disputes. There are logical reasons to

[18] The NMDP also proposes to "study and improve upon" TAMP's current cost-plus tariff regulation. It envisions replacing this with a normative approach, starting with container-handing facilities.

[19] This change is politically contentious; states and especially private operators that have developed minor ports are loath to have these come under central government regulation that would impose a uniform tariff structure. A similar recommendation was made in 1999 to combine the legislation covering major and minor ports but was not translated into policy at that time.

[20] The move to strengthen the regulator actually dates back to a 2005 bill to divide the then de facto regulator Directorate General of Civil Aviation into an independent regulator and an air traffic controller. The DGCA remains in charge of overseeing safety norms.

establish the tribunals. Courts are crowded, and resolving disputes may require technical expertise. India has 10 judges per million persons, compared to 50-100 per million in OECD countries. Over 10% of new cases filed since 1995 have not been addressed yet, creating a backlog of 23 million pending cases.[21] Each sector does require distinct technical expertise to evaluate competing claims. The less charitable interpretation, however, is that these appellate tribunals are an "employment guarantee act" for retired judges.

All existing regulators in transport and beyond are also handicapped by the norms for appointment of regulators. The current civil service norms and pay scales all but ensure that candidates with up to date economic and technical knowledge will not become regulators. Commissions tend to be made up of retired civil servants, many of whom were previously posted in the Ministry overseen by the regulatory commission.

These "middle of the spectrum" changes are at least underway. Reforms that require existing public institutions to play new roles are among the most intractable of the transport sector reform agenda. Many of the existing and most intractable obstacles to unclogging the transport system can be traced back to three ways in which the Govcernment of India has to transform the way that it operates: bounding the role of incumbent transport providers, increasing state efficacy in constructing and maintaining infrastructure, and revamping the process of land acquisition.

3d. Restructuring State-Owned Incumbents

Public sector incumbents have been neither significantly restructured nor moved to an arms-length relationship with policymakers and political pressures. Even in civil aviation, where the role of the incumbent in service provision has arguably changed the most, the actual operations and political entanglements have changed less. Air India and Indian Airlines, the international and domestic parts of India's publicly owned airline were merged in 2007 into the National Aviation Company of India Ltd. (NACIL) , only to face continued financial troubles and near-

[21] Government of India. (2005). *Economic Survey* 2004-5. p. 221

bankruptcy.[22] The public sector status of NACIL seems to be hurting its performance rather than helping. It is subject to the typical public sector pressures to buy more equipment and to provide more jobs. Its working capital needs soared over 2006-9 as it expanded even as revenues were constant. Large orders for new planes were placed even as the sector headed into a downturn. The airline remains overstaffed, employing 1 in 3 people who work in India's aviation sector. It has 210 employees for each of its 147 aircraft, compared to 175 workers per plain for British Airways and 196 for Lufthansa. Nearly a fifth (17%) of the airline's expenditure went towards salaries, double the average for private airlines.[23] NACIL's efforts to restructure are also hampered by red tape. Its effort to develop an integrated reservation system replacing the separate Indian Airlines and Air India booking codes with one unified code so that tickets for international to domestic connections are processed as one ticket (and, more importantly, show up as one ticket in international travel booking systems) has been delayed due to the fact that one of the bidders complained so that the case had to be sent to the CVC for review. The company recently received a US$1.1bn government bailout. The bailout's terms require NACIL to restructure and to cut costs by over $650 million over the next two years. Job and wage cuts are likely to be among the most politically contentious of these efforts. Pilots have already gone on strike in 2009 to protest plans for pay cuts.

Public sector incumbents remain important players in ports and railways, contributing to some of the most apparent obstacles to faster flows of goods and people around the country. There is substantial scope to expand ports' effective capacity by improving port efficiency and improving connectivity to inland transport, but neither of these changes seems to be possible without a change in either ownership or management of major ports or the railways that connect the ports to inland networks. India's ports lag behind global standards in cargo

Comment [JW1]: All of this is about NACIL, or "Indian" as the merged company is called.

Comment [rgn2]: Both, or just Air India?

[22] The merger took place ten years after the boards first considered a proposal and eight years after a Parliamentary Standing Committee recommended the consolidation.

[23] "The king is dead; long live the king," Tarun Shukla. Livemint.com. June 28, 2009. http://www.livemint.com/2009/06/28230233/The-king-is-dead-long-live-th.html?pg=1

handling. Indian ports' average turnaround time is 3.85 days compared with 10 hours in Hong Kong, for example, [24] and performance does not seem to be improving. The average turnaround time *increased* from 2.04 days in 2003-04 to 2.32 days in April-December 2003-05) and 3.81 in 2006-7 according to Economic Survey 2004-5 and data from the Ministry of Shipping. Some of the slowdown has been attributed to poor road and rail container evacuation facilities, but other aspects of performance are likely to result from labor and management practices.

Port management has been slow to change. While the newest port, Ennore, was set up as a company under the Companies Act (under the conservatorship of the Madras Port Trust), the remaining 11 of the 12 are still managed by Port Trust Boards created under the Major Port Trusts Act of 1963. Trustees, appointed by the Government of India, have limited discretion and are bound by directions and policy orders from the Government. Corporatizing other ports, starting with JNPT and Haldia (the two newest major ports other than Ennore), has been under consideration since 1996, but has not yet occurred. This is at least in part a political challenge. Under the current regime, working conditions of port labor are governed by the Dock Workers (Regulation and Employment) Act of 1948, which is highly protective of workers' rights and offers them complete job security. Dockworkers' unions are also affiliated with political parties, increasing their ability to block policy changes that they perceive as harmful to their interests.

Railways infrastructure is also extremely congested, particularly in areas most important for freight. Just over ¼ of rail network (27.4% as of 2008) is double track, so that outdated signaling equipment and traffic management create a significant bottleneck.[25] Freight trains run at an average of about 24 km/hour as of 2007 even on the broad gauge track that accounts for 86% of the rail network, about

[24] Rajesh Kumar Singh and Rajkumar Ray, (2009). "'Top global firms eye India port plans'" *Livemint.com*, July 10, 2009. http://www.livemint.com/2009/07/10152115/8216Top-global-firms-eye-In.html

[25] The 2001 *Indian Railways Report* concluded that it would be very expensive to lay new railroads so the only solution is run more trains on the same track. Data on performance are from Ministry of Railways, Government of India

half of the speed modern locomotives should achieve Average speeds on the narrow and meter gauge tracks are lower at 15 km/hour.[26]

The poor performance of rail freight service has diverted substantial traffic to India's already crowded roads. Trucking was deregulated in the 1980s, and its viability as an alternative to shipping via railways has sharply improved as national highways are extended and improved under the National Highways Development Programme (NHDP). Road connectivity to major ports is also being improved under the NHDP, which will provide an alternative to shipping via CONCOR's container trains. Roads now carry approximately 85% of passenger traffic and 62-70% of freight traffic.[27] By way of contrast, Railways carried 86.2% of freight in 1950 and 70% of freight in 1970.[28]

Railways could be the most efficient manner of shipping freight long distances as well as connecting the country's entryways – ports and airports – with the hinterland. The rail network is one of the largest and densest (in terms of track kilometers per land area) in the world, connecting remote areas of India with the major commercial hubs. With the advent of container shipping, the transition from ship to train (and even between truck and train, if fleets were modernized) need not involve unloading containers and reloading the goods elsewhere. Railway transport, moreover, is fuel efficient, environmentally friendly, and safer than roads. The energy requirement for freight movement by rail is about a quarter of that by road.

This potential is unlikely to be realized until the Indian government alters its relationship with the incumbent provider. Indian Railways (IR) is currently caught between social expectations of widespread access to low-cost passenger service and the financial imperative to generate sufficient revenues to expand and maintain its rail network, wagons, and other equipment. Revenues have increased since the 2001 Indian Railways Report from the Rakesh Mohan Committee argued that IR was

[26] Source: Source:http://www.indianrailways.gov.in/deptts/stat-eco/YearBook_06_07.htm

[27] NHAI website. (www.nhai.org). The lower current figure for road traffic (62%) was according to data provided by the Ministry of Shipping, Road Transport, and Highways. More recent market research reports (Research and Markets, (2007). "Surface Transport in India," Report 845404 cite projections of 65% into 2010-2011.

[28] Source: Table 1.10, Road Transport Year Book 2006-07

in financial crisis. IR currently generates a cash surplus to be reinvested, but it is unclear whether this surplus is sustainable without substantial restructuring. Management case studies (including one written for IIM Ahmedabad) attributed the turnaround to increases in freight handling after extending loading hours, reducing track checks, increasing wagon loads, limiting locomotive changes on freight trains and other changes that increased the goods able to carried by Indian railways. These also cite increased efficiency in passenger handling, including more effective ways to sell "last minute" spare tickets.

IR's organization and its relationship to the rest of the government remains largely unchanged. IR is a public sector behemoth, so large that its budget is presented a day before the central budget is allocated to other sectors.[29] This separation of Railways' budget from the General Budget has opened it to strong political compulsions, as its backlog of proposed projects demonstrates. Railway Ministers have tended to find themselves pressured to announce a whole slew of new Railway schemes. The schemes announced by predecessors languish while the Railways' efforts turn to implementing a new master's favorite projects. Politics has also compelled IR to balance its obligations by cross-subsidizing passenger service and shipping of essential commodities with high freight tariffs for other goods.[30]

The vertically integrated railways monopoly still does everything from housing its workers to making their uniforms and building railroad wagons. Its unusual accounting system makes it difficult to assess the costs of such vertical integration, but procurement costs appear to be substantially higher than would be incurred if these activities were separated. Any move toward privatization or corporatization would inevitably require terminating some of its 1.54 million workers and addressing its pension liabilities of 7,416 crore, nearly 12% of its gross

[29] IR is the second largest railway system in the world under single management. It owns 222,147 wagons, 37,840 coaches, 7566 locomotives, 6853 stations, 300 yards, 2300 goodsheds, and 700 repair shops. IR runs around 11,000 trains daily, of which 7,000 are passenger trains. It employs 1.54 million people – nearly 1% of the Indian population! Source: Indian Railways website http://www.indianrailways.gov.in/

[30] Within freight, essential commodities have been cross-subsidized by steel, cement, petroleum products, and other non-bulk freight.

revenue.[31] Political opposition to privatization and job losses could be counterbalanced by new constituencies in favor of improved passenger and freight service, but only if these improvements are relatively quick to materialize.

Railways' activities also still are shaped by its public service obligations. The Mohan Report on Indian Railways (2001), for example, stated that "there is not a shadow of doubt that the 'social obligations' pressure has increased substantially in the past decade," and called for separating social from economic aspects of railway service, but this has not yet happened. Fare structure continues to be based on political considerations. Increases in passenger tariffs lagged cost over the 1990s: passenger tariffs increased 9% per year from 1993-2000, while costs increased 15% per year. The 2001 Indian Railways Report shows operational losses on passenger traffic of close to Rs. 4000 crore/year. Freight rates increased by 12% in 1997-8, 4% in 1999-00, and by another 5% in 2000-1, while passenger fares remained constant [10th Plan, v.2, p.939]. As of 2005, the ratio of passenger fares to freight charges was still the lowest in the world, and about a quarter of that of China.[32] Recent budgets have kept freight fares roughly constant while decreasing passenger fares (Table 3).

Table 3: Trends in Railway User Charges

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Passenger Fares	No Increase	No Increase	No Increase	Reduction	Reduction	No Increase
Freight Charges	No Increase	No across the board increase	No across the board increase	No across the board increase	No across the board increase	No Increase

Source: Compiled from Budget Documents

3e. Infrastructure Project Management

Improving state capacity to deliver infrastructure projects is another reform priority that will require more systemic change than simply passing a policy or

[31] Government of India (2007), Indian Railways Yearbook.
Source:http://www.indianrailways.gov.in/deptts/stat-eco/YearBook_06_07.htm

[32] "Railways Run on High Costs," *Business Standard*. 2/15/05

creating a new entity. This obstacle to development and expansion of the transport network shows up most prominently in the roads sector.

Rural roads remain one of the most significant gaps in the transport network. Most rural roads are only passable for part of the year. Around 40% of habitations were not connected to all-weather roads as of the 2001 Census. The Pradhan Mantri Gram Sadak Yojana (PMGSY, or Prime Minister's Rural Roads Program), the flagship program to address the gap, seeks to channel an estimated Rs. 60,000 crore to providing roads to all towns of 500 persons or more. As of 2009, half this amount, approximately 30,000 crore had been spent in eight years of program operation. Nevertheless, the program's commitments have increased - what began as an effort to provide "last mile" connectivity has evolved into a project to provide "farm to market" connections. The budgetary allocation was doubled when the current UPA government came into power and increased by 70% in the latest budget cycle.

It is difficult to diagnose the roots of these delays in road construction without more data about administrative processes and the project flow, but fragmentation of responsibility and lack of information flow across levels of government[33] is often seen as a major contributor. Then Finance Minister Chidambaram raised these challenges, for example, in a 2005 interview:

> "There is much to be done in terms of reform of delivery mechanisms, spending, auditing and accounting, and the legal system. You must be able to stand up and say, 'I spent Rs 1000 cr and have got a 1,000 km rural road.'…. that connection between outlay and outcome has to be established."[34]

There is also limited coordination to ensure balance between construction and maintenance. The PMGSY Briefing book, for example, asserts that "the putting in place of institutional measures to ensure systematic maintenance and providing adequate funding for maintenance of the rural core network, particularly the

[33] The program is being executed as a Centrally Sponsored Scheme under the Ministry of Rural Development, in which the central government formulates policy guidelines and standards and provides funding, while states plan and execute the road works. State and sub-state (panchayati raj) governments are in charge of maintaining the roads.

[34] Interview of 3/4/05 in *Business Standard*. The statement was part of his answer to "On a scale of 10, where would you put yourself?"

Through Routes, will be key to the continuance of the PMGSY programme in the State," but then simply admonishes state governments "to take steps to build up capacity in the District Panchayats and endeavour to devolve the funds and functionaries onto these Panchayats in order to be able to manage maintenance contracts for rural roads." These CSS are essentially projects provided by the central government, with limited provision for maintenance.[35]

Coordination across levels of government on road construction and maintenance presents a more general challenge than just reforming the PMGSY program. Some state governments have been forced to advance their own funds to repair sections of national highways, for example, in order to maintain the connectivity returns on their investments in state and district roads. Bihar, for example, has spent 736 crores on national highways in order to maintain the overall quality of the road network. Too much attention to short-term road building and network expansion is ultimately an inefficient use of money, as preventive maintenance costs much less than future rebuilding.[36] The World Bank (2004) reported that only 1/3 of maintenance needs are met. Table 4 reports more recent shortfalls in funding government plans to maintain roads.

Table 4: Shortfall in Funds for Road Maintenance in the Tenth Plan

Year	Requirements as per Norms	Amount Provided	Shortfall	Shortfall(%)
2002-03	2200	800	1400	63.64
2003-04	2200	731.74	1468.26	66.74
2004-05	2480	745.56	1734.44	69.94
2005-06	2480	868.1	1611.9	65.00
2006-07	2480	814.38	1665.62	67.16

[35] Some maintenance is built into the project. All PMGSY roads (including associated Main Rural Links / Through Routes of PMGSY link routes) will be covered by 5-year maintenance contracts, to be entered into along with the construction contract, with the same contractor, as per the Standard Bidding Document. Maintenance funds to service the contract will be budgeted by the State Government and placed at the disposal of the State Rural Roads Development Agency (SRRDA) in a separate Maintenance Account. (From PMGSY Briefing Book, December 2004).

[36] The 10th Plan, for example, cites a study by the World Bank showing that US$45 billion invested in main roads in 85 countries over the last two decades has eroded due to lack of preventive maintenance that would have cost less than US$12 billion [10th Plan, v.2, p.951]. The World Bank (2004) points out that spending 1 rupee on maintenance can have 7 rupees worth of net benefits for road quality.

Source: Table 9.3.5, 11th Plan Document, Vol-III, Page 295

3f. Land Acquisition

Land acquisition, an aspect on which transport projects across all sectors often fail, is our last example of the kind of transformational reform that seems to be the most difficult. Land disputes have been a continuous problem in developing Indian transport infrastructure, and part of the problem again appears to be absence of mechanisms for center-state coordination. Projects the central government proposes and encourages investors to take part in generally require land that either belongs to or must be acquired by the state government. State governments are also responsible for the costs of relocation and resettlement, both of which are politically unpopular.

Companies involved in the roads sector, for example, have been litigated against by states and municipal bodies after starting construction work with approval from the central government. Andrews Kurth, an international law firm and investment advisor, noted that: "The major constraints for [investors in road infrastructure], however, are problems in acquiring land and obtaining environment and forest clearances, each of which requires the assistance of state/local governments," in a talk given during one of the most active times for private investment in roads.[37]

Similar disputes also affect civil aviation, since state governments control the land for airports and surroundings. The development of Mumbai and Delhi airports was hung up over a dispute between the central and state governments about the stamp duties to be paid for the transfer of land. Delhi had offered stamp duty waiver to make the project more attractive, but Mumbai held out longer against the waiver for stamp duty of Rs. 250 crore. Union Civil Aviation Minister Patel had to intervene and guarantee a transfer of land to convince the state government to

[37] "Project Finance in India 2005: Overcoming Hurdles to Growth."Presentation, dated 3/18/2005, available at: http://www.akllp.com/Page.aspx?Doc_ID=2870

award the waiver.[38] Bangalore airport was also held up over a land dispute between the Bangalore International Airport Limited (BIAL), the state government, and the central Airports Authority of India. To finalize the state support agreement for the greenfield airport in Hyderabad took almost two years .[39] "The Bangalore Paradox," an article in the April 23rd 2005 *Economist* implied that the hold-up was due to party differences between center and state governments. Whether or not this is true, such statements in internationally respected publications are likely to affect investors' perceptions. The problem even affects the public sector incumbents. For example, Railways has faced difficulties in obtaining access to land and rights of passage, making the risks of projects to lay new tracks prohibitive. A Rs.1,000 crore sanctioned rail work in Kerala has been stalled by land acquisition issues.[40]

There are examples of solutions to land acquisition issues, but putting them in place would require more policy coordination than is currently possible. The South African Development Community, for example, solves the problem of subnational approval over land use (for telecommunications) by having a standard framework outlining the factors public authorities need to take into account in reviewing applications to use public property. When approval can't be attained or conditions are onerous, investors may appeal to the telecommunications regulator for a final decision that is binding on any other public authority. Investors also can apply to the local authority, then to the telecoms regulator as a last resort, to attain rights of access over private property under expropriation laws.[41]

4. Potential for the Future?

[38] The Maharashtra revenue department's worry was that waiving the stamp duty for this BOT project would lead to project developers for other BOT deals to demand the same, significantly cutting into Maharashtra's own revenues at a time when transfers from the center are declining. The state Cabinet overruled the continued objections of the revenue and forest department to waive the stamp duty. "Fickle Maharashtra Again Waives Stamp Duty for Airport," *Financial Express* 16 February 2005.

[39] The venture now includes the state government as well as the central government Airports Authority of India.

[40] M Sarita Varna (2005). "A Conducive Development Climate…." *Financial Express* March 13, 2005.

[41] International Telecommunication Union (1999). *Trends in Telecommunication Reform: Convergence and Regulation*. Geneva, Switzerland: ITU.

Transport infrastructure is an especially difficult test for public policy in a federal country such as India. The system is affected by various local, state, and national policies as well as the implementation abilities of several different sectoral ministries (Table 5).

Table 5:
Oversight of Public Sector Role in Transport

Mode of Transport	**Central Government**	**State Governments**
Railroads	Indian Railways	Shared financing of specific projects
Roads	Ministry of Road Transport and Highways Indian Roads Congress (standard-setting) National Highway Authority of India (Highways) Ministry of Rural Development (PMGSY- rural roads.) Rural Infrastructure Development Fund – among other infrastructure, provides for villages with a population of 1,000 (500 in tribal areas) to be connected with a road.	Public Works Departments (secondary highways) Panchayati Raj Institutions (rural roads upkeep)
Civil Aviation	Airport Authority of India Directorate General of Civil Aviation (regulator)	No formal role, but can exercise pressure through control of land.
Ports	Ministry of Shipping, each port managed by Port Trust. TAMP: Regulates tariffs at Major Ports	State governments oversee minor ports.
Inland Waterways	National Waterways Authority of India oversees the Ganga, Brahmaputra, and West Coast Canal.	Smaller-scale inland waterways

Progress so far has been based on two relatively easier types of reforms: restricting the state's role, and creating new institutions. Some of the key challenges ahead will require more extensive changes in the organization of existing agencies

and the relationships between policymakers and incumbent providers. Most of the remaining reform agenda will require policy change by construction - the state has to change the way that it operates and to build new capacities, not simply allow the private sector to operate in new areas. This is likely to be slow given the Indian state's history of intervention and distrust of the private sector, its well-developed, powerful, dense network of bureaucracies, and its active, mostly poor, acutely price-sensitive, political audience.

Transport sector reform is unlikely to remain completely stagnant. Technology changes could, in principle, create more opportunities for the state to achieve improved outcomes simply be "getting out of the way." The advent of mobile phones, for example, created an opportunity for entrepreneurs to profit from service provision without fixed investments whose viability rested on states' ability to make credible commitments or provide right of way. New transport service technologies that do not rely on fixed infrastructure like rails, roads, or airports could emerge – blimps, for example, could be transformative.

Inter-modal competition could also create additional pressure on state-owned incumbents to improive their efficiency in delivering services. Minor ports, many of which have been developed under state regimes that more aggressively courted the private sector and took advantage of greenfield opportunities, are increasingly diverting traffic from the major ports. Trucks are eroding Railways' freight share. The recent turn-around in Indian Railways' revenues seems to have postponed serious discussion of restructuring or moving toward privatization in part or whole, but the conversation could be restarted if the financial position deteriorates. It is hard to disentangle the surge in railways revenues from the effects of general economic growth and a boom in shipping. Whether Indian Railways can continue the trend in a downturn will be telling. Inter-state competition to improve the investment climate also could lead to more streamlined procedures for land acquisition, even in the absence of a national change.

Transport sector outcomes may be strengthened by developments outside of specific sectoral policy. Central and state governments' increasing attention to public expenditure accountability and investments in information systems to share

information across levels of government, for example, could improve delivery of rural roads and other publicly constructed infrastructure.

In the meantime, the need to improve India's transport infrastructure, is growing. India's and (Indians') position in the global economy depends on improving the interconnections between the country's cities, villages, and the gateways to the world economy.