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Soft Infrastructure, Trading Costs and Regional Co-operation

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Abstract:

The main purpose of this paper is to clarify some important links between regional co-operation, (soft) infrastructure and trading costs, and to suggest some hypotheses for further investigation. Khan and Weiss(2006) discuss the issue of both hard and soft infrastructure in this context. This paper is a continuation of Khan and Weiss(2006) but in the specific context of **soft infrastructure**, and particularly governance, including corporate governance. As Khan and Weiss(2006) point out, conceptually such discussions can be seen as a part of the analysis of the ‘New Regionalism’ The key idea here is co-operation through preferential trade and investment agreements that aim to strengthen structural economic reform, aid economic transformation, attract foreign investment and generally raise the international competitiveness of participating countries. This paper identifies several crucial areas of future research with potentially large value added. The general hypothesis with significant policy implications which can be elaborated and tested is that **trade costs are negatively related to the existence of and improvements in soft infrastructure**. A related hypothesis is that cross-border cooperation in building and maintaining both hard and soft infrastructure synergistically will lead to a reduction in trade costs. More specifically it will be useful to know the how high are the barriers to trade created by factors like high freight costs, slow port handling, customs delays, lack of competition in the insurance sector, poor corporate governance, unofficial payments and so forth. Some of these factors may be intrinsically difficult to quantify but the potential pay-off from policy-relevant research of this type is enormous. Optimal policies for regional cooperation in soft infrastructure will be difficult if not impossible to formulate in the absence of this type of research.

¹ I would like to thank Debasis Bhattacharya for valuable research assistance.

Introduction

The main purpose of this paper is to clarify some important links between regional co-operation, (soft) infrastructure and trading costs, and to suggest some hypotheses for further investigation. Khan and Weiss(2006) discuss the issue of both hard and soft infrastructure in this context. This paper is a continuation of Khan and Weiss(2006) but in the specific context of **soft** infrastructure, and particularly governance, including corporate governance. As Khan and Weiss(2006) point out, conceptually such discussions can be seen as a part of the analysis of the 'New Regionalism' The key idea here is co-operation through preferential trade and investment agreements that aim to strengthen structural economic reform, aid economic transformation, attract foreign investment and generally raise the international competitiveness of participating countries (IDB 2002).

In this paper, the focus is on co-operation in various aspects of soft infrastructure (eg social networks, legal frameworks). However, such regional cooperation in soft infrastructure will also have an impact on growth, efficiency and equity of hard infrastructure(eg ports, roads, telecoms etc.). In particular, I examine the implications of regional cooperation in soft infrastructure for trading costs within the region.

It should be mentioned that at the Asian Development Bank in particular several other aspects of regional cooperation have also been examined. These include:

1. formal agreements on trade and investment (free trade agreements, investment agreements);
2. monetary co-operation (currency swaps, exchange rate pegs, currency unions)
3. regional public goods (health and environmental protection)

Many of these have been examined extensively elsewhere (for example see Bhattacharya 2006, Kawai 2003). The issue I discuss in this paper is how and why soft infrastructure can assist in this process. Clearly, regional co-operation and coordination and operation of economic activity regionally require infrastructure. However, the following discussion is intended to clarify more sharply why this might be so particularly for soft infrastructure. The aim is to offer a tentative framework for subsequent empirical analysis of where policy interventions might be most effective in promoting inclusive growth..

Motivating Future Work on Regional Cooperation and Soft Infrastructure : An Example of Empirical Work and the Need for Refining the Idea of Soft Infrastructure

In a pioneering study, KC. Fung, Alicia Garcia-Herrero, Hitomi Iizaka, and Alan Siu examine the impact of soft infrastructure reform in PRC on FDI inflow to various regions within PRC..

Their basic regression model has the following form:

$$\ln(FDI_{i,t}) = \alpha_i + \beta_1 \ln(GDP) + \beta_2 \ln(LAGWAGE_{i,(t-1)}) + \beta_3 \ln(HE_{i,t}) + \beta_4 \ln(RAIL_{i,t}) + \beta_5 \ln(HIGHROAD_{i,t}) + \beta_6 \ln(POLICY_{i,t}) + \beta_7 \ln(REFORM_{i,t}) + FDI_{i,t}$$

where the subscripts i and t stands for China's region i and period t and the variables used in this analysis are given below.

$FDI_{i,t}$: FDI from the U.S., Japan, Hong Kong, Taiwan, and Korea to region i at time t,

$GDP_{i,t}$: GDP of region i at time t,

$LAGWAGE_{i,(t-1)}$: average wage of region i at time t-1,

$HE_{i,t}$: the ratio of the number of students enrolled in higher education in region i to its population at time t,

$RAIL_{i,t}$: kilometers of railway in region i per square kilometer of land at time t,

$HIGHROAD_{i,t}$: kilometers of high quality roads in region i per square kilometer of land mass at time t,

$POLICY_{i,t}$: the number of Special Economic Zones in region i, the number of Open Coastal Cities in region i and the number of the Economic and Technological Development Zone in region i at time t,

$REFORM_{j,t}$: The proportion of manufacturing output produced by SOEs in region i at time t.

Their focus is to compare the effects of hard infrastructures (as proxied by RAIL and HIGHROAD) and soft infrastructure (as proxied by REFORM), after controlling for other standard determinants.

The hypothesis that well-developed regions with better hard infrastructure such as superior transportation facilities are more attractive to foreign firms is examined by including the proxy, density of railway and high quality roadway. They use the variable "REFORM" to represent soft infrastructure. 'REFORM' is included to test the degree of internal reforms. It is constructed by calculating the share of the State Owned Enterprises (SOEs) in manufacturing output in each region in each year. China's economic reform has transformed the economy from a centrally planned economy dominated by the state sector to an increasingly market-oriented economy. A larger proportion of state-owned output should indicate a less transparent legal system, more corruption and less market-oriented institutions.

The results show that the higher degree of domination by SOEs in the industrial sector impedes the flow of direct investment from all five countries. The coefficient is found to be negatively significant at 1% level for all countries except Korea, whose level of significance is 5%. A large share of output by SOEs signal to the foreign investors that economic reforms are still far from complete and foreign investors should expect to face difficult political and economic challenges in that region. They explain:

Furthermore, in attracting FDI from the U.S., Japan, Hong Kong, and Taiwan, soft infrastructure is more important than hard infrastructure. Korea is the only exception in the analysis. Among five countries, there is a wide variation in the size of the influence of soft infrastructure is the most important determinant. The coefficient of "REFORM" is -0.89 and -0.97 for the U.S. and Japan regressions, respectively, which is larger than any other variables examined in the analysis for both countries. On the other hand, the negative influence of the variable on Hong Kong and Taiwan FDI is much smaller -0.73 and -0.61, respectively. Korea is positioned between the two groups. One potential explanation may be that the Hong Kong and the Taiwanese firms have an advantage of being familiar with the investment conditions due to the longer association with China than the U.S., Japan, or Korea. Geography as well as linguistic affinity may strengthen the network effect among Hong Kong and Taiwanese investors on one hand and mainland Chinese businessmen on the other. In general, our empirical studies show that soft infrastructure is more important than hard infrastructure in attracting FDI.

This type of empirical work can obviously be refined further. The importance of various specific types of soft infrastructure will need to be underpinned and tested for both their joint and separate effects. This motivates the main concern of this paper to refine the idea of soft infrastructure. Clearly, such a refinement can be used to study a broad array of problems of regional cooperation and infrastructure. As an initial foray into possible future empirical work in the context of regional cooperation, I will try to relate this relatively more refined conceptualization of soft infrastructure to trading costs and further trade creation in Asia.

The Role of Institutions and Soft Infrastructure in the Context of Regional Cooperation

The discussion in Khan and Weiss(2006) focussed on both hard and soft infrastructure drawing on the framework of trade costs and their impact on protection and prices. As noted there, soft infrastructure can be defined much more broadly and below I discuss the wider implications of soft infrastructure for regional co-operation including cooperation in building, operating and maintaining hard infrastructure. This will form the main body of the paper after a preliminary discussion of trading costs below.

This section discusses the key elements of soft infrastructures with a view to answering several important policy questions. These questions range from the nature of soft infrastructure institutions to what is the best policy package for soft infrastructure reforms so that regional cooperation can be optimized and trade costs reduced. Although

a broader view of soft infrastructure reforms is possible, we deliberately confine ourselves to the narrower issue of soft infrastructure reforms as they relate to trade costs and regional cooperation. Therefore, we do not attempt an exhaustive survey of issues or the large literature that exists. Estache(2006) is a good survey of both hard infrastructure and corruption. Soft infrastructure is defined here as all the institutional facilities used to deliver both hard infrastructure such as energy, water and sanitation, telecommunication and transport services, and generally to provide means to enhance economic well-being through both market and non-market economic, social and political interactions. In this sense, soft infrastructure is the institutional means to enable citizens as producers and consumers to get the most out of their economic activities including but not limited to the economic activities in the hard infrastructure sectors.. In Sen's terms, soft infrastructure along with the hard infrastructure can work to enhance the capabilities of citizens. At the end of our discussion I attempt to provide a rough blue print for a research agenda on soft infrastructure in order to overcome the knowledge gap for the policy makers in this vital area. Clearly, regional cooperation in overcoming this knowledge gap is itself an important item in the policy agenda of the governments, INGOs and the NGOs in the region.

I discuss soft infrastructure mainly under three distinct but related categories. These are : governance in general, corporate governance and corruption. I do discuss the issue of privatization of infrastructures in these contexts where it seems appropriate to do so. But first, there must be a clear understanding of the nature of trading costs and the relationship between infrastructure and trading costs.

‘Trading cost’, Infrastructure and Regional Co-operation²

As Weiss(2006) and Khan and Weiss(2006) point out, trading costs are often defined as the range of costs involved in moving a product from a point of production to a market. As such they can refer to both national and cross-border transactions. For example in their authoritative survey Anderson and Wincoop (2004: 691) define trade costs as ‘all costs in getting a good to final user other than the marginal cost of producing the good itself’. Declines in such costs obviously make goods more cost competitive and raise the return on investment. However for an analysis of regional co-operation the focus must be on the cross-border aspects of such costs (or ‘international trade costs’), since it will be these that raise barriers to trade and restrict the return on investments in exportables (although they raise it for import substitutes).

International trade costs can be sub-divided in various ways and different components and aspects of infrastructure can be linked with the different types of trade costs. Box 1 sets out some of these links to bring out the wide range of infrastructure features that will impact on these costs.

² This section draws heavily upon Khan and Weiss(2006). See also, Weiss(2006).

Box 1 Illustrations of trade cost and infrastructure interventions

Type of trade cost	Infrastructure intervention
Transport cost	Ports, Road, Rail, Air links
Freight insurance	Insurance regulation
Customs delays	Harmonization of customs procedures
Unofficial payments	Governance reform
Time in transit	Road, Rail, Air links
Information search	Investment climate
Management of supply chain	Telecommunications, investment climate, regulatory environment
Excess inventories	Ports, Road, Rail, Air links, harmonization of customs procedures
Currency changes (cost of hedging)	Financial sector regulation

Source: Weiss(2006); Khan and Weiss(2006)

The significance of this for regional co-operation is that international trade costs form a potentially important barrier to trade and that improvements in infrastructure, for example through the various mechanisms noted in box 1, can lower these barriers. The theoretical framework that is relevant here is an extension of the effective rate of protection (Balassa, Corden 1972). The conventional formulation quantifies how far value-added in a line of production is impacted by policy-induced barriers to trade in the form of tariff or quota protection on outputs and inputs. This approach has been extended to incorporate transport costs on outputs and inputs (Amjadi and Yeats 1995). In principle however there is no reason why non-transport international trade costs cannot also be added as they also provide a form of protection that allows domestic producers to capture a higher level of value added, whilst still remaining price competitive with foreign suppliers.

Formally we can extend the effective protection rate (EPR) concept so that

$$ERP_i = (t_i - \sum a_{ji} t_j) / (1 - \sum a_{ji}) + (r_i - \sum a_{ji} r_j) / (1 - \sum a_{ji}) + (n_i - \sum a_{ji} n_j) / (1 - \sum a_{ji}) \quad (1)$$

where i is the final product, j is an internationally traded production input and a_{ji} is the (unobservable) coefficient for units of j per unit of i with no policy barriers to trade and no international trade cost; t_i and t_j are the rate of tariff or tariff equivalent of policy-induced trade barriers on i and j respectively, r_i and r_j are the transport costs per unit of i

and j respectively and n_i and n_j are the non-transport trade costs per unit of i and j .³ Coefficient a_{ji} is not directly observable and in practice is proxied by actual inputs per unit of output.

The first term gives the potential proportionate increase in value-added due to policy-induced protection, the second term gives the proportionate increase due to transport costs and the third the proportionate increase due to other international trade costs. In other words the sum of these gives the increase in potential income to domestic factors in comparison with a situation where there were zero tariffs, no quotas and no trade costs. Trade costs thus potentially increase 'natural' protection and since they can vary significantly between products potentially distort relative prices with efficiency implications.

What is the quantitative extent of trading costs? There is a gap here in the Asian regional cooperation literature that future research can fill. Importantly, it is now widely cited that trade costs are more important than policy barriers to trade; for example Anderson and Wincoop (2004:693) argue that 'inferred border costs appear on average to dwarf the effect of tariff and non-tariff barriers'. Their 'representative' international trade costs for industrialized countries, a combination of transport and non-transport costs, are as high as 74%, compared with average tariffs of less than 5%. Of these international trade costs roughly one third are transport related and the rest cover the various types of trade cost listed in box 1. This rough figure of 74%, which is no more than illustrative, can be interpreted as the sum of r_i and n_i in (1) above. If international trade costs for inputs are below those for outputs the representative effective protection rate created by trade cost (terms two and three in 1) will be higher still.⁴

An important part of the argument over the significance of trade costs (not just transport costs) is their variation across products.⁵ It is intuitively clear that transport costs per unit

³ Here for simplicity one can treat non-traded inputs as traded inputs with a zero tariff and assume away the impact of tariffs, quotas and trade costs on their price. Similarly this expression assumes no interaction between tariffs and trade costs, whereas in practice tariffs are typically imposed on cif values which will include trade costs.

⁴ More specific estimates of this type for developing countries are required to gain a sense of the magnitude of the barriers to regional co-operation through trade. Work on Sub-Saharan Africa some years ago was novel in deriving effective protection estimates due to transport costs (the second term in 1) and highlighted the barriers African exports posed by poor transport infrastructure (Amjadi and Yeats 1995). For example whilst import tariffs facing African goods in the US were relatively low the tariff equivalent was on average 8 percentage points above the tariff rate. These are nominal protection figures however and with low value-added content effective protection afforded US producers from transport costs will be much higher. In an analysis for the early 1990's the authors find an average effective protection due to transport of 25% compared with a nominal one of 15% (Amjadi and Yeats 1995, table 5). See Weiss(2006) and Khan and Weiss(2006)

⁵ There has been considerable theoretical discussion on deadweight losses incurred through significant variations in tariffs and similar arguments apply to trade costs more generally (see Anderson 1994 for example).

of value will vary across products with different weight to value ratios, but other aspects of trade cost also appear to differ substantially between products. We have some approximate evidence on this from trade data that allow a comparison between fob and cif values for the same product with the cif –fob margin interpreted as a measure of non-policy induced trade cost. De (2006 tables 4 to 6) for example reports the cif- fob margin at the 4 digit level for the top ten product categories with very considerable variation between them. For PRC's imports from Japan, for example, in 2004 the margin as a percentage of the cif price ranges from a low of 2% to a high of 123% (De 2006 table 4b). Import tariffs on the other hand range from zero to 35%. There are doubts about the accuracy and comparability of this fob and cif price data, but nonetheless the range of trade costs seems very wide.

Weiss(2006) and Khan and Weiss(2006) draw upon the work on trade intensity indices (TII) from the very detailed work of Ng and Yeats (2003) on East Asia. To argue that lowering trade costs can increase trade significantly. They also point to some results from gravity type models (for example Limao and Venables 2001, De 2006) that provide indirect evidence for a negative relation between trading costs and volume of trade..

Much more work remains to be done in quantifying accurately the trade cost to be used in these models, but provided the proxies applied there are broadly reasonable the results indicate a fairly strong elasticity of trade to declines in trade cost. Hence there are further potential benefits from infrastructure investment or intervention in these areas to lower trade cost barriers to trade.

As with any other form of cost, an increase in trade costs of all types will be expected to impact on the incentive to invest. This is reflected in the responses typically found in 'investment climate' surveys that poor quality hard infrastructure that provides poor road and air communications, unreliable power supplies and congested ports is a major disincentive to investment (World Bank 2005).⁶ I now turn to a discussion of specific types of soft infrastructure and their relations to trading costs.

Soft Infrastructure Components

As mentioned before, I will discuss soft infrastructure mainly under three distinct but related categories. These are : governance in general, corporate governance and corruption. I also discuss the issue of privatization of infrastructures in these contexts where it seems appropriate to do so

⁶ However not all trade costs need be borne by the domestic purchaser or importer for internationally traded goods. From simple micro economics we know that the incidence of trade costs will be determined by demand and supply elasticities. See Weiss(2006) for further details.

Soft Infrastructure: Governance, Trade Costs and Regional Cooperation

“Governance” refers to institutions and processes by which we make collective decisions and solve collective problems. It has become the dominant term in discussing issues such as the role of the state as various pressures converged in the 1980s to force researchers and leaders of governments and multilateral organizations to shift attention from government to governance. These pressures included demands to reduce the size of government, frustration with inefficient and corrupt government bureaucracies, and recognition that the formulation and implementation of public policy appropriately included non-government actors. Public officials must now coordinate and cooperate with partners in vertical, authority based and horizontal, negotiation-based systems responsible for provision of public goods. Clearly, these developments have significant implications for the supply and management of infrastructure.

In the last ten years, the World Bank has taken the lead in operationalizing the concept of governance. According to the research at the Bank, governance has several measurable dimensions related to:

- Process whereby *governments* are selected, monitored, replaced
 - Voice and accountability; civil & political rights; freedom of media
 - Political instability and violence
- Capacity of *government* to effectively formulate and implement sound policies
 - Definition of role –which public goods to provide?
 - Commitment to policies, capacity of civil service, independence of civil service, quality of public service provision
 - Regulatory burden
- Respect of citizens and the state for institutions that govern economic and social interactions between them
 - Rule of law
 - Graft and corruption

In a recent summary of the governance literature,(Governance Matters V: Aggregate and Individual Governance Indicators for 1996–2005),Daniel Kaufmann, Aart Kraay, and Massimo Mastruzzi of the World Bank report on the latest version of the worldwide governance indicators, covering 213 countries and territories and measuring six dimensions of governance since 1996 until end-2005: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. The indicators are based on several hundred individual variables measuring perceptions of governance, drawn from 31 separate data sources constructed by 25 different organizations. Using these extensive data sources, the authors construct indicators of the following six dimensions governance:

1. *Voice and accountability (VA)*, the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media;
2. *Political stability and absence of violence (PV)*, perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including political violence and terrorism;
3. *Government effectiveness (GE)*, the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies;
4. *Regulatory quality (RQ)*, the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development;
5. *Rule of law (RL)*, the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence;
6. *Control of corruption (CC)*, the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

We discuss corruption under a separate heading later. In this section we focus on the possible relations between trade costs and the other dimensions of governance in the context of regional cooperation. If we look at Box 1 --- Illustrations of trade cost and infrastructure interventions--- we find that already several areas of governance reform leading to trade cost reductions are indicated. In fact, it could be argued that almost all areas except direct transportation costs can be affected by desirable governance reforms. In particular, unofficial payments could cease or be reduced drastically as *Government effectiveness (GE)*--- that is the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies--- increases with appropriate reforms. Furthermore, if the reforms are carried out on a coordinated basis within the region, the benefits will be reaped by all the parties regardless of their country of origin.

Another area where coordinated governance reforms can reduce trade costs is customs delays. The informal anecdotal evidence indicates that there are substantial losses from such delays. Clearly, even unilateral reform by one country can improve the situation for that country and its trading partners; but a coordinated reform package will provide incentives for cross-border cooperation among exporters, importers and other allied interest groups including consumers which can lead to significant cuts in trading costs. For example, the harmonization of customs procedures, a regional cooperation issue *par excellence*, can save each party involved considerable sums. It can also lead to the creation of goodwill and operational procedures that can ease the way for future gainful cooperation in other areas.

A third area where governance reforms can (at least indirectly) affect trading costs is insurance regulation. *Regulatory quality (RQ)*, the ability of the government to formulate

and implement sound policies and regulations that permit and promote private sector development; If governance reforms lead to an improvement in RQ, then freight insurance and related regulations can lead to significant lowering of costs.

These are probably the most obvious areas in which cross-border coordination along with governance reforms will have significant impact on lowering trading costs. In addition, an increasingly general tendency to follow the rule of law will undoubtedly make regional cooperation and lowering of trade costs more feasible. As is noted in box 1, the lowering of information costs through such cooperation and an improvement of the quality of information can also improve the investment climate as well.

Much of the recent research in governance has focused on defining and measuring various indicators of governance. Operational work has relied largely on survey-based statistical techniques. It is still too early to say how useful the current set of measurement techniques will be in the area of measuring the impact of soft infrastructure reforms on trading costs and other factors related to regional cooperation. But the value added from doing such work can potentially be great(see also the section on corruption).. I now turn to a brief discussion of corporate governance, particularly as it may relate to the Public-Private Partnership idea in the area of infrastructure provision and regional cooperation, and its possible impact on trading costs.

Corporate Governance, Regional Co-operation and Infrastructure Management

Corporate governance in a narrow sense addresses the fundamental microeconomic issue of how the managers of the firm are induced by banks, equity markets, or other mechanisms to act in the best interests of its shareholders and hence to maximize the discounted present value of the firm. In a wider sense, corporate governance can or should address a whole host of issues for multiple stakeholders--- ranging from efficiency and equity to the promotion of economic and political freedom.

By now there is an extensive literature on corporate governance. The interested reader is referred to Khan (2004b)) for a relevant survey of literature. Here the focus is on particular types of corporate governance in Asia, their possible reform and their impact on trading costs.

Khan(1999;2004b) develops the idea of a family based corporate governance system (FBS) and contrasts this with the bank-led system (BLS) and equity market based system (EMS). Both BLS and EMS are closely associated with the dominant mode of corporate finance by banks and equity markets respectively. In the case of FBS, the financing can come from three different sources. Initially, family business is financed largely by internal funds. As the enterprise grows over time, the role of banks and outside equity becomes more prominent. However, the key difference between FBS as a governance system and BLS and EMS lies in the fact that neither the banks nor the equity markets ultimately control the family business groups. The control resides with the family groups

in the final analysis. This may not be without economic rationale, but ultimately FBS can run into trouble as well. Since many developing economies are characterized by FBS, it is important to analyze the role of FBS in infrastructure delivery and management. In addition the role of BLS and EMS in infrastructure delivery and management needs also to be considered.

According to the theory developed in Khan(1999;2004) it is possible to analyze the FBS type of governance by considering five essential aspects: 1) the extent of family controlled corporations in the specific regions, e.g., in East Asia or Latin America; 2) the dominant modes of financing; 3) the key information asymmetries and agency conflicts; 4) problems of monitoring family businesses; 5) investment and capital accumulation. For infrastructure delivery and management all five aspects are important, but information asymmetry , monitoring and investment issues are of particular salience.

It is fair to say that work on the role of corporate governance in ensuring efficiency and equity in the infrastructure delivery and management is yet to begin. But this is likely to be a research area with particularly high pay-off. Infrastructure projects are typically large, involve external financing including foreign financing, and have many informational asymmetries arising from many sources, particularly the specialized nature of many projects. In view of the popularity and potential of the public-private partnership(PPP) in infrastructure delivery and management , it is imperative that we try to understand the issues related to corporate governance in this area. PPP can lead to desired outcome only when many of these informational and agency issues have been sorted out and proper corporate governance with an efficiently functioning Board of Directors is in place.

With respect to trading costs in particular, to the extent a well-governed corporation is able to deliver infrastructure at or close to the minimum average cost, the direct transportation cost itself can be lower . In addition, a well-governed insurance industry will deliver insurance products at lower costs as well. Cross-border coordination of corporate governance reforms by instituting best practices in several countries can lead to substantial lowering of trade costs among these countries and between the region and the rest of the world. Some particular hypotheses to test in this context can flow from the relationship between factors that concern the relations between outside members of the Board, independent Auditing Committees and remuneration committees on the one hand and trading costs on the other. For example, one could test the hypothesis that an independent auditing committee can lower trading costs(via an improvement of the delivery of services by decreasing the incentive to overcharge , follow dilatory practices etc.).

Corruption: how significant a problem?

Our last broad research theme emerging from this quick survey of soft infrastructure, trading costs and regional cooperation may be the most complex one. In the final analysis, corruption is really about accountability for governance failures as the section on governance already indicated. Our major concern here, as in the last two sections, is with how corruption increases trading costs. We suggest research strategies

for determining these links and also policies for improving regional cooperation through fighting cross-border corruption such as smuggling.

Although ‘unofficial payments’ may be the most obvious and perhaps the most widespread type of corruption with regards to trading costs(see box 1), there are clearly many aspects of regulatory environment that are affected by corruption.⁷ The impact of corruption in the financial sector is particularly important to understand. It would appear that almost all the costs listed in box 1 are likely to increase because of corruption .

The usual explanation of the existence of corruption in public sector infrastructure delivery and management relies on the phenomenon of low wages in the public sector. There are at least two other important features of infrastructure that can account for the higher than average risks of corruption in these sectors. First, on the average, projects tend to be much bigger than in other sectors. Second, firms delivering services in infrastructure are often allowed a monopoly on delivery.

The existence of widespread corruption among public monopolies in the infrastructure sectors was often one of the arguments used to advocate privatization. This was supported by the theoretical modeling of corruption .⁸ Assuming that it is easier for corrupt politicians to control public firms than private firms, these researchers argued that privatization could reduce the control government has over the rent offered by the full control of the sector by making political interference more costly or more visible.⁹

However, as Estache(2006) correctly observes:

⁷ One could go further and claim that perhaps all aspects of regulatory environment are affected by corruption

⁸ See, for example, Shapiro and Willig (1990), Shleifer and Vishny (1993), and Boycko, Shleifer, and Vishny (1996) among others

⁹ See also Estache(2006) who adds insightfully: Favoritism, fraud, cronyism, patronage, embezzlement, bribes, and state capture are all concepts that have long been associated with the delivery of infrastructure services in many countries. There is an extensive literature on how to define corruption and on the semantic practices of different institutions; a helpful recent survey is Lanyi (2004). For a recent survey on economic analysis of corruption, see Aidt (2003); on levels of corruption, see Kaufmann and others (2003;2006). There are now models coming up which generate incentive structures consistent with the Latin American stylized facts and which show that there are also cases where private ownership can foster investment while increasing corruption. See Martimort and Straub (2006).

The focus of debate has now shifted from the interactions between public operators and users to those between private operators and government. This can be seen in the survey prepared for Transparency International on corruption and privatization in infrastructure in developing countries (Boehm and Polanco (2003) and TI 2005). There is increasing emphasis on this also in various publications by NGOs and Hall and Lobina (2002)). Many of these document legal proceedings that have demonstrated incidents of corruption in the sector. Friends of the Earth (2001) and various political scientists have documented the role of corruption as a cost driver in contract negotiations and renegotiations in the sector. There is also an increasing body of academic evidence. Flyvbjerg and others (2002, 2003a, 2003b, 2005) and Mitlin (2004) for instance all document how undesirable practice fuels cost excesses at the project level. More conceptual research is also analyzing the changes in the global market structure characterized by an increased domination of this market by a few players. Celentani, Ganuza, and Peydro (2004) develop a model consistent with the fact that an increase in competition in international business transactions can increase corruption in the sector.

Most of the evidence offered by these surveys is however anecdotal and indirect. There is no real systematic measurement of the level of corruption in the sector. With the exception of a database compiled by Clarke and Xu (2003) for Eastern Europe and some sense of the ranking of utilities among corrupt institutions from the *Global Corruption Report* (2004), the annual *Global Competitiveness Report* provides the only comparable, quantitative, multi-country (59 developing countries) overview of corruption in infrastructure sectors, ranking countries according to the perceived degree of corruption (based on interviews with private firms) among many other criteria.

What can be done to reduce corruption in infrastructure? Four main directions in has been suggested. These are: (i) privatization, (ii) regulation and related processes, (iii) increased decentralization, and, (iv) adoption of participatory process in the selection, implementation, and supervision of projects. In each of these areas cross-border cooperation can significantly improve efficiency and reduce costs, including trading costs.

If we wish to attain more precision in future research on corruption in infrastructure and its impact,, some preliminary work needs to be done first. In this effort, there are at least two areas in which basic work is likely to pay off significantly. The first one is data collection, refinement and organization according to some given theoretical framework. There is a significant body of theoretical work in microeconomic theory, corporate governance and related areas that can be used as a starting point for this. Secondly, and at least equally important is the empirical effort that will also be necessary. Empirically, the measurement of corruption levels in the infrastructure sector is still generally approximated by the level of corruption in the country. More direct data are needed.

The assessment of the effectiveness of the policy instruments for the infrastructure sector depends crucially on refining data in ways described above. Once such data are available, accurate estimates of the impact of corruption on trading (and other) costs can be computed by using state of the arts econometric methods.

We concur with Estache(2006) with regards to the assessment of theoretical work in this area and the need for empirical evidence:

The main message of this discussion of the effectiveness of theoretical solutions may be that there is not enough evidence to get a sense of how much and under what circumstances each one of them really matters. When evidence is available, it is too narrow or not robust enough. This defines an important research agenda for the sector. Finding out more about the actual effectiveness of the theoretical recommendations on how to deal with corruption in the sector should be a higher priority.

Therefore, estimating the impact of corruption on trading costs empirically looms as an important research task. At our present state of knowledge, one could begin with some existing (unrefined) index of corruption as a right hand side variable and run regressions on a cross-sectional basis to see what the impact of corruption (*ceteris paribus*) on trading costs may be. Even at this level a rather extensive cross-section data set on a number of variables including governance, corporate governance and industry-specific indicators will be necessary. But the pay off is likely to be large since the existing state is one of theoretical deductions of limited applicability at best, or following one's prejudices with a few anecdotes for support at worst. As mentioned earlier, more refined data on corruption in infrastructure in particular will lead to more accurate empirical estimates of

its impact, and hence, one hopes, to better--- or at least better informed--- policies.

Soft Infrastructure, Trading Costs and Regional Cooperation: a final observation

All three related areas of soft infrastructure discussed so far can lead to a significant reduction in trading costs. Once the relevant data are available this plausible hypothesis can be specified econometrically. With further testing we will be in a position to assess existing policies in the area of soft infrastructure reforms. Turning to trading costs in particular, we saw that that trade costs were thought to be more important than policy barriers to trade. We could test whether this was true particularly for soft infrastructural factors related to trading costs, thus providing a deeper explanation for Anderson and Wincoop's (2004:693) claim that 'inferred border costs appear on average to dwarf the effect of tariff and non-tariff barriers'.¹⁰ Regional cooperation in the soft infrastructure as a broader policy area could also be assessed for effectiveness econometrically. Furthermore, there are also economy- wide modelling approaches that can be used for these and other purposes including assessing the impact of regional cooperation in infrastructure on poverty reduction as well.

Infrastructure Reforms, Trade Costs and Poverty Reduction: CGE Modeling

We also wish to emphasize that soft and hard infrastructure reforms and the consequent reduction of trading costs do not happen in a vacuum but that they also have an impact on the poor through their impact on other markets (such as the labor market and investment savings market) that matter to the poor. These feedback effects are potentially significant for poverty reduction.. Models that can carry out counterfactual policy experiments and estimate their impact on poverty , making possible an economy-wide analysis, are needed. Computable general equilibrium (CGE) models are increasingly becoming a useful analytical response to these needs. At the ADBI, we have carried out such modeling exercises with respect to trade liberalization and its impact on poverty (Cororaton 2005, 2006; Khan, 2004, 2005, 2006) . In general, through a simultaneous and recursive equations system structure, the CGE models can simulate economic and social impacts of reforms and are based on the socioeconomic structure of a social accounting matrix (SAM), with its multisectoral disaggregation. As illustrated in Khan(2004), for example¹¹, The basic idea behind a SAM is to identify the linkages in an economic system. The basic elements when constructing a SAM are input-output tables combined with government accounts, labor

¹⁰ It may be recalled that their 'representative' international trade costs for industrialized countries, a combination of transport and non-transport costs, are as high as 74%, compared with average tariffs of less than 5%. Of these international trade costs roughly one third are transport related and the rest cover the various types of trade cost listed in box 1. This rough figure of 74%, which is no more than illustrative, can be interpreted as the sum of r_i and n_i in (1) above. If international trade costs for inputs are below those for outputs the representative effective protection rate created by trade cost will be higher still

¹¹ See also the references cited there.

force and household surveys. The household surveys are crucial for performing impact analysis on welfare and poverty. How deep the analysis can go depends on data availability. The CGE literature on the effects of public infrastructure service reform is rather modest: Adam and Bevens (2004) for Uganda, Boccanfusso et al. (2006) for Senegal, Chisari and his colleagues (1999, 2003) and Navajas (2000) for Argentina, Andersen and Faris (2002) for natural gas in Bolivia, and Lofgren and others (1997) for rural Morocco. Their main contribution is to show the importance of infrastructure for achieving the MDGs and also to show that good regulation can be redistributive and progressive. Multicountry CGE models for particular regions can also capture the impacts of regional cooperation in hard and soft infrastructure areas.

Summary and Conclusions:

This paper has attempted to provide a framework for considering how soft infrastructure can contribute to the process of regional co-operation in various parts of Asia. Following Weiss(2006) and Khan and Weiss(2006) it has drawn on the familiar formulation of the effective rate of protection – developed decades ago when tariffs and quotas were serious barriers to trade – and argued that this concept can be modified to quantify the empirical significance of broader trade cost barriers. The effective rate of protection concept is flexible enough to allow the effect of a range of potential trade costs to be addressed. Soft infrastructure interventions can be interpreted as instruments to lower trade costs and hence are a means of stimulating closer trading links.

In this paper I have emphasized specifically the relationship between **soft infrastructure** and trade costs. Clearly, much work remains to be done to quantify the impact of trade costs on both on domestic value-added and through protection on trade flows. The basic policy point is that if we have a clear indication of the height of the barriers posed by different types of trade cost this will give us a rough ranking of priorities in terms of soft infrastructure interventions to lower these. Whilst a vast amount of empirical work in the 1960's and 1970's quantified the barriers to trade caused by tariffs and quotas, as yet relatively little has been done to quantify protection from these largely institutional barriers.

This paper has identified several crucial areas of future research with potentially large value added. My general hypothesis with significant policy implications which can be elaborated and tested is that **trade costs are negatively related to the existence of and improvements in soft infrastructure**. A related hypothesis is that cross-border cooperation in building and maintaining both hard and soft infrastructure synergistically will lead to a reduction in trade costs. More specifically it will be useful to know the how high are the barriers to trade created by factors like high freight costs, slow port handling, customs delays, lack of competition in the insurance sector, poor corporate governance, unofficial payments and so forth. Some of these factors may be intrinsically difficult to quantify but the potential pay-off from policy-relevant research of this type is enormous. Optimal policies for regional cooperation in soft infrastructure will be difficult if not impossible to formulate in the absence of this type of research.

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