ADBI Annual Conference 2006
"Infrastructure for Regional Cooperation"

A Summary of the Conference Proceedings

The 2006 ADBI Conference on Infrastructure for Regional Cooperation was held in the ADBI conference facilities in Tokyo, Japan last 08 December.

The seminar subject area of infrastructure for regional cooperation brings together two key development issues: infrastructure and regional cooperation. There are clear signs of a resurgence of interest in infrastructure in developing countries, while regional cooperation and integration are key issues facing the Asia-Pacific region.

Infrastructure fosters economic growth, strengthens inclusiveness, and reduces poverty. Especially, infrastructure investment facilitates regional economic integration, which motivates regional cooperation, including cooperation in infrastructure development, generating a virtuous cycle.

In response to the above, the Asian Development Bank Institute places special emphasis on Infrastructure for Regional Cooperation. Topics within this field specialization include studies of cross-regional interest, i.e., research work with relevance for several countries or sub-regions in Asia and the Pacific, relating to any of the main areas of infrastructure management that are currently key challenges in ADB's developing member countries. Specific infrastructure sectors covered include communication, water, transport, and power, while regulatory frameworks are also addressed.

The 2006 Asian Development Bank Institute Annual Conference focused on some of these issues. In particular, the conference examined issues related to external financing and governance of infrastructure, and infrastructure's effects on trade and poverty reduction. The presentations and discussions provided important inputs to a major study by the Institute on infrastructure for regional cooperation, which will be launched in 2007.

Welcoming Remarks
By Dean Peter McCawley

The concept of infrastructure for development has been floating among scholars and development institutions for more than a decade now, but sadly, there have been no significant accomplishments in this area. There is reason to be optimistic though, as there is now a more serious consideration for infrastructure as an important area for development and addressing poverty. Among the research works done currently are: "Connecting East Asia, New Framework for Infrastructure" by Japan Bank Institute for International Cooperation (JBIC) and "Enhancing Regional Cooperation and Infrastructure" by the United Nations Economic and Social Development in Asia and the Pacific (ESCAP).

There are four main issues in infrastructure provision. The first one is access to infrastructure which remains a major challenge for the poor. Inadequate or nonexistent access to water, sanitation facilities, electricity, and roads of billions of poor people in the world is indeed disturbing. It is often thought that price is the chief barrier to the poor's access to infrastructure.

However, the poor are actually willing to pay even at higher prices to avail of basic utilities that are necessary for decent living such as water. Furthermore, governments seem to put too much emphasis on providing "high-quality" types of infrastructure that does not necessarily meet the poor's requirements. To give a clear picture of this is to say that it is more important for people to have bicycle/walk paths than parking facilities. The key is for the government to be able to effectively meet the specific infrastructure requirements of the poor.

The huge financial requirement of infrastructure is another issue. It is estimated that East Asia needs $200 billion per annum to meet their infrastructure needs. Developing countries are supposed to allocate 5-6% of their GDP to provide sufficient levels of infrastructure but typically, the allocation is only 2-3% of their GDP. It is projected that the private sector will only contribute $20 billion while foreign aid will not fill a significant gap. Therefore, there is a crucial need to promote good financial markets as a source for public financing of infrastructure. Utilities' self-financing scheme is likewise laden with challenges. Collection of fees is often difficult because of the "free-riding" problem. This is not only rooted in the mentality that access to the infrastructure/utility is a right, but also in the high fees for infrastructure/utility in developing countries. Thus, pricing is another important issue. The challenge is to provide good infrastructure at reasonable prices.

Governance and management is also a major issue in infrastructure provision. Typically, utility companies are state-owned and state-owned enterprises are perceived notorious in mismanagement. However, even private monopolies are not immune to mismanagement. The issue is then less about ownership but more on efficiency. The focus should be on improving productivity of the utilities sector.

Session I. Panel Discussion on "Infrastructure in Asia: What Role for Bilateral and Multilateral Development Banks?"
Moderator: Peter McCawley (Dean, ADBI)

"Infrastructure in Asia: What Roles for Bilateral & Multilateral Development Banks?"
by Teruyuki Tanabe (Executive Director, JBIC Institute)

Bilateral and multilateral development banks have three roles to play. First is the catalytic role to attract private investments in infrastructure. Private sector is generally positive on investing in infrastructure and they can be lured back if right policies are implemented and risks are addressed. The second role is as financier especially for relatively low income countries and those in financial difficulties. The third role is as a reliable partner for formulating and implementing better policies and institutional arrangements.

The virtuous cycle that investments in infrastructure create should be recognized: more spending for infrastructure increases economic activities which increases revenues which then increases tax collection providing more fiscal space for other national priorities.

"Infrastructure for Regional Cooperation in Asia: The Role of ADB"
by Masahiro Kawai (Head, Office of Regional Cooperation and Special Advisor to the President, Asian Development Bank)

Economic development requires infrastructure which can further stimulate economic growth and development. The current expansion of East Asian production clusters and networks requires both

national and cross-border supporting infrastructure (such as transport and logistics). The current estimation of Asia's infrastructure needs amount to $300 billion per year.

Infrastructure provision used to be limited to physical structures such as roads, airports, seaports, and dams. However, it has been currently realized that sound "software" infrastructure is needed to make "hardware" infrastructure efficient and effective. "Software" infrastructure refers to legal, regulatory, policy and procedural components of providing "hardware" infrastructure. The infrastructure plan should be part of a national, comprehensive development program. To attract private investments, there must be an enabling regulatory and policy environments. In infrastructure financial management, accountability and transparency are required. To induce countries to work together for cross-national infrastructure, there should be institutional arrangements that will ensure fair distribution of costs and benefits across different stakeholders.

Public sector financing is important but will decline relative to private sector financing. The role of the public sector will focus more on setting the right enabling environment for private sector participation.

There is a need to prepare "bankable" projects. One of the basic problems facing private investors is the lack of good quality information on projects. Investors need to know that projects are well planned, financially viable and prepared to international standards. To finance these "bankable" projects, Asia needs mobilize its massive savings through bond market development and better use of its huge foreign reserves which is currently standing at $3 trillion.

ADB supports Asia's infrastructure development by playing various roles. As a money bank, it provides loans and guarantees, catalyzing the private sector investments. Drawing from its regional and global experience, it is also a knowledge bank offering policy and technical advice and supplementing this role is as a capacity builder for "software" infrastructure. Another crucial role of the bank is as an honest broker that coordinates the multiple stakeholders of a project. The ADB is a neutral institution that can provide objective assessments of a project's costs and benefits. Indirectly, ADB supports infrastructure development through its assistance to improve overall investment climates and bond markets. These roles are not equally important; ADB's direct "money bank" role is diminishing while its other roles are becoming more critical.

"Infrastructure in Asia: What Role for Bilateral and Multilateral Development Banks?"
by Fausto Medina-López, Deputy Representative, IDB Office in Japan

Infrastructure promotes physical integration at the country level and across countries, enhancing regional cooperation and international trade.

Asian countries as those Latin American countries have yet to develop shared integrated strategic vision of cooperation and planning for regional infrastructure.

Asia's infrastructure investment needs are very large. Regional and bilateral development banks can play a role in helping Asian countries to improve their development of a shared strategic vision for regional infrastructure development, enhance their policy frameworks, improve resource allocation to priority projects and improve business climate and regulatory frameworks.

Session I Questions & Comments:

Dean McCawley gave the following comments:

- Elimination of trade barriers alone is not sufficient to address development, it is also important to provide supporting infrastructure.
- Since multilateral and bilateral development banks cannot provide large volumes of finance, its role as facilitator of finance should be given more emphasis.
- Asia can learn from the experiences of Latin America.
- Infrastructure for regional cooperation not only within Asia but across other regions.

Prof. Khan inquired about the particular problems/challenges in financing infrastructure. Then related to this, Mr. Brooks requested information on the specific initiatives to address these problems.

According to Mr. Kawai, the first issue is identifying bankable projects without which, it is difficult to attract the private sector. Then the second one is how to mobilize the excessive savings in the region to finance bankable projects.

Mr. Kawai cited the Asian Bond Market Initiative (ABMI) Program by the ASEAN+3. The ABMI working group is putting forward the importance of a regional guarantee institution and is studying the possible modalities. When done, this regional guarantee institution will be beneficial to the private sector and will induce them to look at long-term horizons. Another working group is looking at the possibility of a settlement and clearing house for Asian bond markets.

Mr. Anthony Rowley from the audience asked how to directly link corporate tax collections from to infrastructure financing. Dean McCawley opined that additional tax is not a good idea as investors are tax averse.

Another observer requested clarification on the meaning of "infrastructure for regional cooperation". Is it infrastructure to induce regional cooperation or regional cooperation to build infrastructure? Mr. Brooks explained that it is actually both. Infrastructure investment facilitates regional economic integration, which motivates regional cooperation, including cooperation in infrastructure development, generating a virtuous cycle.

Mr. Kawai responded to a query on what should be the new role of public sector specifically of public corporations in infrastructure provision. According to him, although the public sector will continue to hold an important role, the private sector's role is going to be more essential. There is a need to create an environment where the private sector feels comfortable with public corporations. Any infrastructure management has to be transparent or accountable enough to attract private investments. Public-private partnerships can close infrastructure gaps.

Mr. Tanabe pointed out the increasing number of bilateral banks in Asia and suggested that they be invited in future related conferences.

Session II. "How much does Infrastructure Aid Regional Growth and Cooperation?"
Chair: Woo Chull Chung (ADB/JRO)

"What do we mean by Infrastructure for Regional Cooperation?"
by John Weiss (University of Bradford)

The link between infrastructure and growth works in many ways. For example, infrastructure expands markets, increases access to inputs increasing return on investments. However,

institutions/soft infrastructure is also crucial as econometric evidence shows that both hard infrastructure and institutions are positively correlated with growth.

Regional cooperation increases trade and investments among countries. The question is how infrastructure activity can strengthen trade and investment among countries.

Cross-border trade cost is a trade barrier. The higher the cross-border trade cost the harder to move goods across borders and discourages export-oriented investments. Trade cost barriers are sometimes more significant than policy-induced protections.

Infrastructure-related trade costs include transport costs, freight insurance, custom delays, unofficial payments and time in transits, information search and management of supply chain, excess inventories, and currency changes. Thus, there is a need to invest in efficient ports, roads, rail and air links; regulate insurance; harmonize procedures; reform governance; improve investment climate; and regulate the financial sector.

Trade protection has impact to a good's value-added. The effective rate of protection of trade policies such as tariffs and quotas may be outweighed by trade costs.

There are many possible ways to estimate trade costs including case study approach, CIF/FOB comparison which is relevant for transport and insurance, direct shipping quotations and index of infrastructure quality in a gravity-type model.

There is a strong growth of intra-regional trade in Asia but trade costs still pose significant barriers. According to a modeling exercise by Brooks et al (2205), trade efficiency by reducing trade costs offers much greater growth potential than tariff reform. Ng and Yeats (2003) found that East Asian trade partners are not trading intensively as expected given the distances involved. Gravity models usually find a proxy for trade costs as a significant factor in explaining trade flow. Fujimura and Edwards concluded that trade is highly elastic to road density.

Poor hard and soft infrastructure that translates to high trade costs impacts the incentive to invest.

Discussant: Douglas Brooks

- Besides cross-border flows of goods, the human dimension or labor migration should also be considered
- In multilateral and bilateral agreements, more harmonization is needed even before standardization of customs procedures, competition policies and environmental standards.
- Time element is more important for certain types of goods such as perishables but time of delivery of women's clothing is also becoming critical due to rapid changes in women's fashion.
- Reforms to improve trade even if marginal can have significant impacts to growth
- Support infrastructure spur greater innovation as it opens up opportunities to see new products and improve them.
- It is very difficult to measure trade cost for service.
- In studying trade costs, the aggregate approach can be used in tandem with the case-study approach as different countries have different issues.

"Does Road Improvement Reduce Poverty? A CGE Analysis for Lao PDR"
by Jay Menon, ADB Institute

Lao PDR was selected for this study as it is a classic example of small landlocked economy where the role of infrastructure can be very critical for economic growth. The country's infrastructure is the poorest in the region but this cannot remain a status quo as it is in the middle of the Greater Mekong Subregion (GMS). Laos' poor connectivity affects the fullest growth potential of the GMS.

Road quality is very poor in Lao PDR; less than 20% of the total network is paved and almost the whole network may not be passable during the wet season. Three types of road quality are distinguished: (1) no vehicular access, (2) dry season only access and (3) all weather access. Most recent road improvements have involved conversion from dry season to all weather access roads. While the percentage of household with no road access remained about the same at around 31%, the ones with all weather access increased from 40% to 50.2%

Based on data from a large ADB project in Champassak, it is estimated that conversion from dry season to all weather access reduced transport costs by 50.25%. From the work done by Starkey (2001), it is expected that transport costs fall by 65.5% going from no road to dry season access roads.

LaoGEM is a CGE model of Johansen class that was used for this study. It is based on the ORANI model of the Australian economy and its detailed structure is similar to prototypes for Thailand (PARA) and Indonesia (WARANG). There are 20 single-output industries used which include 3 agriculture, 1 mining, 7 manufacturing, and 9 services and utilities industries of which one is transport. Households were grouped into 4 categories, 1 urban and 3 rural, with each rural distinguished by the 3 types of road access. Each category is further sub-divided into 100 (centile) groups, with a total of 400 household groups. The assumptions are that labor is fully mobile across sectors and that there are 3 types of capital, one is mobile within but not between industries (fixed capital), the second one is mobile between agricultural industries but not between agricultural and non-agriculture industries (agricultural mobile capital) and the third one is mobile between non-agricultural industries but not between these and agriculture industries (non-agricultural mobile capital). Period of adjustment is therefore short to intermediate, about 2 to 5 years time horizon.

To get a national I-O table, the 20-sector, I-O table produced by ADB for Savannaket province and RAS it using National Accounts data for 2002. Therefore, the structure reflects the industry structure of Lao PDR, but within each industry I-O technology reflects that of Savannaket. SAM is thus based on this I-O table, 2002 National Accounts LECS3 survey data and various trade data.

Four simulations were conducted; the dry to all weather, the no road to dry, and the last two were sensitivity tests for the no road to dry. The no road to dry delivers a bigger impact to GDP and consumption and poverty incidence.

The study concludes that reducing transport costs through rural road improvement generates significant reductions in poverty incidence through improvement of income earning opportunities of rural people and through reduction of costs of goods they consume. However, it is important to consider the type of road improvement –whether dry to all weather, or no road to dry –in assessing the impact on poverty. Although both forms of road improvement are important and contribute to overall poverty reduction, reducing transport costs for households without access is highly pro-poor, but his type of road improvement is likely to be much more costly especially that

Lao PDR's terrain is mountainous. Unless it is, on the average, 17 times more expensive, then future investment should shift to providing road access where there is currently none, if the focus is on poverty reduction.

Discussant: Prof. Haider Khan

- Basic concern is the consideration between two types of policies, the dry to all weather and non to dry
- Since Lao PDR is mountainous, the kind of weight that may be put on benefits of providing roads may be high
- A more careful modeling may be done. The labor assumption must be refined as it is in fact difficult to be mobile in remote areas. The households may be further classified.
- It will be more meaningful if a real I/O table will be used

Session III. "Transport Infrastructure –Connecting Asia"
Chair: Sununtar Setboonsarng (ADBI)

"Trans-Asia Transport Issues and Policy Analysis"
by Tsuneaki Yoshida (Tokyo University) and Liqiang Ma (ADBI)

Prof. Yoshida described the economic growth of Asia, in particular, the fast growing international trade among Asian countries. Consequently, the volumes of Asian freight cargos are also increasing significantly. Until the year of 2003, there are 22 Asian ports among top 35 ports in the world. These huge demands put big burdens on transport infrastructure in Asian. Referring with Trans-European transport network, Asia also needs its trans-Asia transport network urgently.

In order to answer how to deicide the investment priority on the trans-Asia transport network, meanwhile, to analyze the impacts of international trade policies and other infrastructure policies on the freight transport network, university of Tokyo and other research institutes made a research team and conducted a research on 'an integrated modeling of international trade and freight transport network and its policy appraisals'.

Dr. Liqiang MA, as a member of this research project, he introduced the model system, and showed two cross-border transport policies applications of this model system at Great Mekong Subregion network, which can quantitatively analyze the traffic flow changes on the network once these policy implemented. The results demonstrated the road condition improvement and cross-border time reduction will have a great impact on the network in terms of traffic flow pattern, which can be a good tool for the policy maker.

"Capacity Development for Cross-border Infrastructure"
by Tamaoki Watanabe (JICA)

JICA conducts basic research and development about cross-border transport infrastructure. Although JICA is a bilateral donor, due to the expanding regionalization and trade, the agency now has to take into account issues on a regional perspective. For instance, JICA has a development study in Cambodia, the Second Mekong Bridge, located in GMS Southern economic corridor. JICA will evaluate economic improvement and see the negative effects in the region, specifically to Thailand and Vietnam. JICA has to consider not only the direct impact of infrastructure but also multisectoral impact and required capacity development.

JICA's training on CBTI for government officials will start in 2007 and a review of administrative procedures to support CBTI is on-going. Currently JICA has a research study on CBTI. However, JICA does not have so much experience in CBTI, this it will collaborate with ADBI and ADB.

Questions & Comments for Session III

Chair Setboonsarng (ADBI) considered "Trans-Asia Transport Issues and Policy Analysis" as a paper that uses frontier operational research tools which is gaining ground in Japan.
She further inquired on the other important elements to realize the regional common transport policies. Professor Yoshida replied that the important element is institutional, i.e., the authority that will be responsible for analyzing and recommending the regional common transport policies. Finally, she shared her observation that more containers are moving in Asia than in Europe and thus inquired on factors relating to evolution in technology that may be causing Asia's movement in this direction. Prof. Yoshida believes that, most Asian countries are benefiting from their backwardness, their current development and expansion however made them jump to the use of the latest transport system which is container. The container can be used for any mode of transportation.

Dean McCawley inquired on what would be the key issues that the trans-Asia transport model could be used to examine. Prof. Yoshida responded that the most important issues are investments, improvement of road condition, cross-border points, time-reduction at cross border, and maintenance of networks.

Mr. Menon requested clarifications on the assumption used for the findings on the increased in speed on roads. Prof. Yoshida clarified that trade volume and origin and destination were held constant, while shifting the transport mode transport to overland transport. The exact condition of road network was not taken into account as they were not able to access information on this.

A representative from Japan Construction Information Center inquired on how much infrastructure development will be of the inland type to help rural development. Prof. Yoshida said that they will make the model more sophisticated to cover more roads; initially the model will only cover East Asia but would later on include South Asia then eventually, the whole of Asia.

Session IV. Key Issues in Infrastructure: Governance and Finance
Chair: Takeo Shikado (IADB)

"Macroeconomic Effects of Infrastructure Financing: A Tale of Two Countries"
by Douglas H. Brooks (ADBI)

The study looked at India and China, the two countries with largest economies in developing Asia, with largest population in the world, and with economies growing rapidly. The role of infrastructure is starkly growing, amidst rapid urban migration and urbanization as infrastructure development is mainly taking place in the urban area.

The countries' experience on financing infrastructure investment is compared and contrasted and the macroeconomic impacts of public infrastructure investment are quantified.

In India, the asymmetry between revenue sources and expenditure responsibilities stand-out. In China much of financing for infrastructure spending comes from extra budgetary funds or non-tax revenues. A key characteristic of India is that public sector is a net dis-saver and the high public debt makes it difficult for the private sector to carry on public sector investment. Infrastructure investment in Beijing is fourteen times in Mumbai.

The study considered different modes of financing infrastructure, in particular, consumption tax and income tax based on labor income and debt financing using dynamic CGE model.

There are 72 generations each one starts in different year. Public infrastructure is used as factor of production in the private sector and international trade in goods and services is explicitly specified in the model. Public infrastructure was used because it is easier to get data on this and also considering that 90% of infra spending is from public sector.

In the production sector, the Cobb-Douglas production function, decreasing rate of returns, maximization of the present value of the firm were assumed.
In the household sector, labor productivity as differing with age, intertemporal utility maximization, risk aversion, endogeneity of labor supply, exogeneity of death and no annuity market were assumed.

In the case of the government, the assumptions were that it collects taxes, purchases goods and services, makes investment and issues debt; it provides infrastructure to firms; it faces no Ponzi-scheme constraint and that in the long-run, government debt/GDP ratio is fixed, and tax rates or lump-sum transfer are endogenous to balance the budget constraint.

For the foreign sector, the assumptions were that it follows the Armington structure for international trade; exports in each region are constantly elastic and that the capital account is closed.

The model is a dynamic equilibrium, that all commodity and factor markets clear, the first order conditions of households and firm's decision problem is satisfied and a steady state will be reached in 250 years. It solved over 150 thousand equations simultaneously. The model is also a calibrated equilibrium, i.e. it assumed that the economy in base year is temporal path equilibrium along a dynamic adjustment path.

The policy experiments that were done are doubling the public investment in infrastructure as a percentage of GDP to a level that is equal to that in OECD countries and the use of alternative financing modes.

The results of the simulations for both countries show similar patterns about the effects of public infrastructure investment and the implications of alternative financing modes. However, the quantitative differences between the two countries' result reveal their different underlying economic structure. The long term gains are generally bigger in India with its smaller infrastructure stock and public infrastructure investment, doubling investment in infrastructure requires less resources; its lower investment to GDP ratio, thus, lower capital adjustment costs; and its lower saving rate, thus similar increases in interest rate lead to a larger increase in saving in India. However, debt financing is more costly for India. Higher government debt in India results in stronger initial crowding-out effects on private investment and higher debt ratio translates into higher consumption tax rate in the long-run, which discourages labor supply.

The paper concluded that public infrastructure plays and important role in long-term output and investment but its effects depend on the particular financing mode of public infrastructure investment. Consumption tax financing is the best option in terms of promoting long term output growth, but it involves larger short term costs for existing older generations. Debt financing is favorable for intergenerational equality but may have undesirable long term effects. In general, India can benefit more from public infrastructure investment given its relative scarcity of public infrastructure. Its high existing stock of government debt renders debt financing the least attractive option.

"Regional Cooperation, Trading Cost, Governance and Soft Infrastructure"
by Haider Khan (University of Denver)

The main thesis of his paper is that development of institutional framework is essential for linking hard and soft infrastructure.

Infrastructure impact economic growth by widening access to markets (through better road, rail and port network); increasing access to inputs (e.g. increased energy supplies); raising incentive to invest; better regional cooperation and higher trade and investment.

Trading costs comprise the range of costs involved in moving a product from a point of production to a market. They refer to both domestic and cross-border transactions of goods and services. They influence cost competitiveness of goods and investment returns from exportables. International trade costs form a potentially important barrier to trade, increase natural protection and distort relative prices of products with efficiency implications. There is a fairly strong elasticity of trade to declines in trade cost. Thus, it is strategic for regional cooperation in the formation of regional trade blocks like NAFTA, EU, ASEAN etc.

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. Soft infrastructure along with hard infrastructure can work to enhance the capabilities of citizens.

There are 3 components of soft infrastructure. The first one is governance which refers to institutions and processes which helps to make collective decisions and solve collective problems. It has significant implications for the supply and management of infrastructure. The WB identified six dimensions of governance falling into three categories which are (1) process of governance: voice and accountability and political stability and absence of violence (2) capacity of government to deliver: government effectiveness and regulatory quality and (3) the trust and respect of citizens: rule of law and control of corruption.

The second component is corporate governance which 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. Corporate governance, in a broader perspective, 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. It is important in the context of public-private partnership (PPP).

There are three corporate governance systems. The family based corporate governance system (FBS) that is prevalent in Asia is a governance system where financing comes from three different sources, i.e. family banks and equity markets. Contrasted with bank-led system (BLS)

and EMS (equity market based system), which are closely associated with dominant mode of corporate finance by banks and equity markets respectively. The key difference between FBS as a governance system and BLS and EMS lies in the fact the neither the banks nor the equity markets ultimately control the family business groups.

Information asymmetry, monitoring and investment issues are important for FBS type of governance. These are even more critical in infrastructure projects as these are very large investments and are highly specialized. Usually, the financing party does not have full information about the viability of the project. It is necessary to figure out how the mechanism of FBS may influence infrastructure provision and delivery. There are proposals on how to achieve this. One is to include an outsider among the board of directors the board and another is making the role auditing committees more effective.

The final component is corruption which is separated out of governance to emphasize its importance. Corruption deals with accountability for governance failures. Existence of corruption in public sector infrastructure delivery and management is based on the phenomenon of low wages in the public sector. The widespread corruption among public monopolies in the infrastructure sector is often one of the arguments used to advocate privatization. However, both private and public monopolies have structural witnesses. Monopolies are basically competition and oversight averse. What is important therefore is to create competition and strengthen oversight or regulation. The optimal level of regulation should be determined (to avoid under or over regulation) probably by a partnership between economists and scholars in administrative and political science. The adoption of participatory process in the selection, implementation and supervision of projects is also crucial to help reduce corruption.

To estimate the effects of infrastructure reforms on trade costs and poverty reduction, a CGE modeling may be used. However, identifying the kind of CGE specification is necessary as well as identifying trade and transportation margins, choosing between static versus dynamic specification, selecting between Walrasian-flexible types and Keynesian-structural types on pricing, and performing model varieties of trade and financial regional cooperation policies.

The paper attempted to provide a framework for considering how soft infrastructure can contribute to the process of regional cooperation in various parts of Asia. It also identified several crucial areas of future research with potentially large value added. Two key hypotheses may be examined which are that trade costs are negatively related to the existence of and improvements in soft infrastructure and that cross-border cooperation in reforming, building and maintaining soft infrastructure will lead to a reduction in trade costs.

Questions & Comments for Session IV:

The discussant Prof. Yoshiaki Abe of Waseda University suggested to Mr. Brooks including a calibration of income groups in the CGE model to determine the effects of different financing options for infrastructure provision to the rich and the poor. The idea is to test not only efficiency but also equity effects. Prof. Abe likewise suggested considering the level of maintenance of the infrastructure. Dr. Brooks agreed to the views and comments of Prof. Abe. However, including in the analysis the maintenance of existing infrastructure may not be viable as it will be very difficult to collect data on this. Nevertheless, Prof. Yoshida may possibly help in providing the data on quality of infrastructure considering that he has at present an army of researchers on infrastructure in Asia.

On Prof. Khan's paper, Prof. Abe commented that key to governance is addressing first operational efficiency of existing assets even before obtaining new assets. He further added that we should act on daily available data before looking at larger issues. Prof. Khan concurred with Prof. Abe's suggestions on relating the problems conveyed by daily available data with governance and soft infrastructure issues. Prof. Khan will therefore incorporate this point in his paper.

Prof. Yoshida inquired whether governance issues can be applied to hard infrastructure as either community infrastructure (e.g. water services) or network infrastructure (e.g. high ways and transmission lines). Prof. Khan opined that the governance issues are applicable to both but in community-type infrastructure, lack of soft infrastructure is more detrimental to equity considerations.

A student commented that we may be addressing very specific economic problems such as high trading costs by trying to solve very broad issues such as soft infrastructure, governance, and corruption. He suggested that the problems in infrastructure provision may be tackled by adopting market-oriented policies. Prof. Khan however reasoned that there should not be a dichotomy of governance and markets. It is actually markets **and** governance not markets **versus** governance.

A question was also raised on why the financial sector is missing in the discussions on infrastructure provision. Prof. Khan clarified that the corporate governance side also deals with the financial sector firms and not only with the real sector firms. Meanwhile, the areas to address governance and corruption must also include the flaws in the financial sector. For instance, the recent financial scandals in the US such as the savings and loans scandal and the Enron scandal are pointing to the requirement of improving governance in the financial sector. Improving governance in the financial sector may be a pre-condition to improve the governance in the real sector.

Closing Remarks from Dean McCawley:

The sessions covered a range of relevant issues on infrastructure provision. Now that there is a rediscovery of the importance of infrastructure issues, it is anticipated that there will be more discussions in this area. The question is: what has taken us so long? Anybody could see the tremendous difference between the supply of infrastructure between developed and developing countries.

It is necessary to remain dedicated to providing decent amounts of infrastructure in developing countries. The talk on pro-poor growth and poverty policies are all relevant but certainly the provision of infrastructure, of access to water of children and women is in general a fairly pro-poor policy.

Looking ahead, it will be immediately obvious that responding to infrastructure demands will pose a tremendous challenge in various ways not only in financing and policy aspects but also in other incredibly worrying aspects of infrastructure provision. For instance, to supply the huge requirements for power of rapidly developing countries such as China, the predilection will be investments in coal-based power plants, which is likely to use dirty coal considering that it is cheaper. The world then will face another burden to its already deteriorating quality of environment. Thus, there is a whole range of issues that will keep us interested in infrastructure provision. The speakers were thanked in underpinning the importance of further work in this area.