INFRASTRUCTURE POLICY AND ECONOMIC GROWTH: CASE OF HONG KONG

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1. INTRODUCTION

Infrastructure or 'overhead capital' is generally held to be of two classes. First, social economic capital which includes most built facilities such as roads, railways, other air and water borne transport nodes and links and telecommunication systems. These have impacts on the efficiency of the economy as a whole by reducing the costs for which producers would have to pay to produce their goods.

A nation that lacks physical objects like factories, roads, and raw materials suffers from an object gap, which depends upon saving and accumulation (Romer, 1993). Specifically, Easterly and Rebelo (1993) show that investment in transport and communication is consistently correlated with economic growth after controlling for private investment. The relationship between factor demands and public goods was noted among others by Morrison and Schwartz (1996), who estimate the role of infrastructure in aggregate cost functions, and find that infrastructure reduces private production costs. They suggest that increases in infrastructure must more than keep up with output growth in order to have a positive productivity growth impact. Andrikopoulos and Loizides (1998) state that fast growing output enables exploitation of scale, minimizes the problem of redundancy and requires an influx of new capital which itself may embody improved techniques. Alternatively, Munnell (1992) argues that infrastructure policy should focus on eliminating current distortions and inefficiencies. Public construction was also utilized to achieve a balanced population growth between the central core and periphery of a country (Portnov and Etzion, 2000).

Investments in infrastructure are held to increase the efficiency and quantity of firms' production and distribution. This is traditionally portrayed as downward shift in the marginal cost curve. Hence, growth refers to an increase in the "quantitative level of activities and the scale of its associated social structures." However, economies also change structurally over time, for example, changes from agricultural to industrial societies and from predominantly manufacturing to services. In modern post-industrial societies there are increasing amounts of economic activity associated with information and knowledge based services.

Public capital enhances the productivity of private capital, raising its rate of return and encouraging more investment (Aschauer, 1989). For instance, transportation systems must enable manufacturing input and finished products to flow in a timely, synchronized fashion. Large-scale air-cargo complexes, seamlessly connected with efficient highways, modern seaports, rapid railways, and other aviation nodes can support manufacturing industries and more efficiently link them to their regional and global sourcing and distribution systems. Additionally, Buurman and Rietveld (1999) argue that improvement of transport infrastructure leads to better functioning of labour markets, which in turn may lead to higher labour productivities.

Land shortages are largely due to insufficient transport links. Highway planning is intimately connected with housing and economic development policy (Shmueli, 1998). A location with well established infrastructure will cause firms to cluster together at points in space which exhibit a high degree of centrality. The better a country's transport system,

the greater is the scope for internal specialization and division of labor, and the lower is the retail price of goods produced for the domestic market. There is evidence to support the contention that large, private-sector organizations in advanced economies have become increasingly concentrated in their major metropolitan centres (Stephens and Holly, 1981). The adequacy of infrastructure can be used as a measure of the productive capacity of a country. Under-built infrastructure should be developed to allow accelerated economic development. From a more practical point of view, faced with insufficient infrastructure, there will be an opportunity cost in terms of higher unit costs for the individual firm and lower output, employment and international competitiveness for the economy as a whole.

Hence, the infrastructure itself represents a durable asset which not only yields productive services over a number of periods, but also requires time to construct before it is ready to combine with other factors to generate a product. Thus investment in physical capital will be highly productive only if complementary factors of production are available. Another demand-related effect of infrastructure occurs in the field of operations and maintenance. The impact of a piece of infrastructure may transcend the boundaries of regions, as a certain region may benefit from an airport, even though these facilities are not located in the region itself (Buurman and Rietveld, 1999). Thus, trading activities may increase as a result of such spatial spillovers.

The high population density in the territory makes the provision and maintenance of infrastructure provision more economical. In order to stimulate the economy, the Government believes that increased expenditure on construction has "consequential benefits for individuals by providing employment opportunities" (The 1998-99 Budget).[1] To a certain extent, public work is being treated by the Government as an economic stimulant. Increases in public expenditure on construction and housing imply a steady stream of work for contractors and consultants. Major infrastructure projects cover airport, port, road, railway, harbour reclamation and station development. Above all, transport infrastructure projects are expected to take the lead in construction in the context of the slowdown in housing and commercial building at the bottom of the property cycle. These projects include both a number of strategic road links and mass transit systems. When completed, these major transport projects will significantly alleviate road congestion and improve intra-urban movements within the territory. The infrastructure projects will substantially enhance the development potential of vacant land along its alignment. This paper puts together a cohesive and comprehensive picture of where Hong Kong stands now with respect to infrastructure development. The interaction between the public and private sectors cannot be neglected. It is important to understand the role of government and the social costs and benefits of allocating resources to government use as opposed to allowing private enterprise and households to use those resources. The paper is aimed at bringing together the theoretical issues and the Hong Kong experiences that not only are of interest to developing countries, but which also seem to add up to something that might legitimately be called an integrated approach to public policy in infrastructure development.

The paper is organized as follows. The next section discusses government's role in infrastructure investment in Hong Kong, and draw attention to the trend for privatization of infrastructure projects. Section 3 discusses the factors affecting future construction productivity. Conclusions and the associated policy

[1] Among a basket of measures, infrastructure investment has been formulated and implemented to revive the local economy.

implications are summarized in the last Section.

2. GOVERNMENT'S STRATEGY IN INFRASTRUCTURE PROJECTS

Although infrastructure commands a wide resource base, the public finance principle of the Hong Kong Government is to restrict its increase in spending from exceeding the rate of economic growth. Total government spending, including both capital and recurrent has grown in line with GDP. As a result, public expenditure, which is maintained at about 18% of GDP, remains low when compared with other advanced countries. In its efforts to maintain this position, the government is therefore reluctant to use its fiscal reserve directly to boost the economy during the economic downturn.

Hong Kong has one of the most open economies in the world. More specifically, the construction sector occupies a similar position in the global context and is without doubt the most open in the region with no legal or institutional restriction on foreign contractors entering either the public or private construction markets (Raftery *et al*., 1999). There is and has been, no cap on foreign equity entering Hong Kong. Business competitiveness has been maintained through investment in effective infrastructure.

In recent years, the Hong Kong government has become very positive towards privatization. Moreover, the government realized that to maintain the pace envisioned for their economic and infrastructure development, the active involvement of foreign capital, technology and management know-how should be encouraged. Experience shows that a partnership between the public and private sector has yielded fruitful outcomes in infrastructure development. Under this partnership, the government is mainly responsible for providing a sound and stable investment environment, supported by a consistent regulatory framework and a low tax structure. The private sector, on the other hand, is expected to make the maximum use of its entrepreneurial and management skills to exploit the commercial opportunities arising. It is hoped that by so doing the government red tape can be minimized and maximum market efficiency can be achieved.

In the early stages of development, some developing countries require a wide range of projects, some of which their indigenous firms lack the capacity and expertise to undertake. Thus, they must rely on foreign firms to undertake the large and complex projects (Drewer, 1980). Partnership is generally suitable for infrastructure projects which demand a variety of techniques and knowledge. The formation of strategic alliances, in fact, is seen to be necessary because a construction firm cannot be expected to have all that is required to be effectively competitive. It may have a competitive advantage over others in some key areas but not in others. Thus the formation of strategic alliances would be an effective way of overcoming weaknesses or drawbacks that a firm may be exposed to in the increasingly competitive domestic or international setting. The United Nations Centre for Trade and Development (UNCTAD, 1996) suggests that partnerships have a potential use in transferring technology to developing countries. This approach could help polarize the financial and technical superiority of the developed countries and the corresponding inferiority of the developing countries. The construction industries of the developing countries will have to leapfrog in technology, finance and management knowhow. A possible approach is through joint ventures with developed countries' construction companies (Raftery *et al*. 1998). However, problems of technology transfer through joint ventures include: the complexity of technology and the transfer process; attitudes and abilities of transferees; motivations and practices of transferors; and government policies (Sharif, 1983).

Foreign business believes that their ability to form true strategic alliances is crucial for long-term access to the Chinese market. The Chinese partners possess important specialized local market information that the foreign investors

need. However, obtaining information in China is costly and time consuming for foreigners, particularly since much of it is not officially published, especially in foreign languages. Thus, the pooling of resources through joint ventures reduces uncertainty, overcomes market imperfection and constitutes a form of internalization. Against this background, the private sector has lot of opportunities in infrastructure investment in Hong Kong and Mainland China. Many strategic infrastructure projects are completed by the private sector, under the supervision of the Government and quasi-government bodies. They have largely been completed on time and within budget. However, experience of the operational problems associated with the opening of the new Airport in July 1998 clearly shows the complexity in managing these gigantic developments and the need for excellence in management and supervision.

Government spending on infrastructure made up a considerable amount of total expenditure. Among total government consolidated expenditures, she spent 25% to 30% on construction and building. However, the Asian financial crisis of 1998 has hampered the ability of the Government to fund infrastructure projects in Hong Kong. Property prices in the territory have fallen 50% from their peak in 1996. Consequently, the share of land-related fiscal revenue decreased significantly especially in 1999. Contractions in internal consumption cause great concern about future demand and financial viability of the many proposed infrastructure projects. Availability of private finance capital has become a major constraint. The total value of construction works has seen only moderate decrease, because the increased works on buildings has more than offset the decreased works on structures and facilities (Table 1).

It has been argued that, except in the cases of social need, the Government should not be in the housing production business, and the responsibility should, over time, be transferred to the private sector. Against this background, privatization of future infrastructure development becomes essentially an acid test of confidence in the private sector towards Hong Kong's future prosperity. Table 2 shows that private sector has participated quite extensively in various infrastructure projects. In so far as the domestic scene is concerned, these projects have had a fortuitous side-effect in providing additional employment to the current slacking economy in which unemployment has already risen to record high. In the light of the credit crunch and uncertainty associated with the local currency, the Government is required to play a greater role in financing these projects than previously. The widespread nature of such market imperfections challenges the assumption that infrastructure will be available wherever the businessman/industrialist chooses to locate. However, because of a likely reduction in government revenues due to the economic recession, government participation in infrastructure development has to be achieved in the context of much weaker public finances.

It is evident that railway infrastructure remains one of the most important investments for the Government. The Government plans to contribute substantial capital investment in major highway, rail, property, housing and port development. This is intended to improve the region's international competitiveness, and to achieve a desirable interregional population shift. In order to help raise the large sum required for investment in infrastructure construction, it is also important to seek ways to attract private sector funding and maximize available resources in the community.

Implementation of infrastructure projects in Hong Kong would be shared between the Government, various quasi-government bodies and the private sector (see Table 2). At the planning stage, the government has to ensure that the demand justifies level of provision. One of the main characteristics of infrastructure is that the *fixed* cost of providing the service is substantial whereas the marginal cost of providing access for additional users is

relatively small (Hillebrandt, 1979). It is thus important to ensure good value-for-money for resources committed. As these facilities are costly and take time to build, the government commits considerable resources in monitoring their demand and ascertaining the future requirements prior to making an investment decision. However, finding an appropriate implementation agent becomes a key consideration.

Different implementation agents are involved in particular infrastructure projects. However, in most cases, statutory or quasi-government bodies tend to take a leading role in implementing and managing development of infrastructure. These organizations are task forces established under specific ordinances, which stipulate their particular missions, responsibilities, resources, management structure and so on. The Government has a strong link with these bodies and provides the essential support in accomplishing their tasks. But these organizations are outside the government bureaucracy in their daily operations. As such, they can avoid the usual red tape and be able to exercise private sector flexibility in expediting project implementation.

There are a number of these quasi-government organizations in Hong Kong. An important example is the implementation of the new Airport project which is primarily under the Airport Authority (AA), supported by Mass Transit Railway Corporation (MTRC). The AA is a statutory corporation wholly owned by the Government.

The government is responsible for supervising and managing other private sector professionals and contractors involved in the actual on-site construction works. Among all strategic infrastructure provision, the private sector appears to have a much heavier weight in developing port facilities. Hong Kong is a free port. But it is also the only major world port not being run by a port authority. The Government is responsible for overall port planning and ancillary port services. Most of the major port facilities such as the container terminals and river trade terminals are owned, developed and operated by the private sector.

The strong financial position of the Government gives it a relative advantage in funding large scale and expensive infrastructure. In any case, financing of infrastructure projects has three principal forms: (a) government's funding under the capital works expenditure and/or direct equity injection; (b) private sector's own investment funding; (c) borrowing from the local and overseas capital markets. Furthermore, the Government can use its annual revenues to finance public works. Two funds are used in the budget: the Capital Works Reserve Fund (CWRF) and Capital Investment Fund (CIF). CWRF financially supports the Public Works Programme. Its income comes from the land premium and transfers from the general revenue account. Property-related income has been a major income source, covering some 30-40% of the total Government revenue in recent years (Table 3). The Government spends almost the same share of total expenditures on building and construction. On the other hand, some infrastructure projects have created many property development opportunities. Thus the Government is said to have developed land from land.[2]

Financing of projects undertaken by the statutory bodies like the AA and MTRC tends to take a mixture of government equity and debt financing. According to past experience, the Government normally injects a certain portion of equity as an initial start-up and working capital into the corporations. These organizations are then allowed to raise debt in both local and overseas capital markets. As the government wholly owns these bodies, their credit risks are minimal. When their projects are financially sound, their debt issues will attract good responses from capital markets. Revenues generated from the infrastructure projects will then be

[2] However, the Government has been criticized for maintaining the high-land-price policy in order to expand their revenue.

used to pay back the credits or ultimately as dividends to the government. These infrastructure projects were also partly financed through a land capitalization scheme (e.g. development of shopping areas, commercial real estate, and residential buildings). For example, Hong Kong MTRC not only receives its income through the fares, but the profit made on land operations is at round 15% of the construction cost. This makes Hong Kong MTRC the only profitable underground network in the world (Duranton and Deo, 1999).

3. Why Government's Role is Important?

Even the most ardent advocates of free markets have always admitted that the provision of social overhead capital is a legitimate role for government in the process of economic development. In Hong Kong, the Government's stated intention is to promote a free market economy with little government intervention. However, infrastructure investment has several characteristics which make government involvement necessary:

(a) Infrastructure projects usually involve extensive land uses and/or zoning regulations. Thus, Government's participation is to reduce transaction costs in the coordination of production activities. While property rights may be transacted through a wide variety of contractual arrangements, the contractual arrangements will be constrained by the costs of transaction (Coase, 1937; Cheung, 1969). In infrastructure projects, government is usually the resource owner,[3] therefore government taking the lead is the result of the difference in pricing and measuring properties. Our concern here is the contractual arrangements through which the right to develop the infrastructure is delegated to the private sector, so that a delimited set of development rights is surrendered in exchange for an income. Note that private sector has the option of not joining. Furthermore the development of one particular infrastructure project usually depends upon other strategic developments, such as transport network, etc. It cannot in general be the case that private decisions are superior to Government decisions reached through the price mechanism.[4]

(b) Even when the commitment to planning is there, the soundness of the plan will be limited by deficiencies in financial resources that can be overcome only partially with Government's participation. When an infrastructure project is developed, huge capital is locked into the project in the form of the physical structure built thereon. The future returns on infrastructure are often uncertain, and the fixed capital is irreversible once committed. Private investors would be reluctant to put their funds into infrastructure projects whose payoff period is very long and whose benefits go in large part to free riders whom it would be almost impossible to charge. Private construction tends primarily to major population centers of the country in which the immediate demand was greater and more profit could be expected (Portnov and Etzion, 2000). Given the rigid and imperfect structure of the infrastructure projects, it is extremely difficult to sell the failed project halfway through the process to recover the investment outlay. Thus Government's participation in infrastructure projects can be advantageous to the private sector by reducing the risks of new private investment.

[3] In Hong Kong the Government owns all new land supply.

[4] The negotiation process may be cumbersome without Government's participation because private firms do not have the power to change land uses and lease modifications.

Certain types of risk, such as the uncertainty of whether a project will be financed or whether a project will live up to legal regulations, can also be viewed as transaction costs. However, the government's role would be not only to reduce investment risk to private sectors but to promote the adoption of new technologies.

(c) Information concerning infrastructure development is not freely accessible and feasibility studies come at high costs. Moreover the future income from an infrastructure project is highly uncertain. Thus there is a cost of using the price mechanism. This implies that a third cost of discovering price is information cost (Stigler, 1961). Since many potential private investors have very limited knowledge of construction technology, possibilities for joint ventures with foreign companies, and other key information, government assistance in filling these knowledge gaps can constitute an important stimulus to private investment. Even a well-prepared plan will be ineffective unless careful attention is paid to implementation. In general, the Government has fuller information about territorial planning and future land uses than the private sector. Given this head start, private firms find it much less of a burden to obtain the more detailed information that will be needed before a decision whether to invest can be made. The government has an interest in knowing what the private sector intends to do so that it can provide the stimulus or restraint deemed desirable to keep the economy moving toward the policy targets. The government tends to play a significant role in some other routine capital works projects, such as roads and harbour reclamation. Other related capital works projects involve new land formation, highways construction and development of New Town. Resource coordination would be improved with Government's participation.

As a result of the globalization and deregulation of markets necessitated by fiscal, technological and managerial constraints, three trends of recent developments in the construction industry in several Asian countries are identified: (a) larger private sector participation in infrastructure projects; (b) increasing vertical integration in the packaging of construction projects; and (c) increased foreign participation in domestic construction. Consequently the proportion of infrastructure works carried out by the private sector has increased dramatically in telecommunication, power, transport, water, energy, petrochemical and sanitation projects. Obviously, the significant privatization and deregulation measures adopted by the public sector itself which, in turn, have been made necessary by domestic fiscal constraints. Given limited domestic budget resources for infrastructure projects, public sector investments in many of the developing countries in the region used to be dependent almost entirely on foreign aid. However, it became evident that this way of investing was not enough and that public works projects need to tap the efficiency and resources of the private sector. Nowadays, private sector participation is actively sought in the whole gamut of project phases – financing, construction, operation, etc. – especially in major capital-intensive infrastructure projects. The most popular form of private sector collaboration is the BOT arrangement and its variants.[5]

[5] The popularity of BOT contract arrangements means that 'construction only' contracting is getting less preferable except in small-to-medium-scale projects. Construction projects are becoming more complex and requiring more sophisticated technologies and financing devices. The more usual arrangement for large projects now is for contractors, developers and financiers to form consortia in order to seize these players' respective expertise, in addition to reducing project risks. Nevertheless the

4. FACTORS AFFECTING CONSTRUCTION PRODUCITIVITY

Infrastructure investment stimulates economic growth by making product and factor markets function more efficiently, and by providing better and quicker information flows between various levels of the economy. An economic analysis of public-sector investment seeks to evaluate the efficiency of government activities, and also to understand the way government spending and finance affects the private markets. One reason we demand government services is that in many cases government can provide us with items that we cannot easily make available for ourselves or purchase from private markets. Governments also regulate production and consumption to achieve socio-economic goals as improved competitiveness and the attraction of foreign investment.

Success of foreign contractors in Hong Kong can be attributed to their technological superiority, their financial capacity, and their skills in forming strategic alliances with local firms. There are no major efforts coordinated by the Hong Kong Government or the industry to raise the general technology level. Expenditure on research and development by local contractors, particularly the indigenous local contractors, is negligible.

Although it has often been criticized that there is waste and mismanagement in government that results in unnecessarily high costs for infrastructure projects, our results indicate that public investment is as efficient as private investment. However, the government may have grown too much and too rapidly. Some government services could be dispensed with entirely allowing the resources they absorb to be used elsewhere and allowing a reduction in taxes paid. For instance, some government assets and enterprises could be sold to private firms to be operated for higher efficiency. This section discusses the extent to which productivity of private construction projects would be affected by technological development when more public projects is going to be privatized in the future.

Construction technology

Although construction technologies have made remarkable advances in some areas such as ultra-high-rise buildings. It is also true to say that construction technology has made few contributions to the improvement of productivity in the construction industry. For instance, the microelectronics revolution which was jacked up productivity in factories and offices has had little effect on construction work, where labour work still plays a significant role. However, the construction industry is strongly affected by the level of the seasonal labour influx from other industries. In the short-term the construction industry has not been able to attract young workers away from other, more glamorous industries by increasing wages and fringe benefits and by upgrading working conditions. Leading contractors have been actively engaged in the development of robots designed to free human workers from unpleasant work, rather than to raise productivity (Hasegawa and Shimizu Group, 1988).

Pries and Janszen (1995) argue that Japan has spent a lot of effort in R&D, but R&D is explicitly part of the strategic policy. Construction productivity can be improved through an effective use of materials; by facilitating the inventory techniques; by developing methods of recycling waste materials; by reducing material production costs. The development of new materials having high strength but with a smaller cross-section can help reduce the input of materials and increase the free space within the building. However, each country must follow a unique process of technical change based on its original factor endowments and the pattern of its resource accumulation over time. Technical change tends to be most effective when it is based on research which seeks to economize on the relatively scarce factors of production. An effective use of new materials in

participation of large financial institutions able to tap and mobilize sources of cheaper credit is becoming very crucial in these consortia.

construction is particularly important in Hong Kong where land resources are scarce. The sources of innovation range from the lowest level (product innovation) to the highest level (process innovation). The character of innovation in the construction industry has shifted towards more complex and composite products. The proportion of material innovations decreased from over 50% in the 1950s to 20% in the 1970s (Pries and Janszen, 1995). Besides this, the growing importance of environmental issues may have an adverse influence on the construction productivity.

Information technology

Increased global competition means that industry and government must work together to ensure that entrepreneurs have support networks of transportation, telecommunications, services, and knowledge centres. Technological changes are also likely to alter space usage and the demand for real estate. The telecommunication/computing revolution will significantly reduce the office space needed per office worker through corporate downsizing the greater service-sector productivity (Wheaton, 1996). A common thread in all of these arguments is the notion that global systems are increasingly prevalent to the international environment. These services are particularly important to small and midsized firms that often lack the scale or resources to justify full-time internal support staff to meet these needs. The challenge for business and government is to work together to integrate the infrastructure components into environments for increasing the economic competitiveness.

It is important to develop elements of a more efficient surface transportation network - advanced traveler information, traffic management, vehicle control and safety systems, commercial vehicle operations, electronic toll payment, and emergency management systems - to reduce road traffic congestion and more efficiently link roads with air, rail, and seaport facilities. For example, U.S. companies spent more than 10% of the gross domestic product on logistics - packaging, loading, transporting, and unloading goods - in what many manufacturing associations consider to be an inefficient infrastructure system (Kasarda and Rondinelli, 1998).

By the end of the 1980s, global information systems were developing rapidly, particularly within the context of multinational corporations. The development and diffusion of flexible manufacturing systems are receiving greatest attention now. Modern business requires responsive commercial and service support. Firms with flexible business practices must have quick, efficient access to financial institutions; marketing, sales, and consultancy agencies. Manufactures need integrated telecommunications networks to get information on markets and orders, adjust their product designs and product runs, track and manage material flows and inventory, and upgrade management and employee skills.

The efficiency of physical infrastructure can be improved with the emergence of the geographic information system (GIS). Transportation companies can implement GIS applications that include navigation devices to provide drivers with a map display showing their current position and best route to a desired destination. Regional and municipal governments have demonstrated a strong interest in these systems to support planning, engineering operations, and all facets of land-use administration, including electoral rolls and tax base analysis (Tapscott and Caston, 1993).

To cope with the increasing trend that the multinational corporation evolves to a global configuration for its information-technology infrastructure, the Hong Kong government has proposed to build the Cyberport - a hi-tech enclave on 26 hectares of prime land on the western shores of Hong Kong Island, a US$1.8 billion project with a private enterprise (Pacific Century Group). The development will include an ultra-modern intelligent building complex, a state-of-the-

art broadband telecommunications and information back-bone, and a wide range of shared facilities like high performance computers, a media laboratory, demonstration and exhibition facilities and a cyber library.

As a strategic information technology infrastructure project, the Cyberport forms part of Hong Kong's mission to develop a knowledge-based economy and to position Hong Kong as the pre-eminent centre of innovation and technology for East Asia and beyond. It is designed to attract a cluster of companies involved in leading-edge information technology applications and services, including multi-media and content creation involving 3-D graphics and animation. The hi-tech Cyberport is supposed to help propel Hong Kong into the digital age and become an electronic commerce hub in the region. While 17% of the Cyberport project will be dedicated office space, 75% will comprise luxury apartments and houses in order to finance the project. By conventional mode, the government is used to first taking the lead in financing such infrastructure projects as railways, roads and airport, and then have them corporatized and privatized, and this worked well in the past. However, in the Cyberport project, the founding company bears all the development costs and risks and is responsible for financing the entire project. The government bears no investment risk but receives a share of profits from property sales and gets a Cyberport.

The Cyberport will offer Internet start-ups a package of services including venture capital, access to Silicon Valley expertise, capital market experience, links to other Cyberwork ventures and office space. Even small and medium-sized entreprises increasingly rely on international networks of suppliers, distributors, and customers to improve their global competitiveness. One would envisage that the lack of such information infrastructure can undermine the benefits that enterprises gain from international business and slow their response to global market signals.

5. CONCLUSIONS

Public investment spending has a significant stimulative impact on domestic output and labour employment. The core question is that how much should governments do and how much should be left to private enterprise and initiative through market sale of goods and services? Once we have established the basis for public infrastructure project, we have to examine the impact of government finance on private incentives and resource use.

In this paper we have discussed the public-sector strategy of infrastructure investment. However, economy became more rigid, more dependent on the Government as private participation in infrastructure was curtailed. Against this background, we have discussed the Government's policy in the privatisation of the major infrastructure projects. Thus, the need for more integrated approaches to the use of public finance in infrastructure investment is recognized. The trend towards partnership working reflects both the need to build agreement between various interested parties, and also the strength of the private sector, whose forces may be effectively combined with foreign ventures.

The Asian financial crisis in 1998 has hampered the ability and interest of the private sector to fund infrastructure projects in Hong Kong. Thus, the economic base of the territory was seriously eroded and asset prices in the territory have fallen drastically. Availability of private finance capital has become a major constraint. Consequently, contractions in internal consumption cause great concern to future demand and financial viability of the many proposed infrastructure projects.

Nevertheless, it is the intention of the Government to stimulate the economy by expediting the Public Works Programme to meet the needs for land supply for housing and related infrastructure. The Government believes that increased expenditure on construction has consequential benefits for individuals by

providing employment in building work or by stimulating business activities that provide wider employment opportunities.

The increased private sector participation in infrastructure projects, vertical integration of construction projects, and increased foreign participation in domestic construction characterize globalization in the region. However, this paper argues that government would have to take the lead in infrastructure development because there are transaction costs in the development process. While the government often takes the lead in overall infrastructure planning, implementation of the committed projects often relies on the joint efforts of the Government, the statutory bodies and private companies. To the extent that government's participation tends to benefit medium- and large-scale contractors more than small contractors, a well-established sub-contracting system should be allowed.

The competitiveness of a nation's economy depends very much on its infrastructure. Most developing countries, are not competitive in construction technology and finance. However, they can take advantage of technology transfer requirements in the investment agreements to help local contractors move up the learning curve. For example, the success of Japanese contractors is attributed to their technological superiority, financial capacity, skills of forming strategic alliance with host governments and local firms. These strengths are nurtured by the indispensable presence of their Government's strong infrastructure policy.

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Table 1. Gross value of construction works by main contractors (In thousand HK $)

	Buildings	Structures & facilities	Construction work at non-sites	Total
	At construction sites			
1995	39,694	33,891	26,222	99,807
	(7.6)	(27.9)	(1.7)	(11.9)
1996	50,370	36,822	29,097	116,290
	(26.9)	(8.6)	(11.0)	(16.5)
1997	69,025	29,957	32,518	131,500
	(37.0)	(-18.6)	(11.8)	(13.1)
1998	82,626	19,349	31,341	133,316
	(19.7)	(-35.4)	(-3.6)	(1.4)
1999	76,680	16,873	32,884	126,437
	(-7.2)	(-12.8)	(4.9)	(-5.2)

Source: Hong Kong Monthly Digest of Statistics (various issues).
Note: Figures in parenthesis are growth rates in percentage.

Table 2. Implementation Body and Burden-Sharing for Infrastructure Projects

Authority	**Burden Sharing/Organization**	**Major Projects/Responsibilities**
HKSAR Government	Chief Executive & Executive Council	Highest decision-making and approval body of all infrastructure projects.
	Government bureaus and departments	Physical development planning and co-ordination of all infrastructure projects. Monitoring progress and allocating public funds.
Quasi-government Bodies	Airport Authority	Operate, develop and manage the new Hong Kong International Airport at Chek Lap Kok.
	Mass Transit Railway Corporation	Operate, develop and manage the Airport Railway Link.
	Kowloon-Canton Railway Corporation	Operate, develop and manage the West Rail and other cross-border railway projects.
Private Sector	Private developers, professionals, consultants, contractors, etc.	Involved in port facilities development and railway station development. Involved in actual construction works of all infrastructure projects.

Table 3. Government revenue from property-related sources (In million HK $)

	General Rates	Properties & Investment	Land Premium	Total property related revenue	Share of Total Revenue
1993/1994	4,461	8,256	43,560	56,277	39.1%
1994/1995	5,156	8,376	31,357	44,889	29.7%
1995/1996	5,805	8,735	44,881	59,421	38.8%
1996/1997	6,286	9,347	57,546	73,179	42.1%
1997/1998	6,258	17,323	53,516	77,097	33.7%
1998/1999	3,614	31,374	19,251	54,238	30.3%
1999/2000	7,132	23,016	34,810	64,958	40.0%

Source: Hong Kong Monthly Digest of Statistics (various issues).