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Abstract

Telecommuting across geographical frontiers and boundaries is dominated by the use of the "high-tech sweatshop", i.e., centres in low-wage countries where work requiring low skills are carried out. As world economic, political and social structure changes and as technology progresses, there are new opportunities for economic cooperation. This paper examines the promise and challenge of the "global office" in the context of the developed and certain Asian economies. Cross-border or Borderless telecommuting can address different needs of different countries. For tight labour markets like Singapore and Hong Kong, cross-border telecommuting offers an alternative staffing arrangement that incurs minimal social costs. For developed countries like the U.S. and Europe facing increasing competition from the lower wage economies, cross-border telecommuting offers opportunities for externalizing their markets and utilizing labour in developing countries to maintain their competitiveness. For developing economies with large pools of labour like Indonesia and the Philippines, it offers a way of harnessing and upgrading the skill level of their population.

1 Introduction

Telecommuting has its advocates and critics wherever it is practised. Whatever their opinion, it is generally acknowledged that telecommuting is no longer a new phenomenon but an alternative staffing strategy to be exploited by management. The current predominant practice is to have workers who work away from the office, either on the road, at home or at a satellite office. Cross-border telecommuting involving workers in another country is still not widely practised.

The benefits of being able to consider the world for your labour demand and supply is clear; your company becomes more competitive and your economy expands and develops further. It also appears to have the added advantage of discounting some of the plagues of traditional telecommuting, e.g., role ambiguity from working at home, professional image, difficulty of devising different supervisory and compensation schemes. However, work programs across social and cultural barriers will bring with it other difficulties, e.g., employment expectations. Will these prove to be insurmountable obstacles to the implementation of such work arrangement schemes? As a first step to a systematic investigation in this subject, we propose to examine factors that favour and discourage the adoption of these schemes in the economies that are likely to benefit.

2 Developed Economies

Telecommuting started in the U.S in the mid 1970s. According to Link Resources Corp. and USA Today research, the number of telecommuters in the U.S today in 1994 stands around 8.7 million, from 6.6 million in 1992. No official figures for the number of telecommuters in the developed economies are available but the National Economic Development Office forecast that 10-15% of the skilled work force in the U.K will be engaged in telecommuting by 1995 (ILO 1990). Interest in telecommuting has been subject to spurts and starts with the initial impetus provided by the oil crisis in the 1970s. The wave of current interest in this area can be attributed to several reasons: competitive pressure from the market place, shortfalls in skilled labour supply, pressure from employees for less commuting time and alternative working arrangements.

One of the ways for companies to maintain their global competitiveness is to increase their labour productivity; telecommuting has been promoted as a way of increasing labour productivity. Labour productivity for the OECD countries has increased around 1.6% for 1979-1991 period (OECD 1993a). However, this has been somewhat negated by unit labour costs increase of 4.6% for the same period. Wage and labour cost differentials between the developed economies and the rest of the world are too large to be addressed by purely productivity increases. Labour costs in Western Europe including social and welfare costs are US$20 whilst it is US$1.65 in Asia. To remain global

industrial and commercial leaders, companies in Western economies must fully exploit labour cost differentials world wide. Cross-border telecommuting facilitates this strategy as it allows these economies to source for and manage labour outside their national boundaries.

Competitive pressure from the market place has forced some companies into moving some of their operations offshore. AT&T, for example, operate what is commonly referred to as a "high-tech sweat-shop"; labour intensive data entry and data processing tasks are relocated to low wage areas. An American offshore telecommuting operation pays Jamaican workers doing skilled data entry work $1 an hour that is the minimum wage in the country whereas in the US, the same work will cost between $5.50 - $12, depending on location (ILO 1990). The general trend to outsourcing has also been noted among America's financial firms (Economist 1991a). Data processing, systems maintenance and development and back office operations devour capital, running costs and technical management and staff that these firms can ill afford. For most banks and securities houses, these operations are not critical to their competitiveness; they just need to be done as cheaply and as efficiently as possible. First Fidelity, one of America's top 25 banks signed an outsourcing contract with EDS to integrate and run its data operations and systems development projects. Cross-border telecommuting fits in very well with the current business trend of companies trying to gain competitive advantage by cutting overheads through outsourcing and rightsizing, and concentrating on their core activities (Johnston 1993).

Companies whose main business relies on cross-border telecommuting to access low-wage, low-skilled labour will not be able to survive and compete in the long run. Cross-border telecommuting is more appropriate for firms that have moved their low and semi-skilled services offshore. There is growing disquiet however that moving low-skill operations offshore may not be an effective long term strategy as the conditions of this type of work do not promote goodwill; the fast pace of work is often accompanied by electronic monitoring, limited training and the discouragement of worker organizations. Furthermore, the prospect for telecommuting growth in data entry work is unclear; many of these jobs are shifting to data collection at source, with developments of voice and optical character recognition technology.

The main focus of current telecommuting projects has been to address the shortfalls in skilled labour supply so that telecommuting is seen as a measure for retaining valuable workers. Although there is high unemployment in the OECD countries, estimated at $8^3/_4$% (OECD 1993b), this is effectively selective, centering on the unskilled or low skilled workers. The current shortage in skilled labour in the developed countries is expected to continue as the situation will not be relieved by the inadequate numbers of new entrants into the labour market. Cross-border telecommuting can provide access to pools of skilled labour elsewhere in the world, for example, India which has a large pool of engineering and science graduates. This has enabled her to be a key player in the software market that concentrates on providing remote support services and "contract" professional services (Bhatnagar 1994). India is also a good example that illustrates the possibility for an economy to progress from simple, information capture to more sophisticated and complex information processing activities like programming and systems development. However some have argued that the risks associated with this type of offshore venture - different time zones, ambiguous project specifications, specification changes and weaker infrastructure support do not outweigh the economic benefits arising from such collaborations. In fact, concern has been expressed on the danger of the U.S software industry slipping overseas to low-wage, high-skilled countries like India, Singapore, China and Eastern Europe (Zitner 1993).

The role of the developed economies is therefore seen to be that of the employer. Telecommuting promotes flexible business organization in that it allows for the proliferation of different compensation schemes. It should be possible to design different compensation schemes for the same kind of work depending on the country the worker is in. After all, employees of multi-national corporations (MNCs) the world over do not enjoy the same dollar benefits. To compete on price therefore, the functions of a corporation will need to be rationalized with low- and semi-skilled functions moved in low-wage countries. To compete for high-skilled operations, access must be provided to large pools of high-skilled labour in lower-wage countries. Telecommuting can be used as a tool to tackle both high labour costs and skilled labour shortage.

Given the present economic scenario of recession, Trade Unions will not favour any scheme that takes work away from its indigenous population. They are more likely to favour proposals of resettling their workers in low-cost countries with pay commensurate with the local remuneration. Another major resisting force are the companies in the developed economies such as TeleDoc of Utah who recognize the existence of stiff competition from offshore offices that handle the same kind of high volume work at very low wages. Their reaction is typical of other U.S firms: "It angers me to see the short-sightedness of sending our dollars overseas. We think we have the edge because our people have better language skills and because we can make the argument that spending those dollars locally stimulates the local economy and the country overall" (Telecommuting Review 1992). Numerous criticisms have been levelled at companies that exploit foreign workers and there have been calls for new global rules grounded in international trade agreements that guarantee fines or trade sanctions on U.S firms that violate basic rights spelled out in the International Labour Organization convention.

Technology enables cross-border telecommuting. The main objective of telecommuting is to enhance operations by overcoming distance and serving new markets worldwide via telematics. Developed economies cannot hope to compete on price. Instead, they must compete for high value-added operations, e.g., providing high level expertise and services at a distance to start up companies in former Soviet bloc and third world as these countries in turn take on the data processing and basic operations for the high labour cost countries. Technology represents a new means of externalizing the market place. An example of this can be seen from the collection of data from Electronic Points of

Sales(EPOS) in the U.S, which is telecommunicated to Hong Kong and Sri Lanka as their cutting orders for the day and the ready orders are flown back to the U.S to replace inventory. Similarly, Mr John Doe will be able to order the news service of different papers from around the world.

Telecommuting cooperation between different countries will change the whole nature of working; it would be possible to have R&D departments comprising different researchers based in different countries. Companies that currently practise this include Johnston Controls that has R&D software facilities in U.S, Germany and India and Amstrad with its R&D division in Hong Kong and its manager based in the U.K. Collaborations and ability to access data and other resources especially in areas like health and social science and fields that study global and environmental issues, are increasingly important to scientific progress. Data gathered and prepared in remote or developing countries often must be transferred elsewhere, to the more advanced countries for evaluation and analysis.

Cross-border telecommuting can encourage cooperation and collaboration in distance learning and training, library and information provision, and entertainment services. In recent years, there has been a noticeable offering of distance learning programs in Singapore and Malaysia by Universities in U.S, U.K and Australia. Perhaps it might be economically viable to establish "International Universities" to lecture to low enrollment classes in different parts of the third world at the same time. Other novel cross-border collaborations include the use of video-conferencing in a pre-trial discussion between lawyers and a judge in different countries and a joint Singapore-Hong Kong auction organized by Sotheby's of the U.K (Yeo 1994).

With more and more work shifting to being information and knowledge based, and with advances in technology, it would appear that cross-border telecommuting can be used to create new market products and niches. Where conventional telecommuting traditionally focuses on job relocation, cross-border telecommuting can stimulate job creation opportunities to help fuel the economic recovery of the developed economies.

3 Asian Economies

The economic status achieved by the countries in the West Pacific Rim in recent years has been so remarkable that it is regarded as the most dynamic part of the world. However, the achievement of high absolute levels of development is clearly more true of some countries than of others. Table 1 summarizes the differential pattern of economic development on the basis of per capita income figures. The World Bank uses this measure to categorize the economies in this region; we will consider the top eight economies only.

This classification will be adopted as it provides a good estimate of the state of the communications, housing and education in these countries.

	GNP per capita (US$) 1991
Low income - Lower-middle income economies	
Indonesia	610
Philippines	740
Thailand	1580
Malaysia	2490
Upper middle - High income economies	
South Korea	6340
Taiwan	9070
Singapore	12890
Hong Kong	13200

Table 1. GNP per capita of selected Asian Economies

Source: ADB(1992)

3.1 High and Upper-middle income Economies

In contrast to the developed economies, the Newly Industrialized Economies (NIEs) of Singapore, Hong Kong, Taiwan and South Korea face tight labour markets, with unemployment rates at record lows. Together with low birth rates, it would appear that this labour supply-demand imbalance would remain uncorrected. Table 2 shows the widening gap between the national labour supply and the predicted GDP growth rate. As a result of this shortage, the general level of wages has risen each year since 1988; manufacturing wages have increased at double-digit rates in all four economies with South Korean wages rising the fastest, by an average annual rate of 22% (Economist 1991b). These wage increases erode the competitiveness of these economies; thus the governments of these economies seek measures to increase their labour pool.

	Unemploymt. [a] (% labour force) 1991	Pop. Growth [b] (Est. Average Annual) 1990 - 2000	GDP growth [c] (Est. Average Annual) 1993 - 1995
South Korea	2.29	1.9	6.1
Taiwan	1.76	0.9*	6.4
Hong Kong	1.8	1.6	5.7
Singapore	1.93	1.1	7.6

Table 2. Unemployment, Population and GDP Growth in NIEs

Source: [a]IMD(1993), [b]Euromonitor(1993), [c]ADB(1994), *DG of Budget, Taiwan(1993)

There is a shortage of both skilled and unskilled labour; the labour force of the NIEs is reputed to be energetic, ambitious and well educated who shun menial and repetitive jobs. This shortage if exacerbated, could stifle

economic development since tight labour markets translate to lost business opportunities in booming economies. The most obvious way of enlarging the unskilled labour pool is to recruit foreign workers. However, the governments of these economies are wary of the security, health and social implications of accommodating a large number of unskilled foreign workers and thus place tight controls on the movement of such labour. Companies in the NIEs are encouraged to automate jobs as far as possible, particularly those requiring low skills. However, there are limits to automation. The influx of foreign workers can further be controlled through the use of cross-border telecommuting which is an attractive working arrangement as it provides access to the lowly skilled without the accompanying social costs. It permits the globalisation of a country's hinterland which has particular relevance for a small island nation like Singapore. The Economic Development Board of Singapore envisages that investors will use Singapore as the high-tech base to design, market and distribute products made in the low-cost neighbouring countries (Cowley 1991).

To enlarge its skilled labour supply, the NIEs will compete with the advanced economies to tap the skilled labour in lower wage countries like India and China. They are in a position to do this mainly because of the quality of their telecommunications infrastructure, which is comparable to those of the developed economies. The NIEs have recognized the important connection between the quality of the telecommunications infrastructure and national economic development and have channelled substantial investments into information technology (IT) over the last decade, with IT forming around 1% of their GDP. Singapore and Korea are in the process of creating a national information superhighway that will enable reception and transmission of images, documents and voices in businesses and homes. When ready by the end of this decade, it will enable telecommuters to access all the information services and computing resources that they need to do 'office work'.

Cross-border telecommuting appears to be an attractive means to resolve the problem of inadequate labour supply while achieving the objective of sustained economic growth. The preconditions for cross-border telecommuting exist: a high quality work force and the necessary infrastructure. The payoffs from adopting telecommuting are only possible if successful programs in the West can be adapted to local conditions. Here, we touch on one of the limitations to the adoption of telecommuting; there is no general model that any company may emulate or implement, each telecommuting program must be hand-crafted to suit the particular company's environment. We can see however that certain characteristics that are peculiar to the NIEs such as housing, the way of life and the nature of the government-worker relationship will influence the form of telecommuting in these countries.

The population density per sq. km of each of these countries is high by Western standards and comparisons (see Table 3). Hong Kong and Singapore have the 3rd and 4th highest population per sq. km in the world after Macau and Monaco. If we use population densities and urban rates as a indicator of available space for a "home office" and given the high population densities and urban rates of these countries, home-based telecommuting will find less favour with the population than working in satellite offices. Satellite offices are alternative offices, removed from both the home and the primary office, that workers have access to. Shirley (1989) reports on software development and maintenance projects that have been carried out at satellite offices which provide access to computers at high-cost downtown customer sites.

	Inhabitants per sq. km [a] 1991	% Population in Urban Areas [b] 1990
South Korea	437	88
Taiwan	561*	67*
Hong Kong	5507	97
Singapore	4471	100
Japan	328	77
US	13	75
Europe	103	73

Table 3. Urbanization indicators of selected countries

Source: [a] UNESCO(1993), [b] ADB (1992)
*Euromonitor(1993)

One of the main driving forces behind the economic success of the NIEs lies with public policies used to stimulate private sector initiatives. The industrialization programme of these countries has depended critically on selective, guided but extensive government intervention. Industrial workers are docile by Western standards and are heavily regulated and controlled by the governments. Thus, in contrast to the developed economies, the impetus for adopting telecommuting will come from the government, rather than from companies. The governments of these countries know that in order to sustain high economic growth that will propel them into the league of developed economies, they have to go up market to the high-tech areas where labour costs matter less because brain power and capital matter more. Tomorrow's well paid jobs will belong to mobile people especially those who create, process and distribute pieces of information. They include bankers, lawyers, performers and information workers who will send their wares everywhere by satellite or telecommunicated video.

3.2 Low and Lower middle income Economies

These countries have much to gain if cross-border telecommuting were to take off in a big way. One of their economic assets is their vast pool of cheap and under utilized labour. Indonesia has the fourth largest population in the world with 188 million people. However, cheap labour alone is not sufficient inducement for developed economies to consider investments into these economies. The local population must be sufficiently educated and the existing

communications infrastructure must be sufficiently developed.

Table 4 shows some indicators as to the state of the communications infrastructure in these economies which is comparatively undeveloped compared to the NIEs. These governments however are placing increasing importance on improving this facility.

	Telephones per 1000 inhabitants [a]	Electricity Supply per 1000 inhabitants [b] (Kilowatts)	State Investment in Telecoms. [c] (Avg. % GDP)
	1991	1990	1988 - 1990
Indonesia	6.8	62	n.a.
Philippines	10.3	110	n.a.
Thailand	27.3	178	0.45
Malaysia	99.1	282	0.59
U.S	514.9	3102	0.48
NIEs	342 - 452	555 -146-1	0.52 - 1.27

Table 4. Telecommunication Infrastructure Indicators of selected countries

Source: [a] ITU(1993), [b] UN(1992), [c]IMD(1993)

Table 5 shows a smaller gap in the literacy rates and education standards between these economies and the higher income NIEs. In fact, the educational level of the people in the Philippines are comparable to that of its richer neighbours. The edge the Philippines has over the other lower income economies in this respect becomes more obvious when the language factor is taken into account: English is widely spoken and understood in the Philippines. Comparing the figures in Table 4 and 5, the disparity between the communications infrastructure and the education level in these countries is noticeable. For example, although the Philippines ranks the highest in terms of education standards, it is almost at the bottom of the table when it comes to infrastructure development rating.

	% illiterate [a] (aged 15+)	Primary Enrollmt. ratios [a] (% school age pop.)	Secondary Enrollmt. ratios [a] (% school age pop.)	State investment education [b] (% GNP)
	1990	1990	1990	1990
Indonesia	23	117	45	0.9
Philippines	10	110	73	3.0
Thailand	7	88	28	3.8
Malaysia	22	93	56	5.5
U.S	-	100	98	5.3
NIEs	9 - 14	106 - 110	69 - 88	2.7 - 3.7

Table 5. Education standards of selected countries

Source: [a] World Bank(1993), [b] UN(1992)

As a consequence of its low wage levels, crude communications infrastructure and low skill level of its population, cross-border telecommuting work in these lower income economies will be dominated by the "high-tech sweatshops". Much has been said about the undesirability of encouraging the setup of "high-tech workshops". But a powerful argument for them can be made on the grounds that it enables the poorer countries to maintain their foothold on technological progress.

In developing countries, the large number of unskilled labour reduces the social attractiveness of a fast rate of new technology diffusion. Seen historically however, the irony of technology is that it has the tendency of making the weak and poor countries even weaker and poorer. Telecommuting seems to be an acceptable compromise between too little and too much technology. It provides exposure to new technology, it allows adaptation to technical change and experience has shown that in some Caribbean nations the skill level of telecommuters can be gradually upgraded over time (Gordon & Peterson 1992).

Cross-border telecommuting also addresses other concerns of the governments of these countries. In recent years, the governments of Philippines and Indonesia have been expressing increasing concern about the treatment of their nationals working abroad in low-skilled positions. Indonesia will impose stringent controls to discourage cross border movements of such workers from 1996. To replace the foreign exchange earnings that these workers generate, cross-border telecommuting can be employed especially since the governments can control the working conditions of these workers.

Cross-border telecommuting can be used to balance the economic development in both the urban and rural areas of a country by organizing surplus labour for work in the information industry in rural surroundings. The low and lower middle income economies have large rural populations, about 32% of these populations or 103 million people live in rural areas. As economic growth accelerates, there will be a natural migration of the population to the cities where the people expect to find better employment opportunities, higher incomes and superior health, education and community services. Rural-Urban migration has been a dominant factor contributing to the rapid growth of urban populations in countries such as Indonesia and Thailand (ADB 1992). Such a phenomenon could overburden the resources and facilities available in the cities resulting in the degradation of housing, traffic and environmental standards which will ultimately strangle the country's economic growth. Cross-border telecommuting programs in rural areas will help to ensure a balanced economic growth countrywide.

Cross-border telecommuting can be the fore-runner of conventional telecommuting programs in these countries. Currently, there is no known telecommuting programs in Asia outside those implemented in Japan and Singapore. The success of these programs will inspire traditional telecommuting ventures which can benefit these poorer economies. Bangkok is famous or infamous for its traffic jams. An editorial in the Economist (1992) states that

congestion is officially defined as average speeds of below 35 mph. In the busiest districts of Bangkok, rush-hour traffic moves at an average of 4 mph. So the city is planning heavy investment in new roads, its bus fleet and an overhead railway. For a low income economy, this represents funds that have to be diverted from improving other critical sectors of the economy.

4 Conclusion

The "global office" represents an important dimension of telecommuting which is under-researched. It holds enormous economic potential for countries that can exploit its use. The political dimension and implications has not been considered in this paper; we have taken a purely economic perspective on cross-border telecommuting.

For companies in the developed economies, cross-border telecommuting allows them to maintain their global competitive edge. The threat to the loss of competitiveness arises from the high labour costs in these countries. This threat can be contained by out-sourcing non-critical, low-skilled operations to low labour costs economies offshore. The developed economies will compete with the NIEs for such labour. However, their advantage over the NIEs lie with the substantial cost differentials between them and the poorer economies and their ideology of providing financial aid and investments to the less developed economies of the world. More importantly, cross-border telecommuting allows the developed economies to take advantage of changes in the nature of work, namely its level of information content and advances in technology to create new industries.

Cross-border telecommuting is as applicable to booming economies as it is to economies in recession. The NIEs need to enlarge their labour pool to both maintain their global competitive edge and sustain their economic growth. The threat to competitive edge here arises from labour demand-supply imbalance which has lead to rising wage costs. The cost of developing the communications infrastructure in the low income countries may prove to be a barrier to easy access to this pool of unskilled labour. They are likely to lag behind the more developed economies into foraying into the low income economies. However, the social costs associated with imported foreign low-skilled labour, the need to remain competitive, the increasing restraints placed on their supply and the increasing wealth of these high income economies might influence the investment decisions of the NIEs. Cross-border telecommuting allows the NIEs to tap into the skilled labour force of the developing economies through mutual cooperation programs.

The governments of developing economies will welcome the advent of telecommuting as it promises foreign investment funds in various important sectors of the economy, skill upgrading of their workers and other benefits which translate into economic advancement. To attract such investments, these countries must ensure political stability and control, maintain their labour cost competitiveness and continue to invest in human resource development and telecommunications infrastructure.

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