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independence has repeatedly made it clear that it was willing to sacrifice women's rights and freedoms to the interests of the collectivity. Since independence gender politics have been the fulcrum upon which the Singapore government has attempted to raise a number of its significant policy agendas.

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Telecommunications in Economic Growth of Malaysia

Ali Riaz*

During the past few decades Malaysia has been known for the attainment of high rate of growth and its economy has experienced remarkable transformations. Economists maintain that growth and structural transformation are the central features of the post-colonial Malaysian economy. According to some analysts, the Malaysian economy has evolved into a modern industrial economy. Salleh and Meyanathan, for example argue that:

this structural transformation from a lower value-added, farm-based economy to higher value-added, modern industrial economy is characterized by a decline in share of agriculture and a corresponding rise in industry (Salleh and Meyanathan, 1993:2).

These have been achieved through an increased integration with the global economy. The domestic needs notwithstanding, structural imperatives of the global capitalist system determined Malaysia's mode of insertion into, and subsequent role in the global economy. Interestingly, this economic transformation has been accompanied by remarkable advancement in telecommunications infrastructure. Currently, Malaysia has a highly sophisticated, state-of-the-art telecommunications infrastructure. Grown over the last two decades, and most prominently in the 1980s, telecommunications development has ascribed Malaysia (along with Singapore) the "model" status for modern communications in developing countries. Of these, major developments began to take place after Malaysia embarked on an export-oriented industrialization policy in 1970. Enhancements and diversification in telecommunications services came in the 1980s, when Malaysia articulated its aspiration to join the bloc of industrialized countries. Ostensibly, the increased integration of Malaysia with the global economy and development of telecommunications infrastructure went hand in hand.

This article will probe into this relationship. I will argue that there has been an intrinsic relationship between economic transformation and development of telecommunications infrastructure. The mode of Malaysia's insertion into global economy as well as the timing played a crucial role in the exponential expansion of telecommunications. The primary contention of this article is that, telecommunications served as a conduit of and catalyst in the economic growth of Malaysia.

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Malaysia's integration with the global economy is not a new phenomenon, but rather an old one which goes back to fourteenth century. Malaysia, like many other coastal ports of the world, established itself as a regional centre through conquest and alliance building, and became the main port of call for foreign and regional traders for centuries. European intervention in this region began in the sixteenth century. Emboldened by their maritime power and the desire to dominate important world trade routes. The Pengkor Treaty, signed in 1874, not only brought the state of Perak under direct British control but also began a colonial-era for the entire region.¹

Colonialism, as I have mentioned elsewhere, does not simply mean the expansion of an empire; it means the transformation of the economy, polity and social structure of the colony in accordance with the needs and demands of the imperialist economy (Riaz, 1994:35). Southeast Asia in general and Malaysia in particular are no exceptions. In the following 83 years of colonial domination, Malaysian society and its economy experienced obvious and qualitative transformations. The most prominent changes included the emergence of a multi-ethnic society comprised of Malays, Chinese and Indians; and the strengthening of an economy based upon agriculture, mining and trading. Both of these have serious bearings on subsequent developments. Until its independence in 1957, the Malaysian economy was mainly geared toward the production and export of primary commodities, such as rubber and tin. At the independence, 85 percent of Malaysia's export earnings were derived from tin and rubber. Malaysian commodity production, in this respect was directly linked to the international commodity markets. In the subsequent 35 years, the Malaysian economy has undergone a structural transformation.

Over the last three decades, there is a rise of industry in Malaysia. Available data show that in 1957 agriculture made up more than 40 percent of the GDP while manufacturing had a share of less than 10 percent. In 1990, manufacturing accounted for 27 percent of the GDP compared with agriculture's 19 percent. The former constituted 60 percent of total exports while the latter had a share of 10 percent. One may however question the nature of this industrialization. What is of further significance is that:

(the) structural transformation has not lessened the economy's involvement in trade. Exports increased from 56 percent of GDP in 1960 to 65 percent in 1990; the corresponding figures for imports are 44 percent and 65 percent (Salleh and Meyanathan, 1993:2).

The transformation clearly did not take place in isolation from the global economy, but rather articulated itself within the global transformation. For Malaysia this transformation does not mean a breakaway from a metropolitan-dominated world economy, but a reconstitution of the role assigned to a peripheral country with rich natural and other resources operating within the world capitalist system and under the logic of the international division of labour.

This metamorphosis of the Malaysian economy took place gradually and in three distinct phases. Despite some changes, a thread of continuity persists over this period,

especially in terms of Malaysia's role in the global economy as a supplier of cheap raw materials and/or labour. Foreign capital and foreign markets in many ways shaped the destiny of the country. The three phases of the economic growth of Malaysia consisted of a high import-substitution phase (1956-1970), an export promotion and import-substitution phase (1971-1985) and an adjustment and liberalization phase (1986-).

During the first phase of development the *laissez-faire* economic policy of the colonial era was essentially preserved, which meant a continuation of the domination of foreign capital in the economic life of the country. Tariff-protection, advanced to import substituting manufacturing and export-oriented agriculture, came as blessings for the foreign capital, for both sectors were dominated by foreign capital. Although the Pioneer Industries Ordinance aimed at boosting industrialization was enacted in 1958, the government's plans were clearly biased towards agriculture and the rural sector. Infrastructural development was placed high on the agenda in order to link the rural areas with urban centres, so that agricultural commodities can be easily sent to international markets. In the Second Malay Plan (1961-65), infrastructure including communication, fetched the highest share — 26 percent. The agricultural sector's share was 18 percent, while industry received only 2 percent of development expenditures. In the subsequent plan, called the First Malaysia Plan (1965-1970), the highest share of development expenditures went to agriculture, 26 percent. Industry's share raised to 6 percent. Bowie (1991: 69) noted that over the first three five-year plans, agriculture and rural development accounted for 22.3 percent of spending, while industrial development received only 2.4 percent. The government's bias toward agriculture and the rural sector grew out of both national and international considerations. First, because the larger number of Malays (as opposed to Chinese and Indians) were in rural areas and engaged in agricultural activities, the state was trying to aid them. Since the "social contract" arising out from the political compromise reached after the independence gave the Malay party (UMNO) the leading role in politics and the state power was largely controlled by them, state functionaries were trying to use them to the benefit of the locals. Second, the Malay peninsula was incorporated into the global economy by the British and was assigned a specialized role as primary commodity producer geared toward the global market. Of course, emphasis on the agricultural sector reflects a realistic appraisal of this position. Furthermore, the functionaries of the post-colonial state came mainly from the aristocratic class who was nurtured during the colonial era to ensure that the transition in the transfer of power was not to the detriment of the foreign sector. It was beyond the capacity of the post-colonial state to breakaway from the linkage and redefine its role. The function of the Malaysian economy was largely determined by the logic of the prevailing international division of labour. The reliance on plantations and mining (i.e., rubber and tin) kept the national economy vulnerable to the external market forces, especially fluctuations in the prices of the products. Given a favourable global market in the 1960s, the Malaysian economy experienced a stable growth: around 6 percent per annum.

During the early 1960s the import substituting manufacturing sector grew rapidly, particularly in such areas as cigarettes, soap, non-ferrous metals and motor-vehicle assembly; but investment slowed down by the late 1960s. In the meantime, the Federation was formed in 1963 and then came the departure of Singapore in 1965. These have had very little impact on the policy measures. The uneven distribution of growth increasingly became a matter of concern. The growth achieved during the post-colonial era followed the marked "ethnic division of labour" developed during the colonial period, "growth was concentrated in the modern sector where immigrant Chinese and Indians dominated, while the traditional rural sector inhabited by the indigenous Malay majority lagged behind" (Lim and Fong, 1991: 22). Two other critical features of the Malaysian economy began to become evident: an increase in unemployment, and a prominence of foreign investments. Owing to its limited domestic market and nature of the industrialization, the manufacturing sector failed to absorb the growing labour force. Hence unemployment figures were on the rise, from 2 percent in 1957, to 6 percent in 1962, to 8 percent in 1968 (Wong, 1979, Snodgrass, 1970 cited in Jesudason, 1989). On the other hand, foreign investment remained the principal source of funding. As noted by Salih and Young (1987: 168), "the domination of foreign capital in the economic life of the country, not only in the capitalist plantation and mining sector but also in the commercial and trading sector, reached its high point in 1960s." According to one account, in 1970, 80 percent of mining, 62 percent of manufacturing and 58 percent of construction were foreign owned, predominantly by the UK (Hoffman and Tan, 1980: 215-16). Together all these factors created a situation ripe for social upheaval. A rupture of the political alliance (forged among the non-indigenous merchant class and indigenous administrative class) precipitated a crisis which found its manifestation in the racial riots of 1969. This event was a watershed in Malaysia's social and economic policy, and had impact upon the development of telecommunications infrastructure.

Table 1: Public Development Expenditure Allocation for Communications, 1966-1990

	1966-70	1971-75	1976-80	1981-85	1986-90
Communications	205.5	741.9	1252.7	3001.9	9706.1
Telecommunications	195.6*	717.3*	1200.0	2900.4	9572.4
Postal Services	9.6	20.5	41.9	94.0	119.6
Meteorological Services	0.3	4.1	7.6	7.5	14.0

*Including broadcasting and information.

Sources: Malaysia Plan, various issues.

At independence Malaysia inherited a relatively advanced telecommunications infrastructure left behind by the British. During the colonial period the network was developed to serve two purposes: administrative (i.e., to monitor the social and political condition) and economic (i.e., to coordinate activities pertaining to mining and plantation). The post-colonial Malaysian state continued the economic policy of the colonial era. Likewise, generous budget allocations were given to the telecommunications department. From 1966 to 1970 a total of M\$195.6 million was spent on telecommunications (see Table 1), which represented 12.7 percent of the total expenditure for transport, communication and utilities and about 1.9 percent of total budget (Onn, 1989: 85). The total number of telephone subscribers, at independence were 61,000 - up more than four-fold from 1947. Average annual growth rate of telephone subscribers was 16 percent. By 1970, the total number of subscribers grew to 176,000. Annual growth rate of telephone subscribers from 1957 to 1970 was 8.5 percent. During this period the government's primary objective was to enhance telecommunications facilities to service the needs of prominent economic actors (i. e. foreign capital involved in mining and plantation) and also forge national integration through close communication. The latter goal became more salient when Sabah and Sarawak joined the Federation in 1963, though the economic consideration was not completely absent. Since the year 1900 Sabah and Sarawak had a telephone service in place essentially due to the involvement of foreign capital in the growing timber industry. Given that a growing volume of Malaysia's product was passing through the port of Singapore and the latter became the most prominent port in the region, need was felt to extend the telecommunications linkage between Singapore and peninsular Malaysia. In 1962, subscriber trunk dialing (STD) facilities were extended to Singapore and Malacca. Security and strategic consideration came to fore in 1964 when Malaysia faced the so-called "Indonesian Confrontation" (1964-67). This led to a further enhancement in telecommunications infrastructure including the completion of the first stage on South East Asia Commonwealth Cable (SEACOM) linking the Peninsula and Sabah. The completion of the first stage of SEACOM is considered as a milestone in the history of the development of Malaysian telecommunications because besides linking new areas this facilitated improvement in quality of transmission. According to Onn:

a significant milestone in overseas communications was achieved in 1965 when high quality cable telephone circuits were established to replace high frequency (HF) radio service. This was made possible with the completion of stage one of Kuala Lumpur-Kota Kinabalu-Hong Kong SEACOM route. In 1966 SEACOM was further extended to Guam to link up with Japanese-American Trans-Pacific Cable. This tie-up enabled Malaysian subscribers to reach out to Japan, the US and the UK. Through the SEACOM scheme, Malaysia's overseas telephone service had been expanded to 59 countries by 1970 (Onn, 1989:89).

By 1970 Sarawak was also linked through the Gunung Puali-Gunung Serpi Tropscatter Link, which replaced the radio connection between Peninsula and Sarawak via Sabah. A major development in terms of telecommunication infrastructure took place in 1970 when the department established its first satellite earth station, claimed to be designed and developed by local engineers.

Since 1970, Malaysia pursued a new development strategy, which we call the export promotion and import-substitution phase. This phase lasted for about 15 years beginning with the formulation of a 20 year outline perspective plan, the New Economic Policy (NEP), in 1971. Although the riots were the turning point, it was not the only cause of the reformulation of economic policies. Malaysia's position within the global economy also required a change.

In post-World War II the crises originated from the war and its predecessor, the Great Depression, necessitated a restructuring of capitalism leading to the emergence of a new model characterized by a social pact between capital and labour, regulation and intervention by the state in the economic sphere, and control of international economic order by intervention in the sphere of circulation via international institutions like IMF (Castells, 1989: 21-22). This restructuring brought unprecedented economic growth to the western industrialized countries, but continued deprivation to the poor, largely colonized, supplier of raw materials — the Third World. But by the early 1960s, both endogenous (e.g., rampant inflation and successes of social movement and labour struggles in lowering the rate of profit) and exogenous (e.g., decolonization of the Third World and the entrance of new competitive actors into the international economy) factors engendered a structural crisis for global capitalism. Industrialized countries faced severe problems of structural unemployment, underutilized plant capacity, stagnating domestic investment and fiscal crises of the state, which signaled a necessity to restructure the global economy. This restructuring eventually forced the development of a new international division of labour (NIDL) superseding the classical international division of labour. The traditional bisection of the world into a few industrialized nations on the one hand, and a great majority of developing countries integrated into the world economy as raw material producers was replaced by an increasing subdivision of manufacturing processes into a number of partial operation at different industrial sites throughout the world. The commodity production was increasingly subdivided into fragments which were then assigned to whichever part of the world can provide the most profitable combination of capital and labour (Frobel, et al., 1980: 13-14). Despite this profound change what remained the same was the basic goals of a capitalist system, namely:

... to enhance the rate of profit for private capital, the engine of investment, and thus of growth; to find new markets, both through deepening the existing ones and by incorporating the new regions of the world into an integrated capitalist economy; to control the circulation process, curbing structural inflation; and to assure the social reproduction and economic regulation of the system through mechanisms that would not contradict those established to achieve the preceding goals of higher profit rates, expanding demand, and inflation control (Castells, 1989: 23).

The global economic restructuring and consequent new international division of labour that began to replace the old bisection of the world in the early 1960s by then reached to a level where Malaysia's role needed to be reconstituted. No wonder the multinationals' increased search for cheap labour coincided with the state's promo-

tion of export-oriented industrialization. A closer look reveals that the export-orientation was not a policy decision to create employment after the riot, but was already in the planners' minds during the First Malaysia Plan (Jesudason, 1989: 173; Cho, 1990). The passing of the Investment Incentive Act of 1968 marked the shift toward export-oriented industrialization (EOI).

The goal of the NEP formulated in 1971 was to promote growth with equity. Until 1985, three five-year plans were formulated in light of the NEP guidelines, these are: the Second Malaysia Plan (1971-75), the Third Malaysia Plan (1976-80) and the Fourth Malaysia Plan (1981-85). During the period in review (1971-1985), the Malaysian economy shifted its reliance from agricultural products to manufactured goods. Furthermore, export expansion became a central element in Malaysia's industrial development from 1970 onwards. The key to the export strategy was the establishment of special Free Trade Zones (FTZ) in 1971 outside the principal territory of Malaysia. Raw material, component parts and semi-finished and finished products could be shipped into and out of FTZs without being subject to any customs and excise duties. Many special benefits were given to firms entering these zones to produce for export. By 1978, these zones employed 80,000 workers, about 11 percent of the manufacturing labour force (McGee, et al., 1986). In order to attract foreign investment, labour legislation was tightened. Anti-labour policies were further marked since the 1980s (Sundaram, 1987). Availability of low-cost, semi-skilled, women workers that led to the rise of the semiconductor industry and the discovery of new oil field off the coast of peninsular Malaysia (along with the off-shore Sabah and Sarawak), created a "boom" in the early 1970s.

Manufacturing growth was rapid in the 1970s. From 1970 to 1980, the average annual real growth rate amounted to 13.5 percent, and the manufacturing contribution to the GDP rose from 13.4 percent to 22.4 percent over this period. The sector increased its share of export earnings from 20 percent in 1977 to 48 in 1987. The share of agriculture in the GDP declined from 30 percent in 1970 to 20 percent in 1980. Employment in manufacturing rose from 7.6 percent per annum, in construction at 6.8 percent and in utilities at 6.5 percent. The unemployment rate as a percentage of the labour force fell from 7.5 percent in 1970 to 5.3 percent in 1980 (Salleh and Meyanathan, 1993: 6-7).

In terms of overall economic performance, Malaysia did extremely well. Actual GDP growth exceeded planned targets in both the Second (1971-75) and Third (1976-80) Malaysia Plan periods, reaching 7.4 percent and 8.4 percent respectively. Factors contributing to the growth are several. But, in the main, a strong external demand and a rapid increase in the public investment and consumption were the major sources of unprecedented growth in the 1970s. When we speak of "strong external demand," what is referred to is the increased demand of manufactured goods, especially electronics and textiles. Both these industries, primarily the former,

grew rapidly and in the context of decline in demand for rubber and other primary commodity products, emerged as the main sources of revenue. Through the textile and electronics industry, Malaysia's role in the global market was reconstituted from a supplier of cheap raw materials to a supplier of low value-added manufactured goods. A brief profile of Malaysia's electronics industry, totally owned by multinational companies and geared toward the global market, will illustrate this point.²

The electronics industry in Malaysia took a foothold in 1967 when a Japanese multinational set up a consumer electronics plant to take advantage of the domestic market. In 1971 the semiconductor business industry was started when an American multinational invested in Malaysia. Many other multinationals did the same following active government promotion of foreign investment to develop labour-intensive industries. This was part of the export-oriented strategies adopted in the early 1970s. In the 1970s the electronics industry grew at an average annual rate of 13.3 percent, and Malaysia became the world's largest exporter and third largest producer (after Japan and the United States), of semiconductors, overtaking Singapore. Export earnings from the industry increased from M\$14.7 million (US\$ 5.9 million) or 1.8 percent of total export earnings of manufacturing sector in 1970 to M\$2.7 billion (US\$ 1.1 billion) or 37.5 percent of total manufactured exports in 1980, and M\$ 7.0 billion (US\$ 2.8 billion) or 53.3 percent of total manufactured exports in 1986. By 1987, electronics exports were Malaysia's top revenue earners. According to the "Electronics Data Yearbook, 1987" published by Benn Electronics, the total electronics production of Malaysia in 1987 constituted about 0.9 percent of the world's total. Electronics export reached M\$ 14.7 billion (US\$ 5.5 billion) in 1988 and accounted for 56 percent of all manufacturing exports. Currently the industry accounts for the largest share of manufacturing output, value-added, exports and employment.

Despite these impressive statistics, the most important contribution of the electronics industry was the provision of high levels of employment: from less than 600 employees at the end of 1970 to 41,000 in 1976, to an estimated 85,000 at the end of 1985. The electronics industry became the most important absorber of low-skilled labour in the manufacturing sector, and directly contributed to the lowering of the unemployment rate in the 1970s and early 1980s.

The electronics industry, however, is fraught with weaknesses since its inception, primarily owing to its enclave nature. First, given the fact that this industry is completely dominated by foreign-owners, the increase of export does not necessarily reflect a major success of the Malaysian industry. In 1982, there were about 100 electronics companies, among them nearly all the world's major companies. Their assembled products were exported to the United States, Japan and Western Europe. The largest exporter were the US firms, which collectively exported 70 percent of the industry's total export, mainly to the US (*New Strait Times*, 20 June, 1984). Thus a lion's share of the profit was repatriated to the United States. Second this mostly

foreign-owned industry has created very few backward linkages. Most of the intermediate products such as IC brain, lead-frames, gold-wires and ceramic packaging are imported from abroad. As a result, net foreign exchange earnings is remarkably low. In 1983, for example, the semiconductor industry exported S\$3.8 billion worth of semiconductors but imported components and machinery amounted S\$3.54 billion, earning only \$260 million in foreign exchange (*Business Times*, 6 October, 1984). Third, there are very few local linkages in the form of generation of local suppliers except in items like plastic packaging materials and cardboard boxes. Fourth, as with the absence of a backward linkage, there is a noticeable absence of forward linkage. The industry, to date, is heavily concentrated in the component sub-sector. In 1976, the distribution of the component, consumer and industrial sub-sector was 82.3 percent, 11.6 percent, and 6.0 percent; in 1984 it was 84.2 percent, 11.8 percent and 4.0 percent (IMP, Electronics Industry, 1985:14). Which means that except for generating low-wage employment (and consequently some revenue), the contribution of the industry is minimal. Contrary to Asian NIEs, which also host the multinational electronics industry and have developed backward and forward linkages, Malaysia remains a supplier of cheap labour.

The weaknesses described above is not confined to the electronics industry of Malaysia alone, though it is more obvious in this case. Instead, these are endemic to, or one may even say primary characteristics of, the entire export sector of Malaysian industry. The export sector, dominated by an electronics and textiles subsector, has created very poor links with the rest of the economy, and grew depending entirely upon an unstable global market and foreign capital. What this means is that by the mid-1980s, Malaysia progressed a long way from its role in the world economy as a pristinely raw material producing country, but became dependent upon a narrow industrial base which has a high technology input, responsive to the rapid changes in this technology and sensitive to demand which in turn is dictated by world economic cycles. No doubt, this has made the country inextricably tied up with and vulnerable to the international business cycle and foreign capital.

Such a pattern of integration with the global economy not only limits growth but also lessens the state's ability to pursue an agenda inimical to the interests of foreign capital. This is most clearly illustrated in the Malaysian government's failure to establish total control over the petroleum industry through the Petroleum Development Act (PDA) 1974; and enforce NEP's goal through the Investment Coordination Act (ICA) 1975. The ICA, as introduced in April 1975, required all manufacturing enterprises with 25 or more employees (or paid up capital greater than M\$ 250,000) to obtain a license to manufacture. It made the granting of licenses conditional upon compliance with NEP guidelines, meaning ensuring 30 percent ownership by *Bumiputras* by 1990. The reaction from foreign investors was sharp. Describing these as "new and more ominous phase of Malaysian economic nationalism" (Gale, 1981:

1138), foreign investors reacted adversely. Foreign Direct Investment which was on the rise since 1968 (0.9 percent of GNP in 1968 to 6.3 percent in 1974), dropped precipitously to 3.9 in 1975. It further slid down in subsequent years. By 1979, it decreased to 2.9 percent. Another factor that contributed to the stagnation of foreign investment was a recession in the advanced capitalist state, which also reflect the intricate relationship between the Malaysian economy and the global economy. Government, faced with intense pressure, had to back out. Both of these Acts were amended by 1977.

In the early 1980s, especially after Mahathir Mohamad's election to the office of Prime Minister, a deliberate push toward heavy industrialization was made through the implementation of Proton Saga car project, integrated iron and steel plants, and the petrochemical complexes. The Heavy Industries Corporation of Malaysia (HICOM) was set up in 1980 to spearhead the drive. The National Petroleum Development Corporation (Petronas) also established a number of capital intensive industries to exploit the natural gas and petroleum resources available. Commitment to heavy industries involved expensive investments as well as burdensome protectionist measures. The government's massive expenditure on heavy industries was based on continued strong foreign exchange earnings from the commodities and the petroleum sector. But between 1981 and 1986 declining commodity prices reduced export earnings remarkably. Petroleum prices, for example, declined to under US\$ 10 per barrel by 1985 from US\$32 per barrel in 1982. This caused a serious problem for Malaysian economy. The heavy industrialization programme, growing balance-of-payments current account and public sector deficits (primarily due to heavy losses by non-financial public enterprises) were covered and financed by external borrowing. As a matter of fact, external borrowing became the main source of foreign capital inflow in the first half of the 1980s (Ministry of Finance Malaysia, 1988). The extent of foreign borrowing can be appreciated from the facts that in 1986 total outstanding debt was 47.8 percent of the GNP and the debt service ratio was 6.3 percent. During 1981-86 period annual increase in foreign debt was 52.4 percent, highest in the region (Dixon, 1989: 32, Table 1.18). In 1982, the budget deficit was 3.3 percent of the GNP, one of the highest in the world (Sundaram, 1987: 125). Domestic problems in conjunction with the world-wide recession discouraged foreign investment and reduced domestic private investment (from M\$ 10.4 billion in 1983 to M\$ 7.9 billion in 1986). The Fourth Malaysia Plan (1980-85) targets for GDP growth, Malay corporate share holdings and poverty eradication were not met. In 1985 GDP contracted by -1.0 percent, and expanded by only 1.5 percent in 1986, recovering to a modest 4.7 percent by 1986. As a consequence unemployment increased.

Reforms in its economic strategy together with a rapid influx of foreign direct investment and multinational corporations internationalized the Malaysian economy further in the 1970s. The dismantling of the ISI policy and the fuller integration of

the Malaysian economy into the international economy stemmed from international and domestic circumstances. Concomitant to these changes, the telecommunications sector in general and telecommunications infrastructure in particular experienced a massive change. These changes reflect the prevalent international situation. The unprecedented higher level of interconnectedness that grew in the late-1960s had created a demand for a constant exchange of information between and, among the participants of the process making information, a necessary input into every aspect of economic decision-making. As Neuberger, at a very early stage of this process noted:

the larger the number of participants in the economic process, the greater the division of labour, the more complex the technological processes, and wider the assortment of goods and economic services and economic system produces, the more information intensive the economic process becomes (Neuberger, 1966: 132-33).

The interconnectedness brought recognition to the information both as a commodity and resource "a catalytic resource which acts as a powerful agent of change" (Jussawalla, 1993: 128). To tap this resource and trade it as commodity, a system of enhanced capacity to store, retrieve and analyze information and a reliable, faster, and constant mode of communication became crucial. The development of the micro-processor in 1971 and the spectacular growth of telecommunications in the 1970s had been the logical advancement in this direction. As a matter of fact, by early 1970s it became obvious that telecommunications is increasingly becoming the material infrastructure of the world economy like the railway systems in 19th century. In such circumstances, communication and information sectors were designated to play a crucial role in Malaysia's great economic leap encapsulated in the New Economic Policy (NEP, 1970-1990). The importance attached to the telecommunications can be understood from the government allocations for this sector. In the Second Malaysia Plan (1971-75), telecommunications sector received an allocation of M\$717.3 million, more than three-times from the First Malaysia Plan, which represented 26.1 percent of the total expenditure for transport, communication and utilities. Although broadcasting and information was included in this allocation, their share was significant. The increased allocation enabled the authorities concerned to expand their network, train technical personnel and help grow domestic telecommunications manufacturing industry through subcontracting equipment. Major suppliers of equipment, however, remained to be foreign companies.

By mid-1970s multinational corporations became a prominent actor in the Malaysian economy primarily owing to their massive investments in electronics industry. This came as a direct consequence of the new international division of labour. Malaysia's economic policy of embracing multinational and integration with global economy as a supplier of cheap labour necessitated further development of telecommunications infrastructure as instantaneous communication became the

backbone of economic activities. Pressed with these needs Malaysia went for an upliftment of telecommunications infrastructure and telecommunications services. Beginning in the mid-1970s, Malaysia made changes in organizational structure of telecommunications department and paid increased attention to telecommunications services. This heightened emphasis paid off in the form of increase in subscriber base. The number of subscribers increased from 176,000 in 1970 to 194,000 in 1976, a 14.6 percent increase in six years. Obviously this was quite high compared to an 8 percent annual average growth rate during 1957-70 period. Additionally, about 14,000 potential subscribers were waitlisted. In the 1970s along with the development of existing services several new services were introduced. A second satellite earth station was built and telex and data transmission services were modernized. The Auto Telex Exchange inaugurated in 1973 enabled Malaysian subscribers to contact 28 foreign destinations. By 1976, a computer controlled Automatic Telex/Message Switching Centre was commissioned.

Table 2: Telecommunications Department Finances, 1976-1984 (in M\$ million)

	1976	1977	1978	1979	1980	1981	1982	1983	1984
Revenue	282	301	358	433	524	637	772	931	1231
Operating Expenditures	145	189	205	240	299	363	427	655	723
Surplus	137	112	153	193	225	274	345	316	508
Development Expenditures	210	288	359	381	638	697	749	1037	1603
Deficit	-73	-176	-206	-188	-413	-423	-404	-721	-1095

Sources: Department of Telecommunications Annual Reports, 1977-84, Malaysia.

Compiled by: Onn (1989).

In the Third Malaysia Plan (1976-80) telecommunications sector was not only separated from broadcasting and information, allocation for telecommunications was also raised. A total of M\$1200 million was allocated. Although a 1972 amendment to the Telecommunications Act 1950 required that the Telecommunications Department operate on "commercial principles," development and operation costs outstripped revenues during the period 1976 to 1984. As can be seen from Table 2, the development expenditures took the majority share. Between 1976 and 1984 development expenditures increased eight-fold. The plan to make the department self-reliant which prompted the 1972 amendment, was practically shelved. Government went ahead with rapid infrastructural development. In 1978 appropriation for telecommunications doubled. In the following year International Subscriber Dialing Service (ISD) was introduced. Initially the service was offered within a limited geographical area but gradually extended to cover about 80 percent of the subscribers by 1989.

Despite reasonable increase in the number of subscribers during this period (from 194,000 in 1976 to 849,000 in 1984 - sometimes at the rate of 23.5 percent annually;

see Table 3), the department was lagging way behind the customers demand. A large demand for telephone remained unmet. By December 1980, for example, Malaysia had 396,000 telephone lines, but another 133,000 applications were kept waitlisted (Saunders, et al., 1983: 12). The number of waiters for telephone services were ten times higher than the figure of 1972 (Kennedy, 1989: 11). The changes in organizational structure (i. e. placing the department under a reorganized Ministry of Energy, Telecommunications and Post in 1978) and whole hearted attempts were not enough to meet the demands that grew along with the increased interactions between the Malaysian economy and the global economy.

Table 3: Growth of Telephone Subscribers in Malaysia, 1976-1987

	Subscribers (‘000)	% Increase	No. on the waitlist (‘000)
1976	194	14.6	65
1977	228	17.1	76
1978	271	19.1	84
1979	325	20.0	106
1980	396	21.7	134
1981	489	23.5	150
1982	585	19.8	190
1983	700	19.6	200
1984	849	21.3	191
1985	959	13.0	332
1986	1043	8.8	348
1987	1134	8.7	365

Sources: Department of Telecommunications Annual Reports, 1970-1987, Malaysia.

Compiled by Onn (1989).

In the Fourth Malaysia Plan (1981-85), development allocation for telecommunications reached M\$2900.4 million. In conjunction with Malaysia's push toward heavy industrialization thrust for telecommunications infrastructure development reached its zenith. Between 1983 and 1984 there was a 65 percent rise in budget allocations for telecommunications services while allocation for defense, education, agriculture, housing, and health remained static or declined. This massive expenditures resulted in expansion in terms of outreach and addition of new services. With the commissioning of 6000-line SPC telex exchange in 1982 telex capacity expanded, so is the number of subscribers - from 58,000 in 1982 to 111,200 in 1986. Three data transmission services were introduced in 1983. These are Telefax, Bureaufax and Datel. Telefax, an internationally regulated facsimile service which enables users transmit charts, graphics, documents etc., was made available to the public in 1983 and by the end of 1986 about 2000 fax machines were in operation. To transmit low volumes of data

between computers and data terminals via Public Switched Telephone Network (PSTN) a value-added service called Datel was introduced. Bureaufax service, a general facsimile service available from post offices, is intended for general consumers. MAYPAC (The Malaysian Packet Switched Data Network), designed for data communication between computers and data terminals within Malaysia and to and from other countries, made its debut in November 1984.

Although the country was already in deep recession, grandiose and ambitious expansion plan for telecommunications was unveiled by the government in September 1984. As reported by Clad (1984: 78) this plan included the replacement of analog equipment with digital equipment costing US\$860,220,000; the expansion of the local junction-cable network with a move to fibre optics costing US\$ 1 billion; and an upgrading and expansion of transmission and microwave links costing US\$ 300 million. Yet, the department miserably failed to achieve its goal of having 1.5 million telephones by the year 1985, only about a million telephones were in place by the end of the year.

In January 1985, the telecommunications department set up a new automatic mobile telephone system, ATUR 450 (Automatic Telephone Using Radio). Mobile communications were not new to Malaysia since this service was available to Malaysian public since 1964 with the launching of Public Correspondence Network (PCN),³ but the introduction of ATUR 450 was remarkable for technical reasons. Technically ATUR 450 is superior as it uses NMT 450 standard and enable extending the coverage of mobile communications from 30 km radius of Kuala Lumpur to most of the populated areas in the country. In fact, Malaysia was the first country in the region to use the ATUR 450 system with NMT 450 standard. The extensive reach of the ATUR 450 system makes it very useful for people who travel extensively throughout the country. Besides the normal business users, ATUR 450 system proved to be beneficial to the timber companies operating in remote jungle and trawler boats engaged in fishing 50 miles off the coast.

By mid-1980s, Malaysian government embarked on a privatization and liberalization policy. This marks the beginning of the third phase of Malaysia's economic growth. Since 1986 government liberalized rules on foreign equity ownership, expanded investment incentives (through Promotion of Investment Act, 1986), cut corporate tax rates and suspended the Industrial Coordination Act of 1975. Furthermore, the government initiated a grandiose privatization process. These measures, in conjunction with favourable external factors (such as recovery of exports and commodity prices), attracted a large influx of foreign investments. A World Bank study noted:

the new flexibility had a dramatic effect on foreign investment. DFI approvals in Malaysia, which averaged US\$300 million a year in 1983-85, jumped to US\$2 billion by 1988. New investment were directed toward electrical and electronic products, chemical products, rubber products, basic metal products, and petroleum. More of the investments were dedicated to exports than ever before (World Bank, 1993: 302, Box 6.2).

The results of the new influx of FDI are obvious: strong GDP growth since 1988: 7.4 percent in 1988, 7.8 percent in 1989 followed by an average 8 percent growth annually; and gradual reduction in unemployment. But as "more of the investments are dedicated to exports than ever before," there is ample reason to fear that the vicissitudes of the 1970s will be repeated, which means the emergence of enclave-type industries with very little linkages with the domestic economy and making the economy extremely vulnerable to any contraction in the demand for manufactured goods. This, as we have seen, discourage domestic industrial entrepreneurship. limits growth and development of the diversified industrial sector and subjects the country to the vagaries of the global market. Another feature of these foreign investments is that they are directed toward small and medium-sized industries especially geared toward the needs of consumer market. Naturally, these industries are characterized by a low value-added production and a low level of automation. The importance of small and medium-sized industries notwithstanding, this seems incompatible with the Malaysian government's plan enumerated in the Industrial Master Plan (1986-1995) of 1986 — that of establishing strategic heavy-industries — but extremely beneficial to the foreign capital and global market. Nevertheless, this development is congruous with the development strategy pursued by Malaysia since the beginning of the 1970s.

Government's decision to liberalize economy also impacted upon telecommunications sector. The government targeted the Telecommunications Department in 1983 to be privatized. But it took more than two years to come up with legislation delineating the modus operandi of the privatization. In 1985, following the recession, necessary laws were enacted and on 1 January 1987 the Telecommunications Department was formally privatized. In November 1990, Telekom Malaysia was listed on the Kuala Lumpur stock market after the sale of 26 percent of its stock. It became evident that government has initiated a process whereby they will privatize the sector step by step, first opening up fringe service like paging and payphones and according some protection to fledgling providers. Accordingly, in 1989 the government allowed mobile phone operator Celecom to compete against Telekom's archaic ATUR 450 system. Government also gave it five years to build up its base free from further competition. A private company, Binariang Sendirian Berhad (20 percent stake owned by America's US West), received approval from the government in November 1991 to operate a satellite network. In March 1992 the first orbital slot was filed with IFRB, followed by two more in April 1992 (Ghazali 1994: 15). In May 1994, the Prime Minister announced that Malaysia's telecommunications market would be opened up to competition. This announcement was followed by issuing licenses and liberalizing more services. By the end of the year a record number of companies — eight besides Telekom, were licensed to provide a panoply of services— from mobile phones to satellite communications and fixed-line networks. But the sector was privatized even before the government drew up the guidelines for competition.

Privatization along with a huge government allocation (MS9.6 billion) for capital expenditures earmarked in the Sixth Malaysia Plan (1989-90) further accelerated the telecommunications development.⁴ Government initiatives in the early and mid-1980s brought in new foreign investors and renewed interests among foreign telecommunications equipment producing companies in Malaysian telecommunications industry. Lent (1989: 174) informs:

In 1987, STM and Cable and Wireless signed an agreement to establish a joint-venture company (51% STM, 49% Cable and Wireless) to install, maintain and operate a US\$ 100 million fibre-optic cable linking Malaysia with Sabah and Sarawak. ... The following year, another satellite ground station was added, making Malaysia the operator of five international satellite and 12 national ground station.

Supplies were bought from almost all internationally reputed firms like Siemens, NEC, ITT, Hitachi, GEC, Philips, Ericsson, Motorola, Fujitsu. The Swedish telecommunications conglomerate Ericsson won orders worth more than US\$ 550m in September 1994 (Financial Times, September 20, 1994). In January 1996, Harris Farinon, a Canadian subsidiary of the US Harris Corp, was awarded a contract worth US\$ 45m to supply microwave radio equipment to Folec communications of Malaysia to extend basic and cellular telephone system (Financial Times, January 24, 1996).

In the late-1980s an array of new services were added to the existing data and facsimile services. For example, in July 1989, STM started nationwide MAYCIS (Malaysia Circuit Switched Data Network) data service, using circuit-switching rather than packet-switching technology and designed for fast, confidential and reliable transmission of data, messages or information in any digital form with speeds ranging from 2400 to 9600 bps. In the same year, Telemail — a computer-based electronic messaging service with several features, was also inaugurated. Further, a second cellular system called ART 900, based on the ETACS standard and operated by a private company CELCOM, made its debut in August 1989. Thus by the beginning of 1990s, besides having a nationwide telephone service with subscriber truck dialing and international subscriber dialing services, two cellular system, car telephone radio paging services, leased channel video services Malaysia had a number of data services such as Maypac, Maycis, Teleita, Telefax, Inland Leased Circuit Service.

The most remarkable event of Malaysian telecommunications sector in the first three years of the 1990s was the introduction of the Integrated Services Digital Network (ISDN).⁵ After the successful completion of pilot project, ISDN services were made available to the public in July 1993 using the national digital network as platform. As reported in the 1993 Annual Report of The Telekom Malaysia initial system capacity is 2,000 ports of access lines. Both Basic Rate Interface (BRI) and Primary Rate Interface (PRI) are available. The Report further informs, "The BRI service provides two 64 kbps channels on existing telephone lines for simultaneous voice and data transmission. The PRI service is more suited for digital PABX and provides up to 30 64kbps channels via a Mbps link." At the end of 1993, there were 35 ISDN lines in service.

Table 4: Financial Highlights of Telekom Malaysia, 1987-1991

	1987	1988	1989	1990	1991
Operating Income/\$m	1644	1882	2141	2574	3004
Profit Before Tax/\$m	5	180	366	564	1079
Growth Over Previous Year					
Operating Income	-	14.5%	13.8%	20.2%	16.7%
Growth Over Previous Year					
Profit Before Tax	-	3500.0%	103.3%	54.2%	91.3%

Source: Telekom Malaysia Bernhard, Annual Report, 1991.

Table 5: Business and Other Statistics, Telekom Malaysia, 1987-1991

Customer Base	1987	1988	1989	1990	1991
Residential Telephones	798,722	884,138	990,335	1,135,954	1,298,751
Business Telephones	332,997	363,549	397,848	449,790	518,109
ATUR 450	17411	27302	39419	54616	70917
Public Payphones*	19007	21456	22353	24591	27750
Telex	11228	9930	8821	8372	7981
Telefax*	4674	13663	24864	40000**	45000**
Leased Circuits	6724	8206	10953	15528	18782
Datel*	1203	2687	4235	5592**	6830**
MAYPAC	530	763	909	1153	1655
Telita*	-	299	467	530	634
MAYCIS	-	-	301	322	357
Toll-Free	-	-	93	236	334
Telemail	-	-	14	271	561
Total Access lines	1,131,719	1,247,687	1,388,183	1,585,744	1,816,860
Total Access Lines per 100 population	6.8	7.3	8.0	8.9	9.9
Network Capacity Effective Cable Pairs (ECP)	2685	2915	2967	3220	3405
Exchange lines Capacity (ELC)	2311	2407	2453	2506	2712

* Included in business telephone statistics/ ** Estimated.

Source: Telekom Malaysia, Annual Report, 1991.

Besides, over this period Malaysian Telecom has implemented a number of projects including a nationwide digital radio (microwave) network, a nationwide fiber-optic backbone (currently more than 10,000 fiber kilometers land-based network), parts of the ASEAN submarine fiber network (it has also committed US\$45 million in the APC cable network), VSAT, digital leased line (64 Kbps and 2 Mbps)

service. Additionally, in August 1991, Telestock, a dial-in service giving up-to-date share prices, was launched in cooperation with Kuala Lumpur Stock Exchange. The financial highlights of STM for the period of 1987-1991 and statistics pertaining to telecommunications infrastructure development during the same period are presented in *Table 4 and 5* respectively. Value added services currently available and to be available in near future in Malaysia are presented in *Table 6*.

Against the backdrop of the continuing growth since 1988, prospects of further growth in the 1990s and a desire to "make Malaysia an international telecommunications hub in the Asia-Pacific region by the year 2000" (Ghazali, 1994: 15, emphasis in original), Malaysia has decided to continue upgrading its telecommunications infrastructure during the current Sixth Plan period. For the five year period 1991-95 the total investment had been projected as MS5352 million (Sixth Malaysia Plan, 1991-95). As the current plan goes, according to the Deputy Minister of Energy, Telecoms Dato'Hooh Rosli Ghazali:

The network capacity will be increased from four million lines in 1992 to seven million in 1997. The switching capacity will be increased similarly from 3.2 million in 1992 to 6.5 million in 1997. ... National telephone penetration by the end of the sixth plan is expected to be 13 telephone lines per 100 population, and this is expected to increase to 25 per 100 population by the year 1997 and 45 per 100 in the year 2005. ... Exchange line capacity is expected to grow from 2.524 million in 1990 to 3.425 million in 1995, switching digitalization will increase from 76% to 100% by the year 2000. One hundred percent digitalization of long-distance lines will also be achieved by the year 2000 from 41% presently, while digitalization of the international network will increase from 30% to 74% in 1995 and will be completed by the year 2000 (Ghazali, 1994: 14-16).

A number of trends, which would enable us to understand the nature of infrastructural development of the telecommunications and the driving force behind it, can be gleaned from the above description of the development that has taken place over the last three decades in Malaysia. The first and foremost is the urban bias and business orientation of this development. In spite of the presence of a huge rural hinterland, Malaysia's major thrust for development of telecommunications network was not to cater to the needs of the sparse rural areas and ensure universal service but to the business sector increasingly interconnected to the global market. Latest technologies were harnessed for furthering international communication. For example, in 1991, international telephone service registered 228 million minutes calls (excluding those to and from Singapore), a 26 percent increase over the previous year (the total figure including those to and from Singapore was 384 million minutes). Consequently, traffic handling capacity at the gateway in Kuantan was expanded and two new international gateways were installed in the following year. As a result, international telephone traffic to and from Malaysia increased substantially in 1992 and 1993, 452 million minutes and 626 million minutes respectively. On the other hand, only 37,000 rural telephone installations were in place in 1991, a small fraction of total 1.82 million telephones in service. In late 1995, business line growth exceeded residential line growth. As reported by the Financial Times:

Residential line growth, at 16 per cent, was weak compared with 19.5 percent in the first six-months. Business line growth, however, was 17.3 percent in the second half compared with 16.5 percent, so that growth in this sector exceeded residential line growth for the first time since 1991 (Financial Times, March 6, 1996).

It is obvious that the major thrust of telecommunications development came in the 1980s, at a time when Malaysia set its goal to join the bloc of the industrialized nations. Since then there was an explosive growth of data communication network. Prior to that the telecommunications department had given a low priority to the development of a data communication network, providing only point-to-point voice-grade circuits on a leased basis. Lent (1991) informs us that a plan for data network had been put aside in 1979 because market surveys showed inadequate demand and because international standards did not exist for such a network. But the scenario changed dramatically in the 1980s because the Malaysian economy experienced a structural change which entrenched Malaysia's incorporation in the global economy. Since the mid-1980s growing numbers of multinationals involved in off-shore production activities required advanced communication networks and data services and to them available telecommunications services were inadequate. The growth of the telecommunications networks were also beneficial to the foreign companies doing business in telecommunications equipment. To them an upgrading of telecommunications facilities was also an expansion of market for equipment supplies. In both considerations foreign capital was the ultimate beneficiary of the government's initiatives. Juxtaposed with the fact that in post-recession period, Malaysia embarked on a grandiose privatization scheme it becomes easily understandable why foreign capital considered Malaysia as the growing market of telecommunications. The growth of data network was acknowledged by Telekom Malaysia in its annual report saying:

As in the previous years, the growth of data services outpaced the basic telephone service, with packet switched network, MAYPAC, registering highest growth rate. MAYPAC customers increased by 43.5 per cent to 1,650 while MAYCIS, the circuit switched network, recorded a 10.9 per cent to 350 customers at the year end (Telekom Malaysia, Annual Report, 1991: 31).

According to the latest available information, the number of MAYPAC subscribers is 2,215 and the number of MAYCIS subscribers is 362 (Telekom Malaysia, Annual Report, 1993: 5). The user of data networks, as we all understand, is primarily the business sector.

A closer look also reveals that a principal share of telecommunications revenue comes from the business users. The growth rate of business user is higher than residential users and is considered as the core business. In 1991, business telephones generated revenues worth M\$1719.7 million, constituting 57.2 percent of the total revenues earned. In 1992 the share of business telephone in the total operating revenue was 54.5 percent. The corresponding figure for the year 1993 was 54.3 percent. The preeminence of business sector is also reflected in the growth in mobile

telephones and paging services. Currently, there are 2 cellular systems in operation and one is about to be launched, 3 active radio trunk operators, 3 licensees on CT-2 digital cordless and some 20 over paging operations. According to the latest available statistics, ATUR 450 has a total number of 90,000 subscribers and ART 900 has 260,000 subscribers. Paging subscribers have grown to 200,000, a three-fold increase from 1989 to 1993 (Ghazali, 1994:14). ATUR 450, originally designed to provide services to rural areas is being used, according to Onn (1989), "only by businessmen as car phones." because of the high cost of installation.

Table 6: Value Added Services in Malaysia

Name	Type	Provider
MAYPAC	X.25 Network	Telekom Malaysia bhd
MAYCIS	X.21 Network	Telekom Malaysia bhd
Telemail	E-Mail	Telekom Malaysia bhd
Telita	Viewdata	Telekom Malaysia bhd
ATUR 450	Cellular 450 MHz	Telekom Malaysia bhd
(yet to be launched)	VSAT	Telekom Malaysia bhd
(to be launched in 1995)	VSAT	Binariang
INC	X.25	Information Networking Corp Sdn Bhd
INC	Database Access	Information Networking Corp Sdn Bhd
INC	FAX message	Information Networking Corp Sdn Bhd
INC	E-Mail	Information Networking Corp Sdn Bhd
EDI Malaysia	EDI	Electronic Data Interchange (M) Sdn Bhd
VANS	EDI	Value Added Network Services
Video Conferencing	Video Conferencing	Telekom Malaysia Bhd
Celcom ART 900	Cellular 900 MHz	Technology Resources Inc. (TRI)

These orientations of the Malaysian Telecom may be disturbing to some, but not unusual given that the telecommunications infrastructure has been built primarily to integrate the Malaysian economy with the international economy and cater to the needs of the international capital. It is the internationalization of the economy that predicated the development of infrastructure and services and hence they are essentially geared to the needs of the forces contributing in furthering this process. Certainly, in case of Malaysia, structural imperatives were the compelling force for adoption of technological innovations. To put simply, the telecommunications infrastructure has been developed to serve the interests of international capital that benefits from the current international division of labour within which Malaysia's primary task is to supply labour and products

Conclusion

Over the last three decades, Malaysia has been transformed from a lower value-added, farm-based economy to higher value-added industrial economy that can best serve the foreign capital. Its role in global economy has been reconstituted from a primary commodity exporter to a cheap supplier of labour to a supplier of merchandise goods. The domestic circumstances have had significant impact on the state policies, but foreign capital determined the course to a large extent. The government's failure to enact the Petroleum Development Act of 1974 and the Investment Coordination Act of 1975 are burning examples. Furthermore, in post-recession period, Malaysia has gone back to small and medium-sized consumer-oriented industries.

The pattern of development of telecommunications infrastructure and services in Malaysia, especially in the late-1980s, described in the article clearly shows that the goal is to serve the growing internationalized business sector instead of the vast rural population. The current upgradation plan will also benefit the foreign capital as they will be the primary supplier of telecommunications equipment. The telecommunications infrastructure already in place has interconnected Malaysia with global economy. This and the future developments will, of course, facilitate further internationalization of Malaysian economy. But what remains to be seen is whether it will lead Malaysia to become a developed country.

Notes

1. The process of colonization of Southeast Asia was accelerated by two exogenous factors: the opening of the Suez canal in 1869 and the establishment of telegraphic communications in 1871. Both these factors contributed to the rapid growth of western trade and investment and helped bring the region effectively closer to the western industrial centres "at a time when the search for markets and the demand for the region's raw materials were increasing rapidly" (Dixon, 1989: 71).
2. The following description of the development of electronics industry in Malaysia is based on Fong and Lim (1990), and Salleh and Meyanathan (1993).
3. This was a radio telephone service available to customers residing in and within 30 km radius of Kuala Lumpur. Calls between user and PSTN customers were put through the assistance of operators.
4. The total investment during the Fifth Plan period was M\$ 4211 million. Of which government investment was M\$ 779 million. The remaining portion came from private sector (Sixth Malaysia Plan, 1991).
5. ISDN uses digital transmission and provide users with integrated digital access to voice data network. Both voice and data can be sent simultaneously on a single line. Unlike analog lines which must be encoded to be sent over the telephone lines, digital transmission sends data in its original form, thus reducing the likelihood of errors and improving transmission time. The integrated transmission of voice and data is achieved through use of separate channels. ISDN makes use of main channels "B" and "D." The "B" or bearer channel is able to transmit voice or data at the rate of 64 kbits per second, significantly faster than analog transmission speed of 300-96 bps with modems. The "D" or data channel is used to send signal information to control the "B" channel and to carry packet-switched digital data (Information Malaysia, 1993).

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An Analysis of 1993 Chinese Taxation Reform

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A major taxation reform was introduced along with the establishment of market socialism in China during the Third Plenum of the Fourteenth National Congress between November 11 to 14, 1993. The motif of this meeting centred on the "Decision of Some Issues Concerning the Establishment of a Socialist Market Economy."¹ A *Communiqué* which consisted of ten chapters (50 paragraphs) was initiated immediately after the meeting. They can be categorised into three aspects: 1. development of a better market structure; 2. acceleration of the macro-economic control; and 3. reformation of the state-enterprises.² Among the others, reformation of the taxation was one of the major topics. Chinese State Council announced a list of tax reforms which concerned the possibility of gradual corrections of the previous inefficient tax system. Hopefully, the new system could generate more revenue for the central government and maintain the momentum of the entire economic reform.³ In relation to the pace of economic growth and openness of Chinese economy, this article attempts to explore that the above 1993 taxation reform was a product of the previous immature taxation reforms. Neither the methods nor the ingredients of the former taxation reform was carefully constructed in accordance with the growth of the economy of which adequate revenue could be generated from different taxes. In the first place, the article begins with a historical retrospect of the former taxation reforms. Then, it continues to look into the contents of taxation reform initiated in the late 1993 Third Plenum. The article ended with a summary and conclusion of the above findings.

Historical Restrospect of Previous Taxation Reforms

The subsequent contents of taxation reforms after 1978 could be broadly divided into four periods:⁴ I. 1980-1984, tax-for-profit scheme, the so-called "eating in separate kitchens" (fen zao chifan);⁵ II. 1985, third stage of tax-for-profit scheme;⁶ III. 1988, modification of tax-for-profit scheme towards some profitable provinces;⁷ IV. 1992, a trial of tax assignment system will be conducted in nine provinces and municipalities. They are Tianjin, Liaoning, Zhejiang, Qingdao, Wuhan, Chongqing, Xinjiang Dalian and Shenyang.⁸

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