

**THE ELECTRONICS INDUSTRY IN SOUTHEAST ASIA:
CONFOUNDING THE CRITICS**

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Introduction

Since the oil price decline of the 1980s, the single largest export industry by value in Southeast Asia has been electronics, a diverse industrial category which includes consumer electronics (audio and video equipment), semiconductors and other components, computer parts and peripherals, office equipment and other items. This industry is the largest or one of the largest exporters in Singapore, Thailand, Malaysia and the Philippines, belying the stereotype of these countries as largely primary commodity exporters. Electronics is not only a manufactured export, but more importantly, a high-tech manufactured export, as contrasted with the low-tech products -- toys, garments, footwear, etc. -- which still dominate the manufactured exports of South Korea, Taiwan and Hong Kong.

From a political economy perspective, the experience of the electronics industry in Southeast Asia raises many interesting issues, including its role in national development plans, and the reasons why multinationals have chosen this particular region for their investments. The industry's phenomenally rapid expansion and transformation in Southeast Asia over the last twenty years also deserves analysis and explanation. But these important issues have been dealt with elsewhere, by myself and others (e.g. Scott, 1986; Lim, 1983b, 1987b), and need not be repeated here. Today I wish to focus instead on two of the more contentious aspects of the industry in Southeast Asia: firstly, the industry's impact on national economic and industrial development, and on different socio-economic groups or classes, within each country where it is located;

and secondly, its impact on the region's external economic relations with foreign trade and investment partners, and its position in the world economy and international division of labor.

The Critics' Position

Fifteen to twenty years ago, when the electronics industry was first getting itself established in Southeast Asia, critical observers, myself included, argued that its impact on the region would be largely negative (e.g. Lim, 1978a, 1978b; Pang and Lim, 1977[1]). Externally, multinationals from industrial countries were seen to be motivated largely by the super-profits to be earned from "super-exploiting" (Frobel, Heinrichs and Kreye, 1980) Southeast Asian labor; they were not expected to transfer any technology or real skills, which would continue to be concentrated in their home countries, or to generate local linkages, preferring instead to import most of their inputs from foreign parent companies. Additionally, export-oriented multinational electronics companies were expected to be "footloose" and unstable employers, frequently shifting location among different developing countries as comparative costs -- particularly labor costs -- changed.

Consequently, the internal impact of the industry would also be negative, resting mainly in the provision of short-term and insecure low-waged, low-skilled employment, mainly for young females who would

1. See also, the more general attack on export-oriented industrialization in Bello, O'Connor and Broad, 1982.

additionally suffer from the harsh conditions of their employment in multinational factories. There would be little local skill generation or stimulus for local supplying industries, and no local profits (since the electronics factories were mainly 100% foreign-owned), while the high import content would limit net foreign exchange earnings. Yet the multinationals were thought to demand expensive concessions, including location in capital-intensive, government-subsidized export processing zones, generous tax holidays, and the suppression of free labor organization. In short, the electronics industry was seen as yet another villain in the constant stream of exploitative agents of the industrial capitalist world, bent on manipulating Southeast Asian states to maintain their subordinate and dependent position in the world economic order.

The Internal Impact

Today, these early negative predictions are clearly at odds with the actual experience of the electronics industry in Southeast Asia in the past ten to twenty years. Being such a fast-growing industry worldwide, electronics has contributed in a major way to GDP growth in Southeast Asian economies and their industrial sectors, both directly, and through the provision of valuable foreign exchange earnings (since it is largely export-oriented). The growth of this industry has consistently outperformed that of any other sector or industry in these countries in the last twenty years, with only two world-market-induced, region-wide recessions occurring in 1974/75 and 1985/86. Both these recessions were relatively short-lived, with recovery beginning within a year, and the

second recession being milder than the first. This is a strikingly different record from the performance of commodity-exporting sectors, which from 1982-1987 experienced a much more severe and prolonged recession, not to mention a long-term record of frequent cyclical downturns and declining terms of trade. Indeed, given that high-tech industries' technological and market characteristics mean that they are generally more unstable than mature, low-tech industries, the stability and growth of the electronics industry in Southeast Asia is quite remarkable.

The industry has been in Southeast Asia for from 12 to 23 years now, depending on the country, disproving the early prediction of footloose behavior. Over time, as in any business or industry, some individual companies have closed down due to market and corporate problems.[2] Where an offshore plant is crucial to the operations of the parent multinational, it stays put even in circumstances of extreme local political and financial instability, such as occurred in the Philippines in 1985/86. The costs of relocation are high, given the capital resources invested and the skills, experience and linkages developed in Southeast Asian locations which are not easily replicated elsewhere.

The volume and value of electronics output in Southeast Asia has vastly increased over time, as has the amount of capital invested in the industry, the foreign exchange earned, and the number of workers employed

2. For example, the two American semiconductor plants in Indonesia were closed largely because they were marginal to the parent companies' worldwide operations, and were cut back when both parents experienced serious competitive difficulties in 1985/86. But Japanese consumer electronics manufacturers remain in the Indonesian market.

and their total wage-bill (Lim, 1987b). Far from moving to even cheaper-labor countries as wages increase and the local labor market tightens (particularly in Singapore), electronics plants have increased their investments in capital-intensive equipment, in worker training and skill upgrading, and in the bringing in of more high-tech processes and high-value products, including backward and forward integration and horizontal diversification. For example, semiconductor plants in Singapore, the Philippines and Malaysia have integrated forward into testing and customization of chips and direct marketing to final consumers, and a few have integrated backwards into capital-intensive wafer fabrication (e.g. **Southeast Asia Business** various issues; **Electronics** 8/87; **Asiaweek** 8/23/87). In most electronics plants, manual and semi-manual assembly has given way to automated machine-tending by production operators, with the microscope yielding to the computer video-terminal, for example, and higher-value products have been introduced. The share of semiconductors and consumer products has declined in the electronics total as that of more expensive computer products and office equipment has increased. Long-established companies have stayed, while new companies in different industry segments have kept on coming.

Local purchases have also increased, although this varies considerably by country. In Singapore, multinational electronics companies have for many years been generating vertical linkages with local suppliers, many of which they nurtured themselves -- either directly, through the provision of technical and marketing assistance, or indirectly, as the prime source of new indigenous entrepreneurship as experienced multinational employees leave them to establish their own businesses (Lim and Pang, 1982; see also

Lim, 1983a). This is a pattern common to the other NICs -- South Korea, Taiwan and Hong Kong -- as well. But much depends on individual country conditions. For example, the relatively slow development of local suppliers in Malaysia may be due in part to the isolation of many electronics factories in self-contained free trade zones separated by a customs barrier from the local industrial sector, and in part to the disincentive effects of the now-suspended Industrial Coordination Act which may have discouraged some industrial entrepreneurship by ethnic Chinese engineers.

While it is tempting to dismiss these new indigenous industrial entrepreneurs as being merely "dependent" captive suppliers of their multinational customers, the situation is more complex. For example, local suppliers remain scarce relative to multinational demand, and those that have developed have found themselves in a seller's market where they can choose among competing customers, especially in boom periods which are frequent. It is the multinationals which have found themselves dependent on a few local suppliers rather than vice versa (Lim, 1987b). Increasingly, indigenous electronics firms have been able to sell independently on the world market, in some cases becoming competitive with multinationals. The world sales of Singapore's local computer manufacturers -- many of whom developed their expertise while working for multinationals -- have boomed in recent years.

Skill upgrading has proceeded in all countries but this again depends on individual country conditions. For example, it is relatively easy to move high-tech operations to Singapore, where the government has long

invested in increasing the supply of scientific and technically-trained manpower through education and training and relatively free imports, and encourages industry skill upgrading in many ways. This is less easy in Malaysia, where scientific and technical manpower is in short supply, and the ethnic employment quotas of the New Economic Policy require proportional hiring of bumiputra engineers who are especially scarce. Science and engineering education in Malaysian universities is also not of the international quality found in Singapore. A similar situation exists in the Philippines, though here, as in Singapore and to some extent Malaysia, communication and retraining are facilitated by the fact that both skilled and unskilled workers are English-speaking.

While the ratio of skilled to unskilled workers in the electronics industry has risen, and automation has taken place, the absolute number of jobs for unskilled workers has continued to increase because of explosive industry growth. Capital-labor substitution has therefore not led to the retrenchment of low-skilled workers, nor has it resulted in the relocation of operations to the advanced industrial home countries of the multinational. On the contrary, over time more skilled operations -- including research, design, pilot production, and distribution -- have been moved from the developed countries to Southeast Asia. Singapore has been particularly favored for skill upgrading due to its accumulating human skills and experience, political and economic stability, government cooperation and investment incentives, and excellent infrastructure and location, all of which are more important than cheap labor to low labor-content high-tech segments of the electronics industry (Pang and Lim, 1988).

Unskilled -- or rather, low-skilled -- workers have, generally speaking, found good jobs in Southeast Asia's electronics factories, although there are variations by country. Most of the production operators are young women, and their wages in this industry are usually higher than those paid in alternative low-skilled female occupations such as farming, domestic service and work in small local commercial establishments. Hours of work are also often shorter, and working conditions better e.g. because airconditioning and a clean environment are required for the manufacturing process. Fringe benefits are attractive, with multinationals in particular becoming the major provider of social welfare for their employees, an "overwhelming proportion" of whom feel that their lives have improved as a result of their work in electronics factories (Lin, 1986b; Foo and Lim, 1987). Partly because of its favorable "image", and partly because of other factors such as higher educational requirements, electronics commands a higher status than, and is typically preferred by young women workers over, other female-intensive export industries, even where there is little or no wage differential between them (ILO, 1985; Lim, 1987b).

Employment in a large modern factory also provides more opportunity for labor organization and action than, for example, working on a family farm or other family-operated enterprise, though whether or not this opportunity is seized depends on factors outside of the factory itself. Thus a multinational electronics plant in Thailand has been quickly unionized while the longer-established Malaysian subsidiary of the same parent company has not (Blake and Moonstan, 1980; Blake, 1984). Overall, there is a higher rate of unionization in the electronics industry in Southeast Asia than there is in the U.S., where it is very low. More

importantly, throughout Southeast Asia young women apparently favor modern factory jobs for non-economic as well as economic reasons: these include the greater social awareness and participation, and greater personal autonomy and independence, afforded by such work as compared with traditional and contemporary alternatives (Foo and Lim, 1987). These benefits derive from modern factory employment in general, rather than from electronics jobs in particular; but electronics has substantially expanded factory employment for women, and is the largest employer of women in Singapore and, possibly, Malaysia as well.

There have been, of course, problems in the adaptation of young women workers to such modern factory employment, and government policy, social prejudices, and in some cases, bad management, have often reduced its progressive consequences.[3] However in most cases these costs, like the benefits, arise out of the process of industrialization, and the social and economic environment in general, rather than from the operations of the electronics industry itself. Even in the area of health, where the technology of the industry might be expected to play a major role, research has found the national health environment to be a more important determinant of workers' health status (e.g. Lin, 1986a). Over time, the ratio of industry costs to benefits declines.

In short, the electronics industry has so far had a mostly progressive impact on domestic economic growth, capitalist development,

3. This is a large subject which cannot be dealt with here. Some representative works are Grossman, 1979; Lim, 1978a, 1987a; ILO, 1985; Christian Conference of Asia, 1982; Fatimah, 1985.

industrialization and labor in Southeast Asian countries, fostering both the evolution of an indigenous entrepreneurial class and the formation of a proletariat, while providing higher incomes and, for women, some limited relief from the gender subordination common in traditional society. The industry has done this because of its own internal needs, as I have discussed elsewhere (e.g. Lim, 1987b).

The International Division of Labor

In its early days in Southeast Asia, the electronics industry exemplified the typical international division of labor between developed and developing countries. Multinationals in the industry located their low-skilled, labor-intensive assembly activities in many different low-wage countries, which imported inputs from the home countries of parent corporations, processed them, and re-exported the finished product back to the parents for home country and worldwide distribution. High-value operations such as research, design, development, the manufacture of capital-intensive or sophisticated parts and equipment, marketing and distribution were centered in the industrial home country of the multinational parent, with only relatively low-value activities being conducted offshore.

While this international division of labor still typifies segments of the industry today, it has also undergone major changes. American semiconductor firms, for example, have consolidated their worldwide operations in fewer locations, while retaining all their Southeast Asian production bases (with the exception of Indonesia), and transferring to

then more stages of production. Local purchasing has increased, offshore production has been automated, testing has been added to assembly, and skills have been upgraded many times. As previously mentioned, wafer fabrication plants have already been located in Singapore and the Philippines, and two are planned for Malaysia. More design and development functions are being introduced. For example, there are already half-a-dozen integrated circuit designing units in electronics multinationals based in Singapore, (Southeast Asia Business No. 15) while at least one American semiconductor manufacturer (Intel) has had to rely heavily on its Malaysian engineering staff to design a new automated chip plant for the U.S. (Business Week 3/3/86). The technological dependence of home country manufacturing on offshore Southeast Asian plants has increased. In addition many companies have centered their worldwide purchasing, warehousing and distribution activities in Singapore.

Perhaps more interesting than the transformation of the international division of labor within long-established semiconductor multinationals in Southeast Asia is the advent of smaller high-tech companies, often very young and specialized, who are internationalized only by their move to the region. For these new and inexperienced companies which, beset by heavy research and development costs and very short product-lives, are under competitive pressure to minimize costs at all stages of production, Singapore has so far been the favored location. Computer peripheral manufacturers are a good example here. The largest disk-drive maker in the world, Seagate Technologies, established its plant in Singapore in 1981 under the management of a Singaporean who had worked for IBM in the U.S., and was given virtual carte blanche to run the company's operations there.

He decided to establish branch-plants in Bangkok, Thailand and Johor, Malaysia, and was so successful that Seagate has since closed down all production, including pilot production, in the U.S., and now describes itself as "a Singapore company with a few operations in the U.S." (Lim, 1987b).

This is not, of course, accurate, since Seagate's ownership and the recipients of its profits remain American, but this is not the case in other sectors of Singapore's electronics industry. Some indigenous firms, often with government participation, have been buying up small high-tech companies in the U.S., in part for access to their technology, in part as venture capital investments. The government has also recently entered into a joint venture in Singapore with American chip companies (Southeast Asia Business No. 15). And Singapore's largest indigenous computer manufacturer has set up assembly in the U.S. to supply the U.S. and European markets with an IBM clone which has been selling well.[4] These are only some examples of the many ways in which Southeast Asian capital is becoming involved, not only in the electronics industry within the region, but in the U.S. as well. Singapore is further along this path than the other Southeast Asian countries, but behind its fellow NICs, South Korea and Taiwan, which have a much heavier indigenous investment in electronics both in their home countries and abroad (Pang and Lim, 1988).

Southeast Asia, together with the NICs and Japan, in fact forms the

4. The company's motivation was to obtain for itself the U.S.' reputation for being a quality producer of high-tech goods, something which an unknown local company from Singapore -- unlike the American multinationals based there -- could not hope to acquire on its own.

largest regional electronics complex in the world. Most of the world's semiconductors are manufactured in this region, as are most of its consumer electronics products, computers and computer parts and peripherals. Thus the region as a whole has also become a major part of the world market for electronics products, including intermediate parts and components which are purchased here for assembly into final products. With a large combined population and incomes rising here more rapidly than anywhere else in the world, the regional final market for electronics products can only grow. Southeast Asia's fortuitous geographical location is thus a key factor in the success of the electronics industry here. In particular, with the U.S. in decline and Asian economies on the rise, the center of gravity of the world economy is shifting to this part of the world, which by the year 2000 will account for the same proportion of world GDP as North America and Western Europe, today's major markets. Currently, Southeast Asia is a major beneficiary of the relocation of industry from Japan and the NICs, the result of recent major currency realignments and associated changes in international competitiveness.

In short, in terms of production, capital, skills and markets, the international division of labor in the electronics industry has become more complex and diffuse, with increased concentration in the Asia-Pacific region of which Southeast Asia is a part. Multinationals from industrial countries -- including Japan -- have lost their technological monopoly and hegemony over less-developed countries in this industry, and the international division of labor has thus become less unequal over time.

American electronics companies, in particular, are heavily dependent

on their operations in East and Southeast Asia, and the U.S. now runs a deficit in high-tech trade with both the NICs and the ASEAN countries. This has become a matter of strategic concern to some parties in the U.S. -- such as the Pentagon, and industrial policy advocates -- but serious protectionism is unlikely. This is because there is no industry-labor coalition in the U.S. to lobby for protectionism in high-tech industry. On the industry side, this is a competitive growth industry, with successful firms generally being highly internationalized in both their sourcing and their markets so that protectionism would hurt them. On the labor side, this is an industry of overall employment growth, rather than decline, and because of the youth and relatively small size of new high-tech firms, and their high proportion of skilled and professional workers, unionization is difficult and not well-established.

Conclusion: Where the Critics Went Wrong

To conclude, the experience of the electronics industry in Southeast Asia has confounded the negative predictions of early critics with respect to both its internal impact on Southeast Asian countries, and these countries' place in the industry's international division of labor. The critics, myself included, were wrong for a number of reasons.

First, like nearly everybody else, we underestimated the scope and dynamism of this particular industry -- which since I first studied it in the mid-1970s has undergone about four generations of new technology, each with structural characteristics quite different from those of other industries. This technological dynamism has meant much higher levels of

capital investment and reinvestment, skill acquisition and upgrading, and market growth, than earlier anticipated.

Second, we underestimated the adaptability of Southeast Asians -- workers, managers, engineers and entrepreneurs -- to the new technology, particularly their ability to not only retain but improve upon their international competitiveness in the electronics industry as its labor content decreased and skill content increased. This has enabled the industry not only to stay, but to expand, upgrade, diversify and deepen its linkages in Southeast Asia.

Third, we underestimated the ability of the state to manipulate a nation's competitive advantage in this industry; this has enabled countries like Singapore and the other Asian NICs to not only maintain, but to improve upon their international competitive advantage in electronics, and to rapidly increase their shares of the world market in important segments of this industrial complex. By the same token, country differences in the impact and progress of the industry reflect differences in the effectiveness of state policy in enhancing competitive advantage. But market and industry forces have been so strong that even in the absence of supportive activist states -- as in the Philippines, Thailand and Malaysia -- the electronics industry has continued to thrive.

Fourth, we underestimated the importance of regional linkages in the industry, since the nation state is normally taken as the appropriate unit of social analysis, and the focus in international economic relations has been on relations between individual Southeast Asian countries and developed countries (the so-called "core-periphery" linkage), rather than

among themselves. The electronics industry is in fact heavily integrated among countries in the East and Southeast Asian region, even if not so integrated within individual nations. This locational concentration has served to further anchor the industry and its growth in this region, whose share of the world market (as distinct from its share of world production) is also rapidly increasing.

Fifth, we underestimated the extent to which multinationals in the electronics industry are global as distinct from national creatures, committed to offshore sourcing for their home-country and world markets even in the face of substantial changes in technology and relative costs (e.g. *Business Week* 2/29/88). American multinationals, in particular, have contributed greatly to Southeast Asia's surplus in electronics trade with the U.S..

Finally, we underestimated the fluidity and flexibility of the world economy and the international division of labor, erroneously assuming in the 1970s that U.S. economic hegemony and the dominance of industrial-country multinationals could not be undermined by developing countries. On the contrary, the U.S. is now in relative economic decline, and many an industrial-country multinational has been wiped out by competition from developing countries, particularly the Asian NICs and particularly in electronics.[5] Since developing countries' share of world manufactured exports has been increasing steadily over time, it is unlikely

5. For example, the demise of General Electric USA's consumer electronics division had much to do with fierce competition from South Korean companies.

that the electronics industry, and the NICs and near-NICs of East and Southeast Asia, are unusual exceptions to the typically assumed North-South divide in the international division of labour. Rather, their experience may more accurately represent the thin edge of the wedge in developing countries' subversion of an unequal world economic order (Lim, 1987c).

REFERENCES

- ASIaweek August 23, 1987. "Malaysia Back in the Chips".
- BELLO, Walden, David O'CONNOR and Robin BROAD, 1982. "Export-oriented industrialization: the short-lived illusion", in Walden Bello, David Kinley and Elaine Elinson, Development Debacle: The World Bank in the Philippines. San Francisco: Institute for Food and Development Policy, pp. 127-164.
- BLAKE, Myrna L., 1984. "Constraints on the organization of women industrial workers", in Gavin W. Jones, ed., Women in the Urban and Industrial Workforce: Southeast and East Asia, Canberra: Development Studies Centre Monograph Series No. 33, Australian National University, pp. 149-162.
- BLAKE, Myrna L. and MOONSTAN, Chatri, 1980. "Women and transnational corporations (the electronics industry, Thailand)". Mimeographed paper prepared for the East-West Center Culture Learning Institute, Honolulu, Hawaii.
- BUSINESS WEEK March 3, 1986. "Even American Knowhow is Headed Abroad", pp. 60-63.
- BUSINESS WEEK February 29, 1988. "Help Wanted From the Multinationals", pp. 68-70.
- CHRISTIAN CONFERENCE OF ASIA, 1982. The Plight of Asian Workers in Electronics. Hong Kong: Christian Conference of Asia - Urban Rural Mission.
- ELECTRONICS August 1987. "Focus on Malaysia".
- FATIMAH Daud, 1985. Minah Karan, The truth about Malaysian factory girls. Kuala Lumpur: Berita Publishing.
- FOO, Gillian H.C. and Linda Y.C. LIM, 1987. "Poverty, Ideology and Women Export Factory Workers in Asia". In Haleh Afshar and Bina Agarwal, eds., Women, Poverty and Ideology. London: Macmillan, forthcoming.
- FROBEL, Folker, Jurgen HEINRICHS and Otto KREYE, 1980. The New International Division of Labour. Cambridge, England: Cambridge University Press.
- GROSSMAN, Rachael, 1979. "Women's place in the integrated circuit", Southeast Asia Chronicle No. 66 (Jan.-Feb.), pp. 2-17.
- INTERNATIONAL LABOUR ORGANISATION (ILO), 1985. Women Workers in Multinational Enterprises in Developing Countries. Geneva: ILO.

- LIM, Linda Y.C., 1978a. "Women Workers in Multinational Corporations: The Case of the Electronics Industry in Malaysia and Singapore". Michigan Occasional Papers No. 9, Women's Studies Program, University of Michigan.
- LIM, Linda Y.C., 1978b. "Multinational Firms and Manufacturing for Export in Less-Developed Countries: The Case of the Electronics Industry in Malaysia and Singapore". Ph. D. dissertation in Economics, University of Michigan.
- LIM, Linda Y.C., 1983a. "Chinese Business, Multinationals and the State: Manufacturing for Export in Malaysia and Singapore" in Linda Y.C. Lim and L.A. Peter Gosling, eds., The Chinese in Southeast Asia, Vol. 1, Ethnicity and Economic Activity. Singapore: Maruzen Asia, 1983, pp. 245-274.
- LIM, Linda Y.C., 1983b. "Global Factory in the Global City: Labor and Location in the Evolution of the Electronics Industry in Singapore and Southeast Asia". Paper presented at the Conference on Microelectronics in Transition: Industrial Transformation and Social Change, University of California, Santa Cruz, May 12-15.
- LIM, Linda Y.C., 1987a. "Women Industrial Workers: The Specificities of the Malaysian Case" in Jamilah Ariffin and Wendy Smith, eds., Industrial Women Workers in Malaysia. Singapore: Institute of Southeast Asian Studies, forthcoming.
- LIM, Linda Y.C., 1987b. "Capital, Labor and the State in the Internationalization of High-Tech Industry: the Case of Singapore", in Mike Douglass and John Friedmann, eds., Transnational Corporations and Urbanization in the Pacific Rim, Proceedings of a Conference. Los Angeles: Center for Pacific Rim Studies, University of California-Los Angeles.
- LIM, Linda Y.C., 1987c. "The Impact of Changes in the World Economy on Developing Countries". Paper presented at the Symposium on Cooperation for International Development: U.S. Policy and Programs for the 1990s, Symposium I: Setting the Agenda, Center for Advanced Study of International Development, Michigan State University, East Lansing, Michigan June 1-2, 1987 (publication forthcoming from MSU).
- LIM, Linda and PANG Eng Fong, 1982. "Vertical Linkages and Multinational Enterprises in Developing Countries" in World Development Vol. 10, No. 7 (July), pp. 585-595.
- LIN, Vivian, 1986a. "Health, Women's Work, and Industrialization: Women Workers in the Semiconductor Industry in Singapore and Malaysia", Women in International Development Working Paper No. 130. East Lansing, Michigan: Women in International Development Program, Michigan State University.
- LIN, Vivian, 1986b. "Health and Welfare and the Labour Process: Reproduction and Compliance in the Electronics Industry in Southeast

- Asia", Journal of Contemporary Asia Vol. 16, No. 4, pp. 456-474.
- PANG Eng Fong and Linda LIM, 1977. The Electronics Industry in Singapore: Structure, Technology and Linkages, Economic Research Centre, University of Singapore, Monograph Series No. 7, 1977.
- PANG Eng Fong and Linda Y.C. LIM, 1988. "High-Tech and Labour in the Asian NICs". Paper presented at the Seminar on Diffusion of "HighTech" and the Labour Market: Asian Experiences, International Institute of Labour Studies and Indian Council for Social Science Research, New Delhi, 23-26 March 1988.
- SCOTT, Allen J., 1986. "The Semiconductor Industry in South-East Asia: Organization, Location and the International Division of Labor", Institute of Industrial Relations, University of California Los Angeles, Working Paper Series No. 101.
- Southeast Asia Business**, various issues, 1983-. Journal of the Southeast Asia Business Education and Resources Program, Center for South and Southeast Asian Studies, University of Michigan, Ann Arbor.