

The Changing Roles of Free Economic Zones in Development: A Comparative Analysis of Capitalist and Socialist Cases in East Asia

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Free economic zones (FEZs) play important roles in industrialization and economic development of both capitalist and socialist countries in various regions of the world, and thus have become a major subject of study in the development literature. Theoretical debate and empirical analysis have focused narrowly on the positive and negative economic effects of export processing zones (EPZs) in capitalist Third World countries, without giving sufficient consideration to why, when, and how different types of FEZs in both capitalist and socialist economies adapt their roles in achieving development objectives under changing international and domestic conditions. In this article, I systematically compare the dynamic development roles of three FEZs in two different systems—the state capitalist economies of Taiwan and South Korea and the reforming socialist economy of China—during 1966–1990. The comparative findings are interpreted from competing and complementary perspectives of major development theories. Finally, I use the comparative evidence to refine a lifecycle model of the evolution and prospect of EPZs in capitalist newly industrializing countries, and suggest an alternative scenario for FEZs in socialist economies.

Introduction

The onset of the 1990s concluded the first decade since China's Special Economic Zones (SEZs) were established and developed in the 1980s, the second decade of emergence and expansion of most Export Processing Zones (EPZs) in many developing countries in Asia, Africa, and Latin America in the 1970s and 1960s, and the third decade since the birth of the world's first EPZ at Shannon in

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Ireland in 1959. The end of the 1980s also witnessed the establishment of SEZs in East European socialist countries (e.g., Bulgaria, Hungary) and in different republics of the former Soviet Union. The establishment of different types of free economic zones¹ (FEZs) raises the crucial question of how to evaluate their roles in economic development in countries across diverse political and economic systems and geographical regions.

Several studies (Kreye, Heinrichs, and Fröbel 1987; Park 1993; Rabbani 1983; Vittal 1977; Warr 1989; Wong and Chu 1984) compared cross-national characteristics and performance of EPZs. But there is a lack of systematic explanation of how both capitalist and socialist countries use FEZs to meet diverse development needs under changing international, national, and local economic opportunities and conditions. This article contributes to the development literature in general and the FEZ research in particular by comparing the dynamic roles of three zones in capitalist and socialist countries in achieving multiple development objectives over a span of nearly three decades.

The article is organized into five sections. Section 2 presents competing development theories as they pertain to FEZs. This overview highlights how the theories differ in their perspectives on the role of FEZs. Section 3 compares three FEZs by focusing on their dynamic and adaptable roles in achieving six development objectives during 1966–1990. By providing a comprehensive set of economic indicators on the three zones, this analysis furnishes comparative evidence that bears on the validity of each theoretical perspective. Section 4 discusses the theoretical implications of the comparative findings by focusing on how the differences and similarities between the zones in capitalist and socialist economies can be accounted for by both the competing and complementary aspects of major development theories. The last section highlights the differences and similarities in the models of evolution and prospect for FEZs in capitalist and socialist economies.

Theoretical Perspectives

According to the neoclassical economics perspectives on economic development, FEZs provide exceptional opportunities to improve free market activities and to exploit comparative economic advantages. Focusing primarily on FEZs in industrialized market economies, Grubel (1982:46–47) emphasized FEZs as a useful instrument for *selective deregulation* to reduce the costs to all regions of a country resulting from total *regulation* (e.g., tariffs), thus “permitting in principle the development of an optimum pattern by regions.” Extending the notion of selective deregulation to EPZs in developing market economies, Spinanger (1984:65) argued that EPZs represent a *second-best* solution (the first-best option being complete free trade) for a country to integrate into the international division of labor without subjecting the entire economy to trade liberalization. Spinanger also suggested that EPZs produce benefits for the host country by attracting foreign direct investment (FDI), generating employment, increasing exports, and promoting domestic economic linkages via

technology transfer and the use of local materials. In general, neoclassical economics theory has a sanguine perspective that the *deregulated* economic environment of FEZs allows the zones to produce benefits locally and lead to a gradual and diffusive process by which the benefits could spill into the domestic sector. Generally favorable views of EPZs are also found in Basile and Germidis (1984), Dove (1977), Rabbani (1983), Vittal (1977), and Wong and Chu (1984).

Viewed from a dependency/world-systems perspective, EPZs represent a typical situation of dependent economic development. The concessions and incentives offered in EPZs allow core-country investors to benefit disproportionately from cheap local labor and low taxes, whereas the zones in peripheral countries become export enclaves dependent on foreign investment and unfavorably integrated into the globalized manufacturing process controlled by transnational corporations (TNCs), without creating healthy ties with the domestic economy. Critics of EPZs (Fröbel, Heinrichs, and Kreye 1981; Hone 1971; Kei 1977; Morello 1983; Safa 1980; UNCTAD 1983) focused on such undesirable characteristics and consequences as excessive waste in infrastructure provision, fragmented production process, low domestic value added, limited job creation, gendered wage inequality, exploitation of the indigenous labor force, especially young female labor, harsh factory conditions, lack of technology transfer, vulnerability to footloose industries, and a lack or absence of forward and backward linkages.

The state-oriented perspectives hold that the state is capable of playing a leading or guiding role in economic development. This role, however, varies across developing countries and between them and centrally planned economies in terms of a) the state's commitment toward development, b) its strength to bargain with TNCs, and c) its ability to mobilize and coordinate domestic resources (see Evans and Stephens 1988). This perspective points to the state's initiative in setting up EPZs and its capacity to intervene in their operation. The intervention may take place through a) setting and modifying the terms of foreign investment in the zones, b) adjusting and reprioritizing the industrial structure in the zones, and c) encouraging the local inputs of capital and raw materials into the zones (see Chang 1991; EPZA 1986a; MOEA 1987; Park 1993). The state-centered perspective suggests that the positive effects of EPZs can be strengthened and their undesirable consequences minimized through appropriate policy and effective regulation by the host government.

These theoretical perspectives offer different or even contradictory interpretations of the evidence on the impact of FEZs on economic development. Using an integrated inductive/deductive approach, I attempt to show why and how the roles of three FEZs changed over three decades and then, drawing on the competing and complementary elements of the theories, to explain why and how the zones' developmental roles change in response to the interaction between international and domestic economic and political conditions. The revealed differences and similarities in the changing roles of FEZs in capitalist and socialist economies, in turn, help modify and refine the theories' applicability to specific development phenomena and processes.

A Comparative Analysis of Three East Asian Zones

The comparative analysis involves Taiwan's *Kaohsiung* EPZ, South Korea's *Masan* EPZ, and China's *Shenzhen* SEZ, which will be referred to by the names of their locations hereafter.

Methodological Issues

The three zones were selected according to the following criteria. First, the zones are the earliest in their respective countries and were established in different years spanning three decades. This allows a temporal examination of the zones from their beginning points, in terms of the timing factor, and with regard to subsequent stages of development. Second, largely comparable and sufficiently long time-series data on the three zones make it possible to create longitudinal measures for assessing the zones' development over time. Third, the three zones belong to two major variants of FEZs, two EPZs and one SEZ, whose differences and similarities can be legitimately and systematically compared. Fourth, the three zones are located in countries at different developmental stages and of contrasting economic and political systems. On the one hand, Taiwan and South Korea are more industrialized than China; on the other hand, the Taiwanese and South Korean economies are market-oriented, while China has a planned economy undergoing market reforms. The last pair of rationales permits me to examine how the variations in the level of industrialization and systemic economic and political characteristics affect the zones' changing roles. Given the cross-zone variation in data reporting at both the country and zone levels, it is difficult to control the effect of differences in development stages on the three FEZs' roles. Thus, it is more meaningful and informative to focus on the within-zone comparison over time while examining between-zone differences and similarities whenever appropriate. Given the amount of statistical information and multiple indicators, I provide a brief summary at the end of comparing the six development roles of the three FEZs. Finally, I integrate the findings with regard to the changing roles of the three FEZs in a classificatory framework.

A Descriptive Profile and Basic Indicators

Table 1 differentiates Kaohsiung, Masan, and Shenzhen in terms of their time of establishment, size, location, incentives, and institutional structure. Shenzhen was established much later but is much larger than the two EPZs. All three zones are located at or near a port. Although Shenzhen offers more attractive financial incentives than the two EPZs with regard to corporate tax and requirements for foreign investment, it is subject to more hierarchical regulations of higher (central and provincial) authorities in China's planned socialist system. These characteristics will become more relevant and be analyzed more in subsequent analysis.

Table 2 presents four basic economic indicators on the three zones for the 1966–1990 period. (Other, potentially more significant, indicators are not available in the

TABLE 1
Characteristics and Comparative Advantages of Three Free Economic Zones

Characteristic	Zone (Country)		
	Kaohsiung (Taiwan)	Masan (South Korea)	Shenzhen (China)
Year of establishment	1965	1970	1979
Area (acres)	170	431	77,120
Location	Near Taiwan's largest port -- Kaohsiung; linked to Taipei by a railroad along Taiwan's west coast	25 miles west of the industrial port city of Pusan, connected by a good highway; close to Japan's ports	Across the border from Hong Kong; 1 hour to Kowloon by train; 3 hours to Canton by train or bus
Taxes and tax holidays	25% maximum corporate income tax; exempted for 5 years; 20% maximum personal income tax for foreign nationals residing in Taiwan for less than 1/2 year; 6-60% progressively for Chinese and foreign nationals residing for more than 1 year	16.5-27.5% on open corporation; 27.5-49.5% on closed corporation; both exempted for 5 years and reducible for following 3 years; 16.5-60.5% personal income tax; exempted for 5 years and reducible for following 3 years	15% enterprise tax on Sino-foreign joint ventures and fully foreign owned firms; tax reduction of 20-50% for 1-3 years for investment of \$5 million and over, long contract duration, or involving high technology; 5-40% progressive personal income tax
Investment requirements	Companies must be in manufacturing of exportable products; a minimum investment of \$250,000 is required to enter the zone; 25% of capital must be paid upon registration	Reserved for either fully foreign-owned firms or firms in which foreign equity exceeds 50%; later, companies without an equity are allowed to operate so long as they export	Fully foreign-owned firms or joint ventures with a minimum investment share of 25% by foreign investor, but no maximum ceiling on foreign equity
Administrative structure	Administered by the Kaohsiung EPZ Branch Administration of the Export Processing Zone Administration (EPZA) under the authority of the Ministry of Economic Affairs (MOEA)	Managed by the Masan Free Export Zone Administration of the Industrial Estate Administration under the authority of the Ministry of Trade and Industry (MTI)	Administered by the Shenzhen Municipal Government under the control of the Special Economic Zone Offices of the Guangdong provincial government and of the State Council

Sources: Compiled from Arthur Anderson & Co. (1984), Chu (1986), EPZA (1988), SSEZYEC (1985), Spinanger (1984), and Vittal (1977).

annual time-series form for the period.) Although the data do not cover all years for all zones because of their different times of establishment, they span over one decade in each case to reveal some trends.² The four basic indicators in table 2, coupled with additional statistical information, will be used to derive more specific measures of the zones' different roles in economic development.

Attraction of Foreign Investment

Three measures of the three zones' dynamic roles in introducing foreign investment³ are examined: the zones' absolute volume of foreign investment and its proportion of the national total over time, capitalization per firm in the zones, and direct investment by variation in sources.

TABLE 2
Economic Indicators on Three Free Economic Zones, 1966–1990

Year	Kaohsiung (Taiwan)				Masan (Korea)				Shenzhen (China)			
	Firm	Employment	Wage ^a	Exports ^b	Firm	Employment	Wage	Exports	Firm	Employment ^c	Wage	Exports
1966	51	--	--	--	--	--	--	--	--	--	--	--
1967	109	4,600	28	8	--	--	--	--	--	--	--	--
1968	128	11,961	33	26	--	--	--	--	--	--	--	--
1969	161	23,388	37	62	--	--	--	--	--	--	--	--
1970	162	35,322	40	109	4	--	--	--	--	--	--	--
1971	161	40,716	48	156	6	1,248	66	1	--	--	--	--
1972	164	45,507	50	196	26	7,106	69	10	--	--	--	--
1973	151	52,209	56	282	71	21,240	70	70	--	--	--	--
1974	147	48,760	77	348	98	20,822	76	178	--	--	--	--
1975	144	40,194	83	290	94	22,586	87	169	--	--	--	--
1976	137	44,219	102	393	94	29,953	102	286	--	--	--	--
1977	135	43,370	117	419	97	30,719	122	347	--	--	--	--
1978	130	41,249	132	473	95	30,960	128	416	--	--	--	--
1979	128	41,773	153	602	86	31,153	138	513	68	5,600	32	--
1980	131	41,625	185	685	85	28,532	144	538	69	9,500	42	.1
1981	128	40,552	240	772	83	28,016	168	593	95	12,600	50	--
1982	125	36,000	272	724	80	26,012	191	489	153	12,900	54	5
1983	120	35,683	305	750	80	30,989	207	564	200	12,200	55	62
1984	113	38,928	345	938	77	33,858	--	740	374	28,400	86	304
1985	112	36,265	391	872	77	28,983	--	698	575	34,100	103	563
1986	101	35,435	407	949	75	34,883	274	862	730	46,300	105	726
1987	--	--	--	--	74	36,411	361	1,158	940	106,700	112	1,414
1988	--	--	--	--	73	33,080	512	1,454	1,244	150,000	135	1,849
1989	99	31,613	--	--	69	23,076	663	1,375	1,491	211,753	--	2,174
1990	91 ^d	--	755 ^e	--	70	19,616	--	--	1,632	255,598	144	2,475

Sources: *Central Daily News* (August 2, 1994:7), CETRA (1992:111), Clifford (1990:64), EPZA (1989:Table 3), MOEA (1987:various tables), Park (1993:184–185, 187), SSEZYEC (1985, 1986, 1987, 1988, 1989, 1990, 1991: various tables), and Warr (1984:Table 1).

Notes:

^aAverage monthly wages are rounded to the nearest U.S. dollar. The figures are in current prices standardized according to the exchange rate at the end of 1982.

^bExports are rounded to the nearest million U.S. dollars. Since the figures are not in constant and current prices for different years, they should be read to reflect trend for each zone over time instead of suggesting meaningful comparisons across the zones at the same points in time.

^cIndustrial instead of total employment. Given that employment in Kaohsiung and Masan is almost exclusively in the manufacturing sector, and that Shenzhen has multiple sectors and a much larger labor force, using the zone's industrial employment for comparison with the two EPZs is more meaningful.

^d1991 data.

^eAverage monthly wage for workers in electronics factories in Kaohsiung for 1991–1993.

In its second and third years (1966–1967), Kaohsiung accumulated \$26 million in foreign investment, which accounted for nearly 30% of Taiwan's total foreign investment during that period. Large inflow of foreign investment is also indicated by the rapid growth of firms (see table 2). Accumulated foreign investment in Kaohsiung rose continually to \$167 million in 1985, decreased to \$140 million in 1986, and rebounded to \$166 million in 1989. Despite this largely uninterrupted growth, foreign investment in Kaohsiung as a percentage of Taiwan's total foreign investment declined from 39% in 1972 to 18.2% in 1986 and to 6.9% in 1989.⁴ Foreign investment in Masan increased rapidly from \$5.3 million in 1971 to a cumulative total of

\$186.5 million in 1973. Between 1973 and the early 1980s, accumulated foreign investment in Masan never exceeded \$235 million (Warr 1984:171). Foreign investment in Masan as a share of the total foreign investment in South Korea declined from 22.3% in 1972–1976 to 3.2% in 1977–1981.⁵ By 1975 only 2% of the foreign investment in South Korea went to Masan and Iri (Gereffi 1991:48–49)—the country's second and smaller EPZ.

During its first three years (1980–1982), Shenzhen attracted \$200 million in foreign investment, accounting for 11% of the total foreign investment in China. Accumulated foreign investment in Shenzhen reached \$1.3 billion in 1986, when its share of China's total foreign investment peaked at 16%. While accumulated foreign investment in Shenzhen increased further to \$2.9 billion in 1989, its share of the total foreign investment in China dropped to 9% (SSB 1992:357–360; SSEZYEC 1985:599, 1990:64).

The second measure of attraction of foreign investment is change in capitalization per firm in the zones, given the expectation that manufacturing operations in EPZs tend to be labor intensive. General evidence suggests that foreign investment in most EPZs in the 1970s normally did not exceed \$1 million per firm and, in many cases, was below \$0.5 million (UNCTAD 1983:23). In Kaohsiung average capitalization per firm grew from \$0.2 million in 1965 to \$0.3 million in 1970 and to \$1.4 million in 1986 (MOEA 1987). In 1970 Masan's average firm was capitalized at \$0.4 million, which increased to \$1.2 million in 1979 (UNCTAD 1983:23), and to \$1.7 million in 1986 (Park 1993:181). In Shenzhen capitalization per firm rose from \$0.39 million in 1980 to \$1.01 million in 1984, and then declined to \$0.64 million in 1989 (SSEZYEC 1985:594–595, 1990:660).

Third, foreign investment in the three zones have varied in sources. Data showed that of all firms in Kaohsiung in 1975, 30.7% was set up by Japanese investors, 36.6% was Taiwanese-foreign joint ventures and local concerns, 23.3% involved overseas Chinese, 7.9% the United States, 1% Europeans, and 0.5% others (Zenger 1977:85). In the 1980s, domestic investment in Kaohsiung rose quickly, as foreign investment began to decline. As a result, 27.6% of the 98 firms in Kaohsiung in 1989 was locally owned, 5.1% was owned by overseas Chinese, 36.7% was foreign-Taiwanese joint ventures, and only 30.6% was fully owned by foreign investors (EPZA 1989:48).

Of the 105 firms in Masan in 1975, 75 were from Japan, 22 were Japanese-Korean joint ventures, five U.S. firms, three U.S.-Korean joint ventures, and one firm each from Italy and West Germany (Takeo 1977:56). Domestic firms raised their share of the total investment in Masan from 6.7% in 1977 to 11.3% in 1979 and to 16.1% in 1990. The shares of Japanese and U.S. investments dropped from 87.8% and 11.1% in 1975 to 81.5% and 0.9% in 1990, respectively (Park 1993:183).

About 75% of Shenzhen's total investment through the 1980s came from domestic sources, and the rest was foreign. During 1979–1990, Hong Kong and Macao, predominantly the former, accounted for 93% of the foreign investment cases and 76% of the contracted capital (Chen 1994:172). Some of this investment, however, came from subsidiaries of foreign firms registered in Hong Kong and Macao (Wong 1987). In 1989–1990, Taiwan emerged as the second largest investor behind Hong

Kong, while other major foreign investors were the United States, Japan, and Singapore. The proportion of domestic firms in Shenzhen decreased from 100% in 1980 to 83.7% in 1984 and 63.4% in 1990, whereas the share of Chinese-foreign joint ventures and wholly foreign-owned firms increased from 0% in 1980 to 26.3% in 1984 and to 35.8% in 1990 (SSEZYEC 1991:605).

The comparison suggests that foreign investors responded quickly to the financial incentives offered in the three zones (see table 1), which achieved the goal of pulling in badly needed foreign capital at the initial stage of export-oriented industrialization (EOI). The zones' significant shares of the total foreign investment in Taiwan, South Korea, and China at an earlier stage indicate that these countries would not have received the amount of foreign capital had the zones not existed. The three zones adapted to the changing international and domestic economic and political conditions in different and similar ways. More integrated into the world economy, Kaohsiung and Masan reacted sensitively to global economic recessions during 1973–1974 and 1981–1982 as their occupant firms decreased (see table 2). In the case of Shenzhen, it is domestic policy adjustments and political instability that caused foreign investment by Western and Japanese companies to fall or stall in 1985 and again in 1989 (Chen 1988; SSEZYEC 1990:660), although continuing investments from Hong Kong and Taiwan offset the potential overall loss and sustained the growth of firms (see table 2). Given the differences in labor cost and developmental stages, capitalization per firm in the two EPZs increased and remained higher than Shenzhen whose level of more labor-intensive manufacturing fluctuated over time. While Japanese capital has accounted for the largest share of foreign investment in Kaohsiung and Masan, capital investment from Hong Kong has been dominant in Shenzhen. This pattern reflects the importance of historical relationships and geographical distance between the investing countries and the zones (see table 1). The Taiwanese and South Korean governments gradually allowed and encouraged the flow of domestic capital into Kaohsiung and Masan, especially when foreign investment began to diminish. In general, as both international and domestic comparative advantages shifted, the relative role of all three zones in attracting foreign investment attenuated, more so for the two EPZs than for Shenzhen.

Creation of Employment

Four different measures of the zones' role in generating and sustaining employment can be examined. The first and most basic measure is total employment in the zones. As table 2 shows, the number of workers in Kaohsiung and Masan rose rapidly during their earlier stages. Both EPZs lost jobs during the 1973–1974 and 1981–1982 world recessions, and had employment contraction in the second half of the 1980s. In Shenzhen, the industrial labor force soared continually through 1990.

Second, change in the number of employees per firm measures the average size of the zones' firms and their degree of production concentration and sophistication over time. In 1967 Kaohsiung averaged 42 workers per firm, a number that increased to 278 in 1972 and to 351 in 1986, but dropped to 319 in 1989. The number

of employees in the average firm in Masan rose from 57 in 1971 to 299 in 1976 and to 465 in 1986, but decreased to 280 in 1990. Shenzhen's average firm size decreased from 138 in 1980 to 63 in 1984, and then rose to 142 in 1989.⁶ This U-shaped change in Shenzhen is the logical reverse of the \cap -shaped curve of capitalization per firm (see previous section).

Third, the three zones' employment effect can be measured in their share of the national labor force. In 1968 Kaohsiung accounted for 0.3% of Taiwan's total employment; that percentage rose to 0.7% in 1977 and declined to 0.5% in 1986. Masan's labor force as a percentage of South Korea's total employment remained around 0.2% during 1975–1982. If we consider the ratio of the zones' workers to the total manufacturing labor, the zones had a slightly stronger effect on job creation. Kaohsiung's share of Taiwan's total manufacturing labor increased from 2.3% in 1968 to 2.8% in 1977 and dropped to 1.3% in 1986 (table 2 this article; DGBAS 1987:table 6). Masan's labor force as a share of Korea's manufacturing employment was 1.2% in 1973, and declined slightly to 1% in 1981 and to 0.5% in 1989 (Park 1993:184–185). Given the size differentials, Shenzhen's employment as a share of either China's total or manufacturing labor force remained even lower than the two EPZs. In all cases, if the indirect jobs created by the zones were included, their employment effect would be somewhat magnified (see later discussion on regional development).

Fourth, I examine whether the work force in FEZs are characterized by: a) great labor mobility and job turnovers, and b) a predominance of young, female, and poorly paid labor. According to an estimate (MOEA 1987), the labor turnover rate in Taiwan's EPZs ranged between 1.5% and 13%, with a mean of 8.5%. A survey of selected firms in Masan (Park 1993) showed that the rate of labor resignation averaged 10%, with female workers much more likely to quit than male workers. In contrast, although Shenzhen's experiment with creating a labor market led to the largest turnover of jobs of any urban locale in China, the average job turnover rate in the zone was very low in the first few years. But Park (1993) estimated the rate of labor resignation in Shenzhen to be approximately 30%.

In Kaohsiung and Taiwan's two other EPZs (Nantze and Taichung), the proportion of female workers decreased from 83.4% in 1967 to 78% in 1986, fluctuating around 80%. While the average age of the workers rose from 19 in 1967 to 26 in 1986, over 55% of the female labor was made up of women aged 16–24 (MOEA 1987). In Masan the ratio of female workers declined from 89.7% in 1971 to 77.8% in 1981 and to 70.4% in 1990 (Park 1993:184–185). Of Masan's workers, 74.9% were those between 18–29 years (Kei 1977:71). Male workers averaged 10 years older than female workers because the former had more advanced education and/or had completed three-year army service before joining the labor force (Park 1993). In Shenzhen close to 70% of the workers in the electronics and textile industries were females, with an average age of 25 (Chen 1988). On average, males made up 51.5% of the labor force, and females 49.5% (Park 1993:186).

In Taiwan's EPZs the ratio of the average wage scale of an unskilled male worker to an unskilled female worker was 1.2, and an average skilled male worker made

\$1.2 for \$1 paid to an average skilled female worker (EPZA 1988:14). By comparison, the average male worker in Masan earned 2.2 times as his female counterpart in 1974; this ratio rose to 2.5 in 1978 but declined continually to 1.8 in 1989 (Park 1993:187). True comparison between the two EPZs and the SEZ is not possible due the lack of similar data on Shenzhen where 37.3% of all female workers earned a monthly wage of \$40–59 (the lowest wage category) in 1985, while only 17.9% of all male workers fell into this wage bracket (Chen 1988).

As the comparison suggests, whereas the two EPZs created a large number of jobs during their formative and expansion stages but lost the momentum subsequently, Shenzhen has been adding new jobs continually. The two EPZs had similar average firm size, especially at a later stage of development, while the average firm in Shenzhen was smaller, and fluctuated over time. Because of the tremendous size differences among the three economies, the two EPZs created more jobs relative to the total labor force than Shenzhen did. But the three zones are similar in the rate of labor mobility, dominance of young female workers, and gendered wage disparities. This suggests that the prevailing economic logic of labor-intensive industrialization in FEZs tends to override the structural differences between capitalist and socialist systems.

Promotion of Exports

In addition to total exports in table 2, three more precise measures of the zones' dynamic export capacity are examined. First, the zones' export-import balances change with their developmental stages. Generally, EPZs have to import a lot of raw materials and production equipment in their formative stage in order to start manufacturing for exports. This was true of Kaohsiung, which registered a trade deficit of \$5.4 and \$3.2 million in 1967 and 1968. Since 1969 Kaohsiung has exported more than it has imported. In 1976 Taiwan had a \$567 million trade surplus, 24.5% of which was accounted for by Kaohsiung (MOEA 1987). Masan had trade surpluses of \$0.5 million in 1971, \$74.7 millions in 1975, and \$176.9 million in 1982 (Warr 1984:171). Although exports from Shenzhen grew 119% annually during 1982–1986, imports increased from \$724 million to \$1.1 billion (do Rosario 1987), translating into an accumulated deficit of \$1.7 billion, with a single-year deficit of \$484 million in 1983 (Wang and Bradbury 1986). In 1987 Shenzhen registered a surplus of \$271 million for the first time, which rose to \$521 million in 1990 (SSEZYEC 1991:247).

Second, the data in table 2 allow exports per employee to be conveniently examined from a dynamic perspective. Per employee exports from Kaohsiung grew rapidly from \$1,739 in 1967 to \$9,661 in 1977 and to \$26,781 in 1986. Per employee exports from Masan also rose rapidly from \$1,603 in 1971 to \$21,166 in 1981 and to \$59,586 in 1989. From an even lower level and at an even slower pace, per employee exports from Shenzhen increased from \$75 in 1982 to \$3,281 in 1984 and to \$5,233 in 1990.⁷

The third measure of the zones' role in exports is the measure of local exports as a share of the countries' total or certain manufactured exports. Kaohsiung's share of Taiwan's exports rose rapidly from 1.3% in 1966 to 7.6% in 1971, and declined to 4.4% in 1977 and then to 2.4% in 1986 (MOEA 1987). Exports from Masan increased from less than 0.1% of Korea's total exports in 1971 to 4.0% in 1974, and dropped to 3.6% in 1980 (Warr 1984:173) and to 2.2% in 1990 (Park 1993:189). Shenzhen's share of China's total exports rose from 0.3% in 1983 to 4.8% in 1990.⁸ While the zones' exports as a share of their countries' total exports are generally low, their share of certain manufactured exports is higher. During 1966–1990, Taiwan's three EPZs contributed 18% toward the island's total electronics exports (Wong 1992:44–45). Shenzhen accounted for 14.8% of China's total electronic exports in 1987, and this share rose to 34.7% in 1990 (SSEZYEC 1988:62, 1991:174).

The comparison shows that Kaohsiung and Masan were more effective than Shenzhen in producing trade surpluses and per employee exports, and in promoting their countries' exports at the initial stage. Although the two EPZs' role in trade surplus and per employee exports remained strong, Shenzhen caught up quickly. The two EPZs' contribution to overall exports, which was limited to begin with, decreased over time. In comparison, Shenzhen's role in promoting China's total exports, especially in electronics, became stronger with time.

Transfer of Technology

Given the difficulty in quantifying technology transfer, I evaluate the three zones' role in facilitating technology transfer in terms of both human resources and physical equipment.

The human dimension pertains to the training and upgrading of local personnel and the use of expatriates in managerial and technical positions. During 1967–1986, a total of 3,143 overseas managers and technicians worked in Taiwan's EPZs, and Kaohsiung averaged 234 such persons annually. During the same period, Taiwan's EPZs sent a total of 2,849 local workers and technicians to receive training overseas, primarily in Japan. Of these trainees, 1,484 (52%) were dispatched from Kaohsiung. A number of foreign firms in Kaohsiung have gradually replaced expatriates with local technicians and managers. An American electronics firm hired all local technicians except for the general manager (Rabbani 1983). During 1966–1990, the three EPZs accounted for an average of 3% of Taiwan's total technological cooperation agreements with foreign countries (Wong 1992:44–45). Technology transfer in Taiwan's EPZs also took the form of organized training seminars.⁹

By 1980 in Masan, 3,000–4,000 persons had received technical and engineering training locally and abroad (mostly in Japan) in various fields, especially in electronics. About 400 of those later departed Masan to work for large domestic Korean firms, presumably carrying with them technological knowledge (Rabbani 1983). In two wholly Japanese-owned firms in Masan, expatriate managers and technicians accounted for only 0.4% and 0.2% of the total employees. This evidence was used

to suggest that technology transfer had already been transferred to the South Korean side (Park 1993). On the other hand, there is evidence on the lack of technical personnel among the labor force in Masan. Only 3.8% of the total work force were technicians and skilled workers, and this share was only 8.0% if engineers were included. In the training courses given by the foreign parent companies, Korean workers did not master the full technology of the production system, but acquired only sufficient basic knowledge to operate the machines (Basile and Germidis 1984).

By the end of 1987, Shenzhen had employed a total of 562 technicians and specialists from Japan, the United States, and Hong Kong. It also had sent 138 trainees to those countries (SSEZYEC 1988). Shenzhen had a job rotation system with the interior, which allowed approximately 30,000 technicians and engineers to work temporarily in the zone and then to return to the interior with some technical knowledge and work experience. Shenzhen also organized training sessions on such subjects as international finance and enterprise management, which were attended by thousands of administrators and professionals from national and provincial agencies (Chen 1988). In some wholly Japanese-owned firms, expatriates amount to 1.5% of all employees (higher than in Masan), which suggests that foreign technology has yet to be transferred (Park 1993); but the same evidence indicates that the process may be already underway.

It took some time for the EPZs to make progress in introducing advanced production machinery and equipment. Gradually, most of the enterprises in Taiwan's EPZs have adopted automated facilities and begun to manufacture or assemble such highly sophisticated products as integrated circuits (I.C.'s), computer boards, satellite receivers, and precision instruments. By the mid-1980s, 110 of the 243 firms in Taiwan's three EPZs had adopted automatic or semiautomatic machinery in their factories (EPZA 1986b). Industries most likely to bring in technology are those producing capital goods and intermediate products, including electrical appliances and equipment, chemicals, and metal products (Basile and Germidis 1984). These industries were less represented in Kaohsiung than in Masan. Only 11 out of the 99 firms in Kaohsiung in 1989 manufactured metal products, whereas 18 of the 83 firms in Masan in 1982 were specialized in metal products. While 8.4% of the total investment in Masan was in precision machinery and instruments, only 2.2% of Kaohsiung's investment went to the same product category (EPZA 1989:46; Warr 1984:174). In Shenzhen only 7% of the imported technology was up to international standard (do Rosario 1987). According to a Chinese government estimate, however, 40% of the 30,000 pieces of imported equipment by 1985 had been considered advanced by the 1970s' standard, and some even represented technology of the 1980s (Chen 1988).

The comparison suggests the lack of major necessary and sufficient conditions for technology transfer in the three zones, especially at their earlier stage of development. In general, the dominance of noncomplex and routinized assembly operations and their specialized nature in EPZs, coupled with the vertical integration of research and development (R&D) by TNCs in their home countries, limit the zones' role in transferring advanced technology. Although the presence of foreign capital

and management in the three zones leads to the increasing transfer of some technical knowledge and managerial expertise, the machinery and equipment, such as those from Japan in Masan and from Hong Kong in Shenzhen, tend to be older and dated (Park 1993). If the minimal ratio of expatriate to indigenous managerial and technical personnel is accepted as a crucial criterion for successful technology transfer, as Sklair (1985) suggested, Kaohsiung and Masan have accomplished more than Shenzhen. Since the differential performance reflects the two EPZs' more advanced and mature industrial composition, it is expected that Shenzhen will gradually improve in technology transfer with further industrial upgrading.

Integration With the Host Economy

A major issue in the debate over EPZs revolves around whether and to what extent they are isolated "enclaves" or capable of creating domestic linkages (see Rabbani 1983). Two important measures of the presence and strength of domestic linkages are examined: the use of local materials as inputs and domestic sales of the zones' products.

In Kaohsiung the share of domestic to imported materials grew rapidly from 7.9% in 1970 to 25.0% in 1984 and to 30.5% in 1986 (MOEA 1987). In Masan the ratio of imported local raw materials to foreign raw materials increased from 2.7% in 1971 to 50.1% in 1977 and reached an all time high of 50.7% in 1982 (Basile and Germidis 1984:55). The domestic raw materials as a share of Masan's total foreign exchange earnings rose sharply from 6.3% in 1971 to 39.8% in 1989 (Park 1993:192).

During 1983–1985, there was a heated debate over whether Shenzhen should be both inwardly and outwardly oriented or exclusively export-oriented (see Fewsmith 1986; Zhang 1987). Thus Shenzhen's domestic linkages have been different from the two EPZs from the outset and more complex than can be measured in only the ratio of local to all inputs. Since 1980 Shenzhen has been open to domestic enterprises to relocate, to set up production units, or to form joint ventures with the zone's start-up firms as ways of forging linkages. By 1990 state ministries and inland provinces had set up 3,975 industrial and commercial joint ventures in Shenzhen, with a total capitalization of approximately \$2 billion (SSEZYEC 1991:142). The large number of domestic firms in Shenzhen use primarily domestic materials as production inputs (Osborne 1986). But the foreign-invested firms in Shenzhen use little domestic raw materials because their quality is generally lower than the imported. Shenzhen is also financially dependent on the domestic sector, since 89% of the zone's loans in 1988 came from the interior (Park 1993).

The second major linkage between FEZs and host economies is local sales of the zones' products. Taiwan, in principle, prohibits its EPZs' products from being sold on the domestic market. However, exceptions are made for a) products which cannot be manufactured in the customs territory and need to be imported, b) products, whose quality requirements and specifications cannot be satisfied by manufacturing in the customs territory, but that are indispensable to the domestic manufacturing enterprises, and c) obsolete machinery and equipment. The upper limit of domestic

sales of EPZs' products was set at a meager 2% (Rabbani 1983). The MOEA of Taiwan has recently loosened the limits on domestic sales of the EPZs' products (CETRA 1992). And the approved domestic sales are charged import duties and surtaxes (EPZA 1988). This import-substituting function incurs no net gain or loss to the protected segment of Taiwan's domestic sector.

Masan did not allow any domestic sales until 1974, when only 2.1% of its products was sold at home. Later, the share of Masan's domestic sales rose to 14.9% in 1981 and to 17.5% in 1989 (Park 1993:189). And officially, firms in Masan are allowed to sell up to 30% of their products on the domestic market, even though this upper limit is not always enforced. The limited sale of the zone's products has two different economic implications for South Korea. When the zone's firms sell their goods at the higher domestic price and receive the tariff revenue (which would otherwise have been added to the equivalent quantity of imports), the sales accrue a net loss (negative externality) to the domestic sector. On the other hand, when domestic sales from Masan take up the quotas protected by quantitative restrictions, the sales are not import substituting but additional to imports, which has no net welfare effect on South Korea (see Warr 1984:178-179).

Since the beginning, Shenzhen has set the goal of exporting 70% of its products but has not been able to achieve it completely. Up to 1985, more than 50% of Shenzhen's products, especially electrical appliances (e.g., refrigerators) and consumer electronics products (e.g., color TV, stereos), were sold within China at higher-than-domestic prices. This allowed Shenzhen to reap a net gain at a loss to the domestic sector, as the zone firms collected the tariff revenue. After 1985 the central and local governments imposed stricter controls on domestic sales from Shenzhen, and the zone's firms had to pay corresponding duty on the goods that they were permitted to sell domestically. This state intervention served to correct some of the external diseconomies by balancing the gain-loss ratio between the *regulated* (domestic) and *deregulated* (zone and overseas) markets. A survey of 14 Chinese-foreign joint ventures and wholly Chinese-owned firms in Shenzhen in the late 1980s showed that none of them sold more than 30% of its products on the domestic market (Park 1993).

The comparison suggests that, over time, Kaohsiung and Masan developed stronger domestic linkages by using more local inputs and increasing domestic sales. Due to its stronger inward orientation, Shenzhen has more substantial and varied domestic linkages than the two EPZs. At an earlier stage, the domestic linkages tended to benefit Shenzhen at the expense of the interior economy. Subsequently, they were modified by the state to make Shenzhen more export-oriented and competitive instead of competing "unfairly" with the domestic sector.

Regional Development

When Kaohsiung was constructed on 170 acres of land reclaimed from the sea in Kaohsiung Harbor in 1965, the city of Kaohsiung had about 600,000 people, poor infrastructure, and a severe housing shortage. Ten years later, the population of

Kaohsiung increased to over one million, and the city was elevated from a provincial municipality to metropolitan status directly under the central government. The establishment of the EPZ also led to the modernization of Kaohsiung's port facilities. Today Kaohsiung has become the world's fourth largest container port, behind Hong Kong, Singapore, and Rotterdam (IDIC 1989b). Taiwan's government has gone beyond financing the expansion of Kaohsiung's port facilities, since it has recently pushed the firms in the zone to subcontract to factories outside (CETRA 1992).

Three years after the EPZ was built on reclaimed swamp near the port city of Masan in 1971, the population of Masan doubled from 170,000 to 350,000 (Takeo 1977). The zone spurred the development of Masan's surrounding area by generating jobs, increasing incomes and expenditures on employees' welfare, and securing rents on the construction of factories, buildings, and office facilities. By subcontracting production to firms in the surrounding region, Masan also has fostered supporting industries and indirect employment (Rabbani 1983). Consequently, the number of outside suppliers and subcontractors around Masan grew from 44 in 1976 to 525 in 1988, and the employees in those firms increased 3.7 fold from 4,518 to 16,689. In 1976 there was a one-to-one ratio of firms in and near Masan. In 1988 every one firm in Masan had seven outside suppliers and subcontractors (Park 1993:184-185).

Shenzhen was a small rural town of some 70,000 people before it was officially designated as a SEZ in 1980. In just one decade, the permanent population of Shenzhen grew five times to 362,000 in 1989 (see Chen 1993). If its temporary population (primarily labor without the officially issued local household registration) were included, Shenzhen's total population grew fifteenfold, and stood at 1.03 million in 1989. The number of industrial firms in Shenzhen and the surrounding county rose from 224 in 1979 to 2,470 in 1989 (SSEZYEC 1990:647, 653). With only one five-story building in 1979, Shenzhen today has hundreds of highrises, and is China's most modern-looking city. The creation of the SEZ helped industrialize a previously rural area, contributing to the prosperity of a larger metropolitan region. In the early 1990s, the central and provincial governments extended Shenzhen's SEZ status and investment incentives to Bao'an county, which has begun to receive increasing overseas investments because of its cheaper labor and land than Shenzhen itself. This spatial diffusion on the Chinese side of the border also facilitates the development and stability of the increasingly integrated and sprawling Shenzhen-Hong Kong region.

The comparison indicates that Kaohsiung, Masan, and Shenzhen were capable of fostering regional economic development, partly due to their favorable and strategic locations. And the impact of Shenzhen on regional development was more dramatic than the two EPZs. Given the general differences among the three national economies, market forces played a stronger role in fostering the regional development of Kaohsiung and Masan than that of Shenzhen. The specific form and degree of government intervention, however, have varied in each case. In Kaohsiung and Masan, the government was more active at the beginning through building up the

infrastructure, and it retreated when the development of the EPZs became self-sustaining. By comparison, the government role remained strong in shaping Shenzhen's regional development.

A Classificatory Summary

This comparative analysis has shown the changing roles of the three FEZs in achieving six development objectives. Table 3 summarizes and classifies the findings schematically.

As regards foreign investment attraction, employment generation, and export promotion, Kaohsiung and Masan contributed considerably to economic development at an earlier stage; but as EOI in Taiwan and South Korea widened and deepened, the EPZs' relative role became increasingly unnecessary and thus gradually diminished. While Shenzhen's strong initial role in attracting foreign investment weakened, its effect in generating jobs and promoting exports became stronger, even though its effect on job creation in China as a whole was negligible. With respect to technology transfer, domestic integration, and regional development, the role of Kaohsiung and Masan was not as strong at their early as at their later stages. As the two EPZs improved their production sophistication, they became more effective in transferring technology, integrating with the host economy, and stimulating regional development. Although Shenzhen's role in technology transfer remained relatively weak, it maintained continued and close linkages with the domestic economy and had a growing influence on regional development. As table 3 indicates, the roles of the two EPZs and Shenzhen exhibit different patterns of shift. As the two EPZs lost some strength in achieving the first three development objectives, they played a growing part in obtaining the last three goals. Shenzhen differs from the two EPZs in how its role in securing four of the six development objectives changed or stabilized over time. These similarities and differences raise significant theoretical implications.

Competing and Complementary Theoretical Explanations

The comparative evidence on the three FEZs is subject to both competing and complementary explanations from the three theoretical perspectives in the second section of this article. The large flow of foreign investment into all three zones supports the market model of neoclassical economics, which attributes investment growth to government deregulation (Grubel 1982). But this government deregulation is selective and partial, reflecting the state policy to shape and isolate FEZs into special and rational investment areas. In market-based economies like Taiwan and South Korea, selective deregulation is sufficient to differentiate EPZs into special economic environments for foreign investment. In China's increasingly mixed economy, Shenzhen is a spatially delimited market-like locale for selected and gradual experiments with capitalist activities (Sklair 1985). In this sense, Shenzhen represents a *second-best* solution for a socialist country to integrate into the global

TABLE 3
Achievement of Six Development Objectives in Three Free Economic Zones

Development Objective	Zone (Country)		
	Kaohsiung (Taiwan)	Masan (South Korea)	Shenzhen (China)
Foreign investment attraction	(+>-)	(+>-)	(+>-)
Employment generation	(+>-)	(+>-)	(->+)
Export promotion	(+>-)	(+>-)	(->+)
Technology transfer	(->+)	(->+)	(-)
Domestic integration	(->+)	(->+)	(+)
Regional development	(->+)	(->+)	(->+)

Notes:

(+) indicates continued positive role of a zone in achieving a development objective,

(-) refers to a continued weak or lack of effect.

(+>-) denotes a mixed and dynamic effect that changes from strong positive at an earlier stage to gradual weakening at later stages.

(->+) suggests a mixed and dynamic effect that is weak earlier on but is strengthened at later stages.

The changes denoted by the plus and minus signs here do not imply precise differences in magnitude or degree but indicate general directions and dynamics.

economy without subjecting its entire economy to the capitalist world-system and market dominance. The declining role of all three zones in attracting foreign investment over time reflects growing interaction between market coordination and state intervention as rising labor cost within the zones, and extension of incentives beyond the zones, led to a reduction in their relative shares of foreign investment. But there is an underlying difference between the two EPZs and Shenzhen. In the former, foreign investors may have reacted more to nationwide industrial grading, which reduced the appeal of the EPZs. In China, on the other hand, the extension of SEZ policies to other coastal and inland regions (Chen 1991), coupled with the rising production cost in Shenzhen, lured some potential foreign investors away.

From a dependency/world-systems perspective, the declining number of firms and dwindling employment in EPZs reflect their vulnerability to the highly mobile and "foot loose" practice of international capital (Fröbel, Heinrichs, and Kreye 1981). The rapidly rising labor cost in Kaohsiung and Masan (see table 2) has recently forced a number of Japanese firms and other foreign firms to relocate to lower wage countries such as the Philippines (Clifford 1990) where Subic Bay (the former U.S.

naval station) is being renovated into a large new special economic and freeport zone. In fact, the Taiwanese government has recently committed large financial resources through its new International Economic Cooperation Development Fund (IECDF) to assist the development of the Subic special economic and freeport zone. To offset the loss of declining foreign capital, the state in both Taiwan and South Korea encouraged and channeled the flow of domestic capital into Kaohsiung and Masan. The neoclassical economists' concern with FEZs' ability to achieve trade surplus is alleviated, since all three zones reached that goal after their respective formative stages. Critics with a dependency/world-systems orientation would point to the fluctuations in the two EPZs' exports (see table 2) as vulnerability of labor intensive EOI to the uncertainty and volatility of the world market. Yet government involvement in guiding the shift from labor-intensive to more capital- and technology-intensive industries in all three zones enhanced their export capacity in per capita terms, lending some evidence to the argument that the state is capable of helping to improve some of FEZs' functions.

Although the three zones did not live up fully to the expectation that intimate linkage with industrialized countries facilitates technology transfer, the two EPZs made more progress on this front than Shenzhen. The dependency/world-systems perspective finds evidence on the lack of technology transfer in and through FEZs. From a state-centered perspective, industrial upgrading with government guidance in FEZs may lead to increasing introduction and transfer of foreign technology. Evidence on the two EPZs' growing integration with their domestic economies fits the neoclassical economics notion that the zones have spill-over effects on the host economy, especially enhancing the local suppliers' opportunity to provide certain raw materials. Using contradictory evidence, Sklair (1986) argued that the backward linkages between such an EPZ as Masan and the domestic sector are not as strong as generally believed. Neoclassical economists (e.g., Grubel 1982) also suggested that the imperfect separation of *regulated* (domestic) and *deregulated* (zone) markets can have negative external effects, as illustrated by the zones' firms selling goods at higher domestic prices without paying corresponding duty. Complementary to the neoclassical economics explanation, one could make a statist argument that the state policy of encouraging the use of local inputs and regulating domestic sales helps to strengthen the zones' domestic linkages. Although Shenzhen exists as a market-oriented SEZ, strong state planning and regulation at the central and local levels ensured the zone's tight domestic integration from the beginning.

The growing impact of all three zones on regional development bears out the neoclassical economics explanation that FEZs are capable of stimulating their surrounding areas, discounting the dependency/world-systems perspective that the zones are isolated enclaves. Supporting the state-centered perspective, the comparative evidence shows that a socialist state exerts a stronger and broader influence on the extent and direction of Shenzhen's regional impact through regulating the form and scale of migration (e.g., restricting the size of the permanent population in the zone) and the spatial spread of investment incentives beyond the zone.

This suggests that the three theoretical perspectives cannot consistently explain all

the changing characteristics and roles of FEZs. Instead, they complement each other in revealing the shifting external and internal conditions and processes that shape the dynamic roles of FEZs.

A Life-Cycle Model of EPZs and its Socialist Alternative

Fujimori (1978) proposed a life-cycle model of EPZs that has four stages—the new (infant) stage, the growth (adolescent) stage, the mature (middle-age) stage, and the declining (old-age) stage. The EPZs in Taiwan were born during its shift from ISI (import-substituting industrialization) to early EOI (1966–1973). South Korea's EPZs have evolved along an identical trajectory through its various industrialization stages. The rapid growth of EPZs facilitated this transition by providing urgently needed foreign exchange earnings and initial export experience. During Taiwan's EOI expansion and deepening (approximately 1974–1981), the EPZs' role matured in terms of accumulating large trade surpluses, securing sizeable ratios of local inputs, and promoting electronic products as the lead export. As Taiwan entered secondary ISI and advanced EOI (1982–1990), Kaohsiung's role began to wane and its performance indicators fell below the second and even the first stage (Wong 1992). This close historical association goes through a staged life course as the EPZs adapt their roles to ongoing industrialization.

To stretch the life of its EPZs beyond the mature stage, the Taiwanese state has contemplated and adopted measures to revitalize existing EPZs and to introduce new versions of FEZs. Policy discussion has focused on whether to introduce rigorous and explicit regulations for industrial upgrading and on the pros and cons of turning the current EPZs into conventional industrial zones, science parks, Taiwan-mainland China trade zones, or commercial/ residential zones (see Chang 1991). Since its three EPZs are already crowded, Taiwan has planned to establish a fourth EPZ to attract foreign investment in such advanced industries as semiconductors, biochemical, and optoelectric products. The government would invest heavily in equipment for environmental protection, pollution control, and waste water disposal to lengthen the life of the zone (IDIC 1989a, 1989b). In both Taiwan and South Korea, the state also promoted the geographically unrestricted "bonded factories" that were granted the same export incentives as the EPZs, and began to play a stronger role in exports than EPZs (Gereffi 1991).

From a life-cycle perspective, Shenzhen appears to be going through the growth stage, trailing one stage behind Taiwan and South Korea's EPZs. Although Shenzhen has lost some ground to China's recent policies to create other open coastal areas and to set up high-tech development zones at Pudong (near Shanghai) and in other locations (Cheng 1990a, 1990b; *Jingji Ribao* 1993), Shenzhen has maintained labor-intensive industrialization. But the experience of Taiwan and South Korea's EPZs, reinforced by the pressure from alternative and competing zones within China, will force Shenzhen to be more adaptable and flexible in its development objectives and strategies as it begins to move from the growth to the mature stage. A recently unveiled blueprint has set new priorities for Shenzhen to distinguish itself in becom-

ing a dominant center in high-tech industries, international finance, and commercial transaction, and to continue as a social "laboratory" for market reforms (Liu and Li 1993). Given that Shenzhen was initially created in a socialist planned economy, and has been reshaped by continuing spatially oriented "policy competition" involving newly emerging growth areas, this Chinese SEZ may well evolve in a more uncertain and unpredictable fashion, rather than following the linear life-course model of Taiwan and South Korea's EPZs.

Notes

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1. Throughout the article, I use FEZ as the generic term to encompass EPZs, SEZs and other variants of FEZs such as foreign trade zones (FTZs).
2. Until 1992, the Shenzhen SEZ was confined to the urban districts of Shenzhen Municipality, which also administers the surrounding Bao'an County. Unless otherwise noted, the data pertain to the Shenzhen SEZ in order to make the unit of analysis more comparable with the two EPZs.
3. Foreign investment may be direct or portfolio. Direct investment normally involves an ownership interest and an effective voice in the management of an enterprise, while portfolio investment entails a share in ownership but no significant influence on the enterprise's operations (World Bank 1985). Foreign investment in EPZs is overwhelmingly direct. Foreign investment in Shenzhen refers to the total stock of foreign capital in joint ventures, wholly foreign-owned firms, compensation trade, offshore oil ventures, and assembly and processing (Chu 1986; Stepanek 1982). Strictly speaking, only joint ventures and wholly foreign-owned firms involve direct investment, whereas foreign capital in the EPZs is mostly direct in the form of joint ventures and wholly foreign-owned firms. Since the bulk (80%) of the foreign capital in Shenzhen is accounted for by joint ventures and wholly foreign-owned firms (Chen 1993), the definition of foreign investment is comparable between Shenzhen and the two EPZs.
4. Calculated from Clark (1989:tables 6.9, 6.18), EPZA (1989:48), IDIC (1990:5), and MOEA (1987:47).
5. Calculated from KOTRA (1990) and Warr (1984:table 1).
6. Average employment per firm in all three zones is calculated by dividing employment over firms in table 2.
7. Calculated from the exports figures in table 2 over Shenzhen's total labor force instead of its industrial employment to make per employee exports more comparable to those of the two EPZs.
8. Calculated from the exports figures in table 2 and SSB (1992:25).
9. From April 1984 to March 1985, the EPZA and the Small and Medium Enterprises Administration had jointly sponsored a program called "The EPZ Factory Management Technology Services Program," in which 24 top-notch companies were selected by the EPZA to give 70 seminars on topics related to factory management. More than 1,600 managers and technicians from over 1,000 local factories participated in this program (EPZA 1986b:49).

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