

EVOLUTIONARY MODEL OF FREE ECONOMIC ZONES —Different Generations and Structural Features

MENG Guang-wen

(*Department of Geography, University of Tuebingen, Fichtenweg 14/302, 72076 Tuebingen, Germany*)

ABSTRACT: Free economic zone (FEZ) has a long history and plays a more and more important role in the world economy. Most studies, however, focused on the theoretical analysis of benefit and cost as well as the economic role of FEZ in the less developed countries and little attention has been paid to the evolution of FEZ. This paper will improve the above-mentioned studies and put forward the structural and spatial evolutionary model of FEZ by analyzing the development of objectives, preferential policy, governance structure, industrial sectors and location of FEZs based on the international economic and political development. FEZs develop towards: 1) more comprehensive and macro objectives, 2) more industry-oriented and multi-preferential policies, 3) more cross-national and combination zones with administrative areas, 4) more technology-intensive and multi-industries, 5) more flexible location and larger spatial dimensions, 6) more rapid evolution and typologies, and 7) more economic integration to the host economy.

KEY WORDS: free economic zone; structural evolutionary model; spatial evolution

CLC number: F119.9

Document code: A

Article ID: 1002-0063(2005)02-0103-10

1 INTRODUCTION

Many kinds of areas with special economic privileges—like the right to raise lower taxes—have been established since the 16th century. Since the 1960s, a variety of new models have developed, and their importance has risen on a global scale. The worldwide development of free economic zone (FEZ) is tending towards a general model although there is still a rich structure of different kinds of FEZ. There are numerous theoretical and empirical studies on FEZ. The classic studies discussed trade creation and trade transfer in a cross-national "Free Trade Area" (VINER, 1950). However, most studies focused narrowly on the economic effects and roles of export processing zone (EPZ) and special economic zone (SEZ) in developing countries (WALL, 1976; SPINANGER, 1984; RABANI *et al.*, 1983; WARR, 1989; UNCTC, 1990; BOLZ *et al.*, 1990; BUSCH, 1992). Several studies attempted to provide a theoretical framework to analyze these economic effects (benefits and costs) based on the standard "2 × 2 × 2" Heck-Ohlin trade model for small countries (HAMADA, 1974; HAMILTON and SVENSSON, 1982). Others presented a general theory of FEZ (GRUBEL, 1982; UNCTC, 1991; BALASUBRAMANYAN, 1988) or they discussed its structural and spatial evolution (MCCALLA, 1990; CHEN, 1995).

However, several questions have not been answered yet. First, there still remains some notable linguistic and conceptual confusion about the definition of FEZ since a general typological classification has not yet been advanced. Second, an indicator system to describe and analyze FEZs has not been developed. Third, most studies analyzed the static economic effects, while only little consideration has been given to the general evolution of FEZ. Fourth, the inherent relation between FEZ and the concept of regional economic integration (REI) has not been wholly discussed.

In this paper, following a short outline of the evolution of the seven generations of FEZ, a structural and spatial evolutionary model of FEZ on an international level will be developed by analyzing key factors of FEZ such as objectives, preferential policy, administration, industrial sectors and location. Finally, the results of this paper and further research suggestions will be discussed. The arguments are based on previous studies and on the recent development of FEZs all over the world and in China.

2 FEZ'S EVOLUTION: SEVEN GENERATIONS

The idea of free port (FP), as the oldest FEZ, can be traced back to the Roman port of Delos (Greece) commonly cited as the first to have conceived of this possi-

Received date: 2005-01-05

Biography: MENG Guang-wen (1960–), male, a native of Tianjin of China, Ph.D., specialized in regional planning and policy, environmental planning, tourist planning and management. E-mail: gwmeng98@hotmail.com

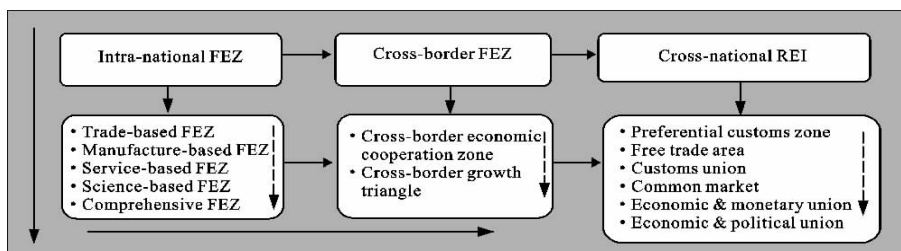
bility. Subsequently, such ports also arose in some city-states (e.g. Venice) along the eastern and southern rim of the Mediterranean in the early Middle Ages (MC-CALLA, 1990). In the late 13th century, some cities along the North and Baltic Sea established the "Free Trade Union" (Hanseatic League). Hamburg and Bremen, as "free cities" (FCs), played a dominant role inside the union. Free port Leyghorn (1547) in the Italian city of Genoa is generally acknowledged as the first FP (GUO, 1987). Hamburg FC and Leyghorn FP symbolized the birth of FEZs. Thereafter, FEZs experienced several development stages (MENG, 2003).

2.1 Definition and Typologies

In the literatures, on this subject we can find numerous terminologies for FEZ. There are currently at least 66 different terms to describe what is generally known as FEZ. To realize certain economic and political objectives, FEZ is a geographically defined zone where certain economic activities are especially allowed and where free trade and other preferential policies and privileges different from the host country are granted. FEZ ranges from a small size to a large dimension, from a zone inside a country to a cross-border zone involving more than two countries and further from an economic zone to an economic and administrative zone (MENG, 2003).

FEZs can be classified first into territorial and regime types according to their spatial structures. A territorial-type of FEZ has a specially defined territory with an infrastructure of high quality and administrative facili-

ties staffed with better-trained people than elsewhere in that country. There are two sub-types of this kind of FEZ depending on the linkages with the domestic economy and the policy of customs supervision, i.e. open type and enclave type. The enclave type (FP, FTZ (free trade zone) and EPZ) is a strictly defined zone in which a policy of closed customs supervision is carried out so that it has less direct linkages with the domestic economy than the open type (SEZ, science-based industrial park (SIP), free financial zone, and free tourism zone). The open type carries out a special policy of customs supervision (not closed customs supervision) and is not strictly defined or separated from the domestic economy. That is why it has more direct linkages with the domestic economy than the enclave type. Some types of FEZ, such as SEZ, have the feature of both open and enclave types of FEZ. The regime type of FEZ is only a free economic "regime", not a free economic "zone" so that it is only a special case of a territorial type. According to the industrial sector and the background of general features, such as economic freedom, geographically defined area, and macro location, FEZs can be classified into 6 main types and 7 generations as well as many subtypes, such as trade-based FEZ (FTZ), manufacture-based FEZ (EPZ), service-based FEZ (free tourist and financial zones), science-based FEZ (science-based industrial park), comprehensive FEZ (SEZ), cross-border FEZs (cross-border economic cooperation zone and cross-national growth triangles). Cross-national regional economic integration (REI) is FEZ's final development trend (Fig. 1).



Note: The horizontal arrows point to the evolutionary direction of typologies based on the industrial structure and location of FEZ; the vertical arrows point to the ties of subordination between the two typological systems based on the industrial structure and location; the broken arrows point to the evolutionary direction of typology of FEZ inside a typological system

Fig. 1 General typologies and evolution of FEZ

2.2 Criteria of FEZ Evolution

External factors such as development stages, prominent events of world economy, politics, and progress in science and technology are the background for classifying the evolutionary stages of FEZ. For example, the Second World War and the Second Scientific and Technologic Revolution are the criteria which determine the two

developmental stages of trade-based and manufacture-based FEZs.

The development and the combination of external factors will change the internal factors, including objective, location, industrial sector, preferential policy and administrative model of FEZ. The changed leading economic sector such as industrial sector, its development

and its combination with other factors during the different periods will once again promote the typological variation of FEZ, namely that existing FEZs will either disappear or be transformed or new types of FEZs will be created. When one or more types of FEZs are in the leading position, these types of FEZs would be the essential factors used to classify the evolutionary stages of FEZ.

The evolutionary stages of FEZ should not only be classified by the inherent evolutionary law of FEZ, but also by the time continuity, specifically by the chronological sequence. Each evolutionary stage of FEZ is born out of the former stage such that there is always a transition period between the two stages. The stages will be determined by the period during which type of FEZ greatly developed and had a leading position and not by the time when one type of FEZ first arose.

2.3 Seven Generations of FEZ Evolution

After the "Discovery of New Continent" (the 16th century) and the "First Industrial Revolution" (1760–1840), FC, FP and FTZ spread from the Mediterranean, North and Baltic Seas to Asia, Africa, and America. The FPs and FTZs in South America and the Caribbean Islands were established by Spain, Portugal, and Great Britain, and those in Asia and Africa were set up by Great Britain and France. Until the 1950s, most FEZs in the world belonged to the 1st generation of FEZ: trade-based FEZ. During this period, FEZs were transmitted from FC to FP, and from FP to FTZ—the Hamburg FC is an example. Following the political and technological progress, various types and generations of FEZs arose and promoted the world trade liberalization, financial internationalization, production integration, institutionalization, and regional economic integration (REI). The cross-national REI was also set up—a typical example is the "Customs and Currency Union (CCU)" among the Netherlands, Belgium, and Luxembourg in the 1930s.

Great changes in the world economy and world politics and the development of world science and technology took place after the Second World War having a crucial impact on the development of FEZ. Numerous new types of FEZs were also created while trade-based FEZ was redeveloped. The first typical service-based FEZs, such as free gambling zone and red light zones, arose in the early 1930s, but they reached their golden ages in the 1970s. Unlike trade-based FEZ, the service-based FEZ is not strictly geographically separated from the host coun-

try's territory by fences or other barriers. From the 1950s to the 1970s, the establishment of trade-based FP and FTZ gradually gave way to the manufacturing-oriented zone. Manufacture- and service-based FEZs, as the 2nd and 3rd generations of FEZ had a leading position. The transformation began because the manufacturing industry was promoted in Hong Kong and "an amendment" was made in 1950 to the Foreign-trade Zones Act of 1934 in the USA, which allowed manufacturing to occur in FTZs and was finished by the establishment of Shannon EPZ and Kaohsiung EPZ. Other new types of FEZs emerged and developed during this period including comprehensive FEZ (Manaus FTZ, 1957), science-based FEZ (Stanford Research Park, 1951) and cross-national REI (European Free Trade Area—EFTA and the European Economic Community—EEC). FEZ experienced its rapid development during this period. The total number of EPZs in the less developed countries soared from 11 in 1970 to 96 in 1981 (BASILE and GREMIDIS, 1984). FEZs spread from Europe to Asia, the United States, Latin America and Africa, from developed countries to less developed countries. South Korea, Singapore, the UK and USA are typical examples.

Following the world political and economic development and the technological revolution, FEZ evolved further into the science-based FEZ such as science-based industrial park (SIP) and technopolis, as the 4th generation of FEZ, and the comprehensive SEZ became the 5th generation from the late 1970s to the late 1980s. Typical examples are the development of science-based FEZs in the less developed countries and comprehensive FEZs in China and Eastern Europe. World REI reached a high level. Both EEC and EFTA continued to admit new members. In addition, EEC perfected the community market, and monetary and economic union (MEU) became reality. In 1989, APEC was established and in the same year, the Canada US Free Trade Agreement (CUSFTA) was signed and a FTA was built. Moreover, FEZ reached their golden ages in Asia and the United States and spread from these two continents to Europe and Australia. The conception of science-based FEZs in the USA promoted their development in Western Europe. The Chinese SEZs directly influenced the setup of FEZs in Eastern Europe. There has been significant growth in the number of EPZs since the 1970s. About 88 EPZs in 30 less developed countries and regions were in operation in 1980 (80% of EPZs in Asia, the Caribbean and Latin America, and about 20% in Africa and the Middle East)

① Trade-based FEZs include Free Ports such as Hong Kong, Singapore, Grand Bahamas, Hamburg, Bremen, and Duisburg; FTZs such as Colón (Panama), Barcelona, Genoa, Iquique (Chile); bounded warehouse zone (BWZ) such as Bari and Rome, Buenos Aires; free transit zone or entrepôt trade zone such as Santos zone (Brazil), Calcutta zone (India).

(UNCTAD/Geneva, 1985). By the 1980s, there were about 600 SIPs in the world. Many comprehensive FEZs were set up in China and Eastern Europe. The number of FTZs in the United States increased from 7 in 1970 to 118 by 1986 in a rapid diffusion process.

The Fourth Industrial Revolution in the 1990s has promoted the further development of FEZs, including cross-border FEZ (CFEZ), science-based FEZ and REI. Since the first official cross-border FEZ arose in EEC in 1976, cross-border FEZs have developed towards the economic cooperation and integration inside the zone and between the FEZs and the regions around them, with an increase in numbers since the 1990s. Most cross-border regions, including cross-border economic cooperative zones (CECZs) in the EU and cross-border growth triangles (CGTs) in Asia, occupy potential and strategic advantages, but in reality they are also the regions with lower REI, REC and lower economic and technological levels in reality. Therefore, their establishment is more a political than economic decision (Europäische Kommission, 1995). However, CECZ and CGT, as transitional types between the classic FEZs and cross-national REI, have made great progress in promoting information exchange, mutual understanding, technology transfer, investment and improving the infrastructure, and finally, cross-border national economic and technological development. Cross-national regional integration such as the EU has become the final development and the seventh generation of FEZs since the 1930s.

3 STRUCTURAL AND SPATIAL EVOLUTION-ARY MODEL OF FEZ

FEZ has been used as a tool or instrument to realize economic and political objectives. At the same time, the development of the world economy, politics, and the progress in science and technology will influence its evolution during different periods. The evolutionary model of FEZ can be summarized and defined by analyzing its key factors.

3.1 FEZ's Objectives and Roles in the World Economy

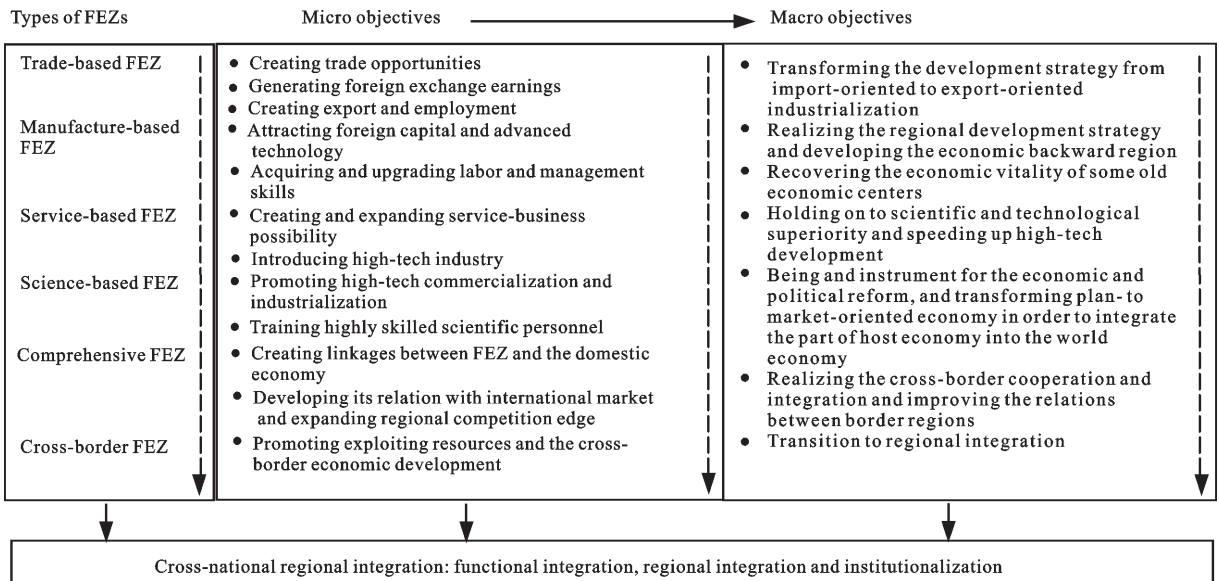
According to a recent estimate (LIU, 1994), the share of the world's total trade accounted for by all the FEZs rose from 7.7% in 1979 to 20% in 1985 and around 30% in the early 1990s. In other words, FEZ has augmented not only in number and typology, but has also played an increasingly important role in the world, national, and regional economy since the 1500s.

tain economic, and even social and political goals. Further, they include micro and macro objectives, common and special objectives, and they evolve step by step from the economic to the social and political level. Generally, FEZ has more similar micro-economic objectives, but the macro-objectives are for the most part different from each other. The objectives evolved from the direct micro-economic objectives to the indirect macro-economic objectives, or, in return, the micro- and macro-economic objectives evolved from the trade-based FEZ to the comprehensive and cross-border FEZs. The comprehensive and cross-border FEZs have multi-objectives and more macro objectives. The micro objectives evolved from creating trade, export, employment, foreign exchange, and attracting foreign capital to absorbing advanced technology, investment, and training personnel, but the macro objectives evolved from promoting regional development to carrying out structural reform and regional cooperation. Its final goal is REI (Fig. 2).

3.2 FEZ's Preferential Policy

In order to realize the certain objectives, FEZs are established in the selected zones and provided a stable and profitable investment environment, namely well-developed infrastructure and the preferential policy or the law and regulations. Its evolution will be determined by national and international economic development, its own objectives and development.

In the case of one FEZ, the preferential policy will be formulated, developed, and abandoned, or will become the laws and regulations, or will be transformed from regional-orientation to the combination of regional-and industry-orientation. A FEZ possesses administrative laws and regulations, economic law and regulations and economic incentives and privileges (preferential policy). The preferential policy can represent FEZ's laws and regulations because it is the important part and primary stage of FEZ's laws and regulations. Following the FEZ's development, the policy will be transformed through practice to law (policy-practice-law). In other words, the newly established FEZs mostly carry out the preferential policy such as the EPZs and FTZs in less developed countries, but the old ones carry out the laws and regulations such as the FPs and FTZs in the developed countries, or a FEZ has both laws and regulations and preferential policy. For example, many preferential policies of EPZs in Panama, Taiwan and R. O. Korea exceeded the period of validity. Many FEZ's laws and regulations can be found in some old FPs such as the first FP Leyghorn. Some FEZs in China transformed their regional-oriented to the combination of regional-oriented and indus-



Note: The horizontal arrows point to the evolution of objectives from micro- to macro-objectives of FEZs; the vertical broken arrows point to the evolution of types, micro- and macro-objectives of FEZs; The short vertical arrows point to the relations between FEZs and cross-national regional integration; This figure summarized micro and macro objectives of all types of FEZs. Each FEZ has most but not all of objectives.

Fig. 2 Evolutionary model of FEZ's objectives

try-oriented preferential policy.

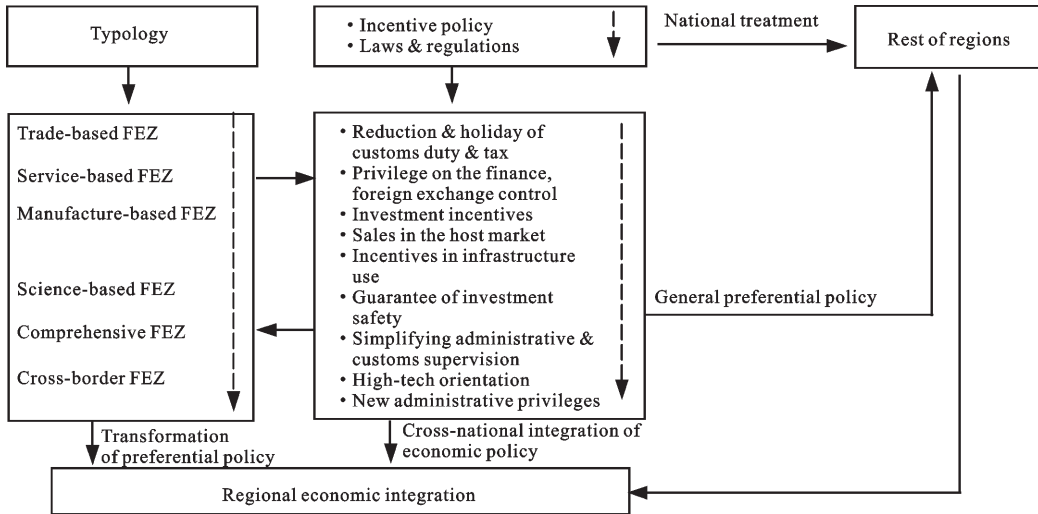
The preferential contents and degree are enriched and enlarged following the evolution of FEZs from the trade-based to the comprehensive and cross-border FEZs. It expanded from the trade to the service, production, administrative and social, even political field. In addition, preferential policy will be expanded to the regions outside the FEZs, for instance, present the national treatment to the foreign investors inside or outside FEZs. Moreover, in the well-integrated region, FEZs are united with some types of REI such as FTA, custom union (CU), and common market (CM), and the preferential policy has been transformed into or replaced by the basic principle and common economic policy of REI, but some FEZs are still treated as an exception of the treaty of REI. For example, the EU decided that FEZ is part of its common customs system, but goods within the FEZ, including goods from the third country, are seen as goods outside the EU. Thus, FEZs in the well-integrated regions still play a role in promoting free trade development and REI (Fig. 3).

3.3 FEZ's Governance Structure

A successful FEZ might have a governance structure with high responsibility authority, high efficiency, high flexibility, and long-term interest perspectives whose task is to plan, administer, coordinate, and develop economic and social activity within the zone in close coop-

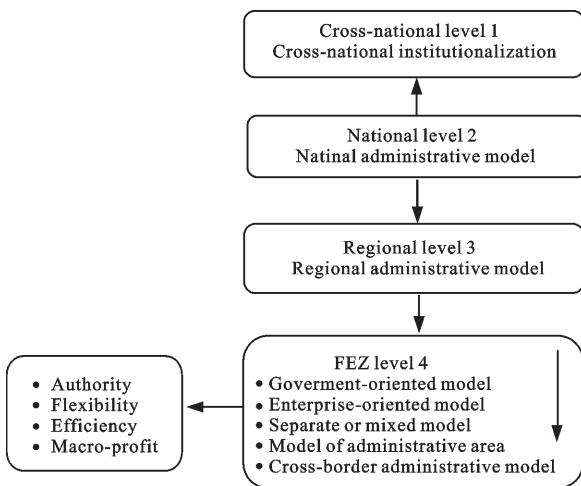
eration with the host country's authority. Although there is a general lack of government intervention and strong political control of economic activities in FEZs, the zones are not completely "free" from state influence in that they are all subject to some forms and degree of international, national, and regional administrative governance. Most FEZs can be classified into four administrative levels: 1) a cross-national level institution is responsible for the cross-national economic, social and political cooperation of FEZs; 2) the national administrative system is responsible for the macro-decision making of FEZs such as legislation and supervision; 3) the regional administrative system means that state and province govern and supervise the economic and social affairs of FEZs (LI, 1996) and 4) the FEZ's authority itself is responsible for its own economic and social activity. The FEZ's authority includes the government- and enterprise-oriented models, the mixed or separated model, the model of administrative area, and the cross-border administrative model (Fig. 4).

The revolutions of FEZ's administrative model relates to the various types of FEZs and regional, national, and international economic development and policies. First, FEZ's administrative model evolved from national to regional and FEZ level because FEZ's establishment is initially the country's matter and then the matter of local governmental. Second, FEZ authority evolved from the government-oriented, from the enterprise-oriented and



Note: The horizontal arrows show the evolution from the preferential policies and laws and regulations of FEZ to the national treatment and general preferential policy in the rest of regions; the vertical broken arrows show the evolution of types and preferential policy of FEZ; the vertical solid arrows show the evolution or transformation of preferential policy from FEZ to REI; This figure summarized all preferential policies of FEZ. Each FEZ has most but not all of preferential policies.

Fig. 3 Evolutionary model of FEZ's preferential policy



Note: 1. The levels 1–4 mean the administrative positions of FEZs. 2. The horizontal arrows show the features of governance structure of FEZ; the vertical arrows point to the evolution of administrative system of FEZ from level 2 to levels 3, 4 and 1 and inside level 4

Fig. 4 Evolutionary model of FEZ's administration

the mixed model to the model of administrative area. Along with the development of market-oriented economy, a lot of FEZs were transformed to or selected from the enterprise-oriented and mixed model. Moreover, more and more comprehensive FEZs possess a mixed model of an administrative area and FEZ. Third, the cross-border administrative model has taken place. Because one country cannot govern a cross-border FEZ along, the compromise between the two or more countries led to the cross-border administrative model with

both characteristics of FEZs and REI. Finally, the evolution of the national administrative system and the cross-border model led to the cross-national institutionalization of world REI.

3.4 FEZ's Industrial Sectors

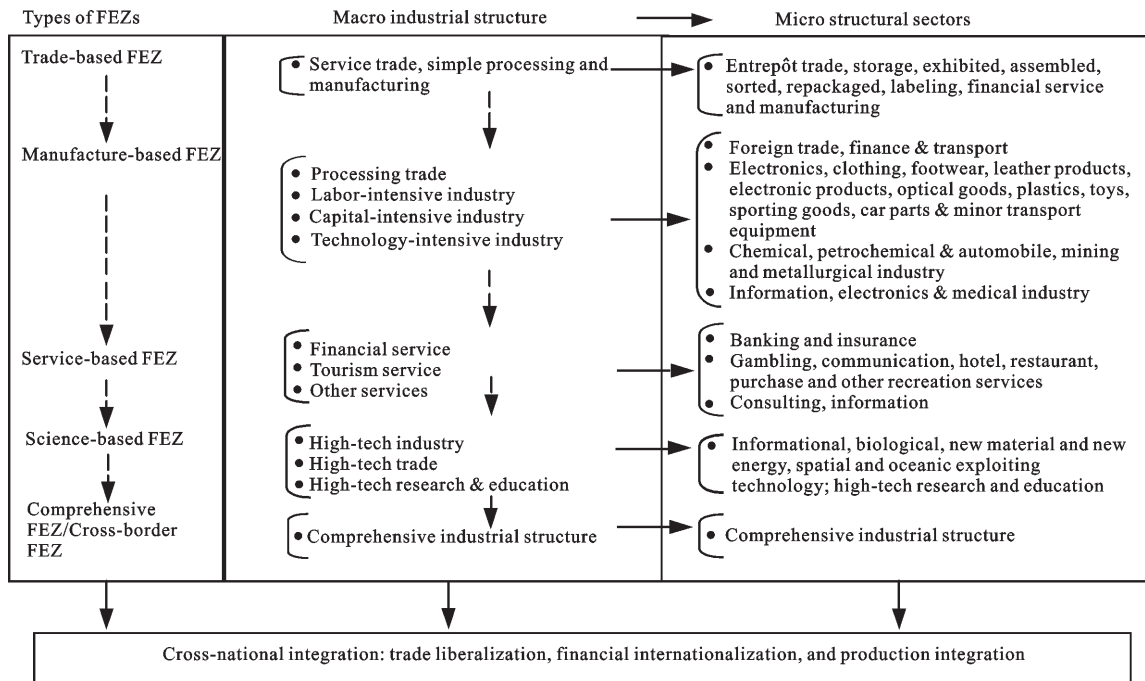
The industrial sector consists of the key factors indicating FEZ economic development. Its evolution occurs in each FEZ. They have developed more comprehensive sectors with a stronger orientation toward capital- and technology-intensive manufacturing and services. Generally speaking, FEZ's industrial structure evolved from the trade, financial and tourism to the manufacturing industries and agriculture, namely from tertiary industry to secondary and primary industries, which turns out contrary to the evolutionary order of a typical regional industrial sector. Moreover, like the normal economic zone, secondary industry is transformed from labor- and capital-intensive to technology-intensive industry or high-tech industry. The industrial sectors of FEZs will evolve from single sector to multi-sectors. In addition, the "inlaid industrial structure" of FEZ is determined by the FEZ's planning, the first investment group, several large trans-national corporations, the industry-oriented preferential policy and its own evolutionary law. At the primary stage of a FEZ, the industrial sector is determined and established by the planner and the first group of investors, such as EPZs in the less developed countries. In the 1960s Mauritius was a typical case (UNCTC, 1990). But, following the development of

FEZ, the industrial sector and pillar industry would be newly rebuilt based on the investment of several trans-national corporations and the evolution of industrial sectors. The experience of Chinese FEZs has proven this fact. Finally, the evolution of industrial sector of FEZ promoted world production integration because FEZ will be integrated into the production systems of the world or trans-national corporations (Fig. 5).

3.5 FEZ's Geographical Spread

FEZs are now flexibly located: from the ports in the coastal regions to the interior and to the cross-border region with favorable communications. They tend to expand spatially. Whereas the historical FPs comprised only small adjacent areas, some SEZs in China and Russia today cover hundreds, even over 1000 km².

FEZs spread from Europe to other continents and then



Note: The horizontal arrows point to the evolution of industrial structure from macro industrial structure to micro industrial sectors of FEZs; the vertical broken arrows point to the evolution of FEZ's types from trade-based to cross-border FEZ and world REI, and the industrial structure from trade, industry, high-tech industry to comprehensive structure

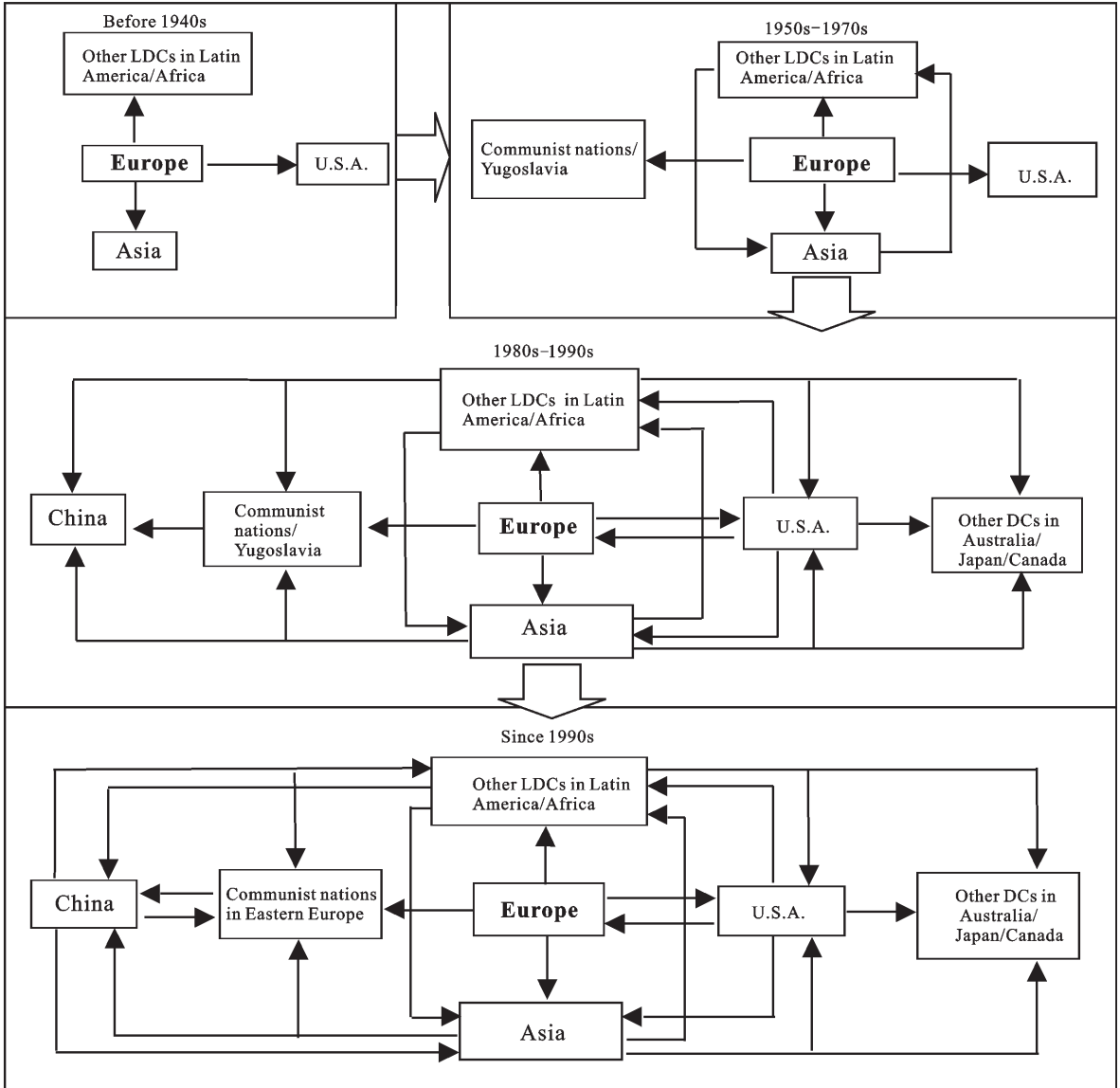
Fig. 5 Evolutionary model of FEZ's industrial structure

return. FEZs originally arose in Europe in the 1500s, and then spread to Asia and Africa in the 19th century, to America in the 1930s and to Oceania in the 1980s. In return, they influenced and promoted each other. For example, the science-based FEZs emerged in the United States and spread to Europe, Asia and other continents. The EPZ concept spread from Asia to North America and the UK. FEZs have spread from the developed countries to the less developed countries since the 1960s and then returned (Fig. 6).

4 DISCUSSION

The evolution of FEZ can be classified into five stages. After the primary stage of FEZ, such as FC and FP (pre-1500s), the first stage is symbolized by trade-based FEZ, such as free port and FTZ, since the 1500s; the sec-

ond stage has manifested itself in manufacture-based FEZ such as EPZ, and service-based FEZ such as free financial zones (FFZ), since the 1960s; the third stage is symbolized by comprehensive FEZ, such as SEZ, and science-based FEZ, such as SIP and technopolis since the 1980s; the fourth stage is incarnated by cross-border FEZ, such as cross-border economic cooperation zone (CECE) and cross-border growth triangle (CGT) since the 1990s; the fifth stage is symbolized by cross-national REI since the establishment of the MEU of the Netherlands, Belgium and Luxembourg in the 1930s and was optimized by the establishment of the EU, and two other typical examples are NAFTA and APEC. The evolution of FEZs has accelerated over time. While several centuries elapsed between the first and second stages, it took only some 20 years for the FEZ to evolve from the second to the third stage and about 10 years from the third



Source: Developed from MCCALLA (1990)

Notes: 1) The arrow points show the direction of influence or diffusion of FEZs; the bold, short arrows point to the diffusion in four stages; the continents and nations transliterated by the bold and big letters in the rectangles play a dominant role in the spread of FEZs; on the contrary, the continents and nations play a limited role in the diffusion of FEZs; the science-based and service-based FEZs of U.S.A. spread to other countries and continents. 2) DCs refers to developed countries; LDCs, less developed countries.

Fig. 6 Spatial evolutionary model of FEZ by selected periods, geographical areas and nations

to the fourth stages.

FEZs have evolved from the first to the sixth and even seventh generations according to the evolution of the economic sectors of FEZs, including trade-based FEZ as the first; manufacture-based FEZ as the second; service-based FEZ as the third; science-based FEZ as the fourth; comprehensive FEZ as the fifth, and cross-border FEZ as the sixth, and even cross-national REI as the seventh generation. Some FEZs played an outstanding role in the evolutionary stage of FEZs. For example, Ham-

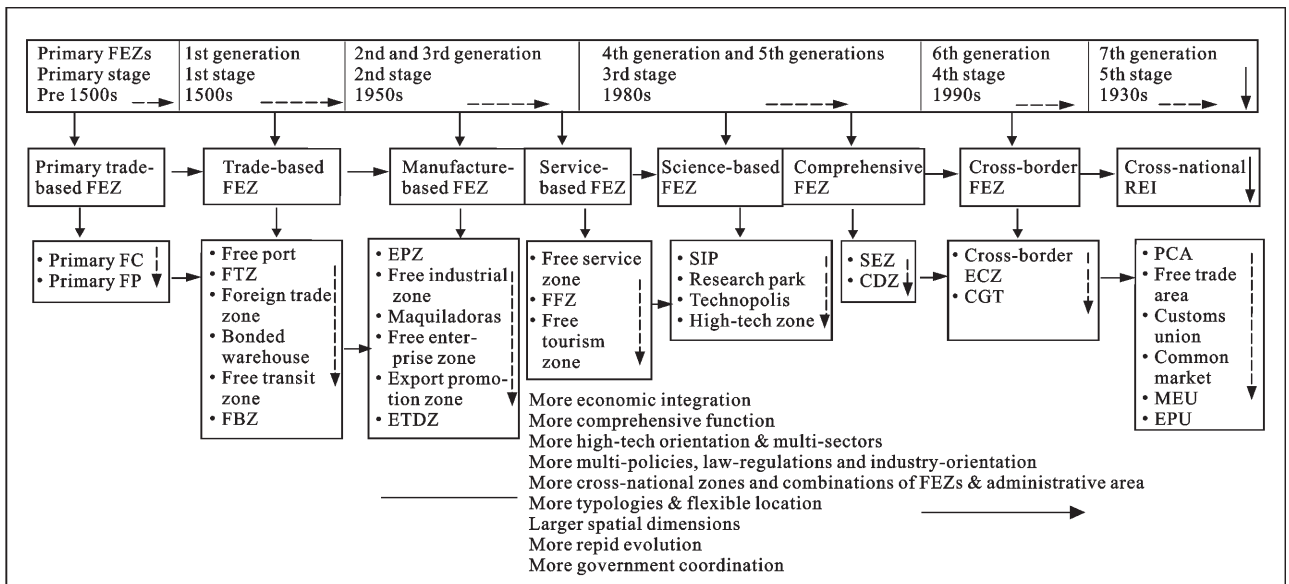
burg FP at the first stage; Hong Kong FC, Shannon and Kaohsiung EPZ at the second stage; Shenzhen SEZ and Silicon Village at the third stage; and CGT between Singapore, Indonesia and Malaysia, and the CECZ in the border regions of Germany, the Netherlands and Belgium at the fourth stage.

Following this typological evolution, FEZ is being transformed from micro to the macro economic, and further to the social and even political objectives. In the case of single FEZ, the preferential policy is being

transformed to economic laws and regulations, but its contents, degree and spread of FEZ in general have been enriched and it is tending to more combination of zonal and industry-orientation. FEZ is also transforming their administrative models from regional, national to cross-national level, from the government-oriented, enterprise-oriented to the mixed model of the FEZ and administrative area and to the cross-border model. The industrial sector of FEZs is being transformed from tertiary to second and primary industries, from single to multi-sectors, and from labor- and capital-intensive to technology-intensive industries. FEZs are spreading from the coast to the interior and they have more flexible locations and larger spatial dimensions. Their evolution is quicker, and they have more economic integrations with the other regions. This evolutionary model of FEZs improves and develops the previous studies (Fig. 7).

It is unlikely that FEZs have reached their limit. As long as trading barriers exist, there will be the need for FEZs to go beyond these barriers. In fact, according to different estimates, the number of various types of the FEZs in the world was continually on the increase. In 1900, there were only 11 FPs and they were located only in a few countries of Europe and Asia. In 1975, 25 less developed countries ran 79 EPZs. By 1986, the number in the world had risen to 47 countries with 176 EPZs (KREYE *et al.*, 1987). Recent studies in the 1990s suggested that there may be more than 900 FEZs of various types in about 90 countries and territories of the world (LI, 1992).

FEZs are continuing to be created in the world, especially in less developed countries, but the new establishment of FEZs, especially comprehensive FEZs and EPZs, has decreased since the 1990s. China alone estab-



Source: Developed with numerous additions and modifications from the simple sketch in WONG and CHU, 1984; GU *et al.*, 1993; CHEN, 1995

Notes: 1) The horizontal solid arrows show the direction of evolution of FEZs in typology and function; the broken arrows show the time; the vertical solid arrows show the relation between the evolutionary stages and types; the vertical broken arrows show the evolution inside sub-typology; 2) FC: free city; FP: free port; FTZ: free trade zone; FBZ: free border zone; EPZ: export processing zone; ETDZ: economic and technological development zone; FFZ: free financial zone; SIP: science-based industrial park; SEZ: special economic zone; CDZ: comprehensive development zone; ECZ: economic cooperation zone; CGT: cross-border growth triangle; PCA: preferential customs area; MEU: monetary and economic union; EPU: economic and political union

Fig.7 Evolutionary model of Free Economic Zone since the 1500s

lished two classic comprehensive FEZs (Pudong New Area and Suzhou New Area), 53 science-based FEZs, and 13 EPZs inside science-based FEZs through the middle 1990s. After that, the establishment of FEZs was no longer encouraged in China. Beside the Lhasa Economic and Technological Development Zones of Tibet, the foundation of new FEZs was not planned in the "Strategy of Western Development of 2001". Several cross-border

FEZs, however, have been in operation or planned. Besides of Tumen River CFEZ and Lancang River CFEZ, the CFEZ between China, Mongolia and Russia as well as other Central Asian Countries will be planned. Furthermore, FEZs will be encouraged in these transforming countries. In place of classic FEZs, science-based and cross-border FEZ developed very quickly in Asia, Europe and Latin America. The typical examples are

cross-border economic cooperation zones in the EU, cross-border growth triangles in Asia, NAFTA, and planned FTA between China and EAEC. FEZ is the form and basis of world REI, but REI is the development of FEZ. It is equally said that intra-national FEZ will develop into cross-border FEZ and finally to cross-national REI. Until world REI one day becomes a reality, FEZ will continue to exist.

However, several questions remain open. First, how will a FEZ further develop? Will it be a normal economic zone or become an urban zone or still be a FEZ? Second, why FEZ has played a more important role in the less developed countries than in the developed countries, especially in China? Third, what is the inherent relation between REI and FEZ, while REI and globalization are discussed worldwide. Fourth, as a new type of FEZ, the study on cross-border FEZ is just at the beginning stages, so its typology, policy, administration and development model should be deeply researched. Finally, several scholars attempted to provide a theoretical framework to analyze large FTA, small FTZ and EPZ, but no study discussed the general economic theory of FEZ, although FEZ is seen as a general definition to cover all types of FEZs.

REFERENCES

- BALASUBRAMANYAN V N, 1988. Export processing zones in developing countries: theory and empirical evidence [A]. In: GREENWAY (ed.). *Economic Development and International Trade* [C]. London: Macmillan, 157-195.
- BASILE A, GERMIDIS D, 1984. *Investing in Free Export Processing Zones* [M]. Paris: Development Center of the OECD, 22
- BOLZ Klaus, DIETER Loasch, PETRA Pissulla, 1990. *Freihandels- und Sonderwirtschaftszone in Osteuropa und in der VR China* [M]. Hamburg: Verlage Weltarchiv GmbH. (in German)
- BUSCH Berthold, 1992. *Sonderwirtschaftszonen als Instrument der System-Transformation* [M]. Deutscher Instituts-Verlage. (in German)
- CHEN Xiang-ming, 1995. The evolution of Free Economic Zones and the recent development of cross-national growth zones [J]. *International Journal of Urban and Regional Research*, 19: 591-621.
- Europäische kommission, 1995. *Europa 2000: Europäische Zusammenarbeit bei der Raumentwicklung* [M]. Luxemburg: Amt für amtliche Veröffentlichungen der Europäischen Gemeinschaften. (in German)
- GRUBEL H G, 1982. Towards a theory of free economic zones [J]. *Review of World Economics*, (118): 39-61.
- GU Yuan-yang, WEI Yan-zhen, WANG Xiao-hua, 1993. *A Panoramic View of the World's FEZs* [M]. Beijing: World Knowledge Press. (in Chinese)
- GUO Xin-cang, 1987. *An Introduction to the World's Free Ports and Free Trade Zones* [M]. Beijing: Publishing House of Beijing Aeronautical Engineering Institute, 11. (in Chinese)
- HAMADA Koichi, 1974. An economic analysis of the duty-free zone [J]. *Journal of International Economics*, (4): 225-241.
- HAMILTON Carl, SVENSSON Lars E O, 1982. On the welfare effects of a duty-free zone [J]. *Journal of International Economics*, (13): 45-64.
- KREYE O, HEINRICHS J, FRIBEL F, 1987. Export processing zones in developing countries: results of a new survey [R]. Germany: Sternberg Institute. Working Paper No. 43, ILO, Geneva, 6-7.
- LI Hai-yan, 1992. The various types of free economic zones in the world today [J]. *Special Zone and Open City Economy*, (12): 64. (in Chinese)
- LI Li, 1996. *Study on the World Free Trade Zone* [M]. Beijing: China Reform Press, 95. (in Chinese)
- LIU Yu-chi, 1994. The evolution of the world's economic special zones and the development choices facing China's SEZs [J]. *Special Zones and Development Zone Economy*, (5): 77-80. (in Chinese)
- MCCALLA Robert J, 1990. The geographical spread of free zones associated with ports [J]. *Geoforum*, 21(1): 124.
- MENG Guang-wen, 2003. *The Theory and Practice of Free Economic Zones* [M]. Frankfurt am Main: Peter Lang, 19-25, 45-51.
- RABANI F A *et al.*, 1983. Economic and social impacts of export processing zones in Asia: an evolution [R]. Tokyo: Asian Productivity Organization.
- SPINANGER Dean, 1984. Objectives and impact of economic activity zones—some evidence from Asia [J]. *Weltwirtschaftliches Archiv*, (120): 64-89.
- UNCTAD/Geneva (UN Conference on Trade and Development/Geneva), 1985. *Export Processing Free Zones in Developing Countries: Implications for Trade and Industrialization Policies* [M]. New York: United Nations, 1-2.
- UNCTC (UN Center on Transnational Corporations), 1990. *The Role of Free Economic Zones in the USSR and Eastern Europe* [M]. New York: United Nations, 4.
- UNCTC, 1991. *The Challenge of Free Economic Zones in Central and Eastern Europe: International Perspectives* [M]. New York: United Nations, 3-5.
- VINER Jacob, 1950. *Customs Union Issue* [M]. New York: Carnegie Endowment for International Peace.
- WALL D, 1976. Export processing zones [J]. *Journal of World Trade Law*, (10): 478-498.
- WARR P G, 1989. Export processing zones: the economic of enclaves manufacturing [J]. *The International Bank for Reconstruction and Development*, (1): 65-88.
- WONG K Y, CHU D K, 1984. EPZs and SEZs as generators of economic development: the Asian experience [J]. *Geografiska Annaler*, 66(1): 1-16.