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Transformation path of China's cities in industrial decline: The case of Changchun *

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Abstract. Since the mid-20th century, many industrial cities have fallen into decline. Traditional industrial areas in many developed countries, such as the Great Lakes region in the northeastern United States, the Ruhr area in Germany, Birmingham and Manchester in the UK, and the Ural industrial zone in Russia, experience industrial decline, weak economic growth and urban decay as a manifestation of regional decline — a "reverse development phenomenon". Today, economic, social, environmental and other factors made large-scale cross-regional migration almost a social norm, while regions with population outflow inevitably fall into decline due to labor shortage and brain drain. The primary cause of industrial city decline is the unbalanced industrial structure which determined production, resource and capital dependence, reducing flexibility and sustainability of the urban economy. Once an economic crisis affects the urban pillar industry, a vicious cycle of economic weakness and population loss arises and ultimately leads the city into a development trap: economic shocks caused by industrial structure imbalance, demographic shocks from massive loss of labor force, political shocks from urban growth and spatial shocks from suburbanization have led to qualitative changes in the urban spatial pattern, leading to urban decline. The development crisis of industrial cities triggers the collapse of the urban system, resulting in the loss of urban development elements and a decline. China is currently in a transition from industrialization to post-industrialization, and industrial cities face the risk of urban decline. As the capital of the Jilin Province, Changchun is a famous center of heavy industry, and since the mid-20th century the city has faced many development difficulties due to such factors as industrial crisis, population loss and environmental degradation. The decline of Changchun is explained in the article by multiple reasons, including the imbalance of industrial structure, the degradation of urban space and the decline of urban culture. Therefore, Changchun's revival should also take place in three dimensions: economy, space and culture. The economic dimension implies development of Industry 4.0 and diversified urban economy, networking, informatization and digitalization, optimization of the industrial structure with the focus on service industry and

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innovation (new industries, new products, new technologies, new business forms and new models of the urban economy) in order to increase the economic resilience of the city and overcome potential economic risks. The spatial dimension implies the regional development thinking to create a new metropolitan area by breaking the traditional urban-rural opposition — Changchun as both a hub city for transportation, economy, scientific and technological innovation in the Jilin Province and even Northeast China and a model and core of the rural revitalization in the Jilin Province's "hinterland". The cultural dimension implies the focus on changing the city's image and spirit by using its "soft power" — cultural influence: on the one hand, historical heritage of Changchun as a city with a long history; on the other hand, its potential of keeping up with the times and innovation.

Key words: Northeast China revitalization; urban transformation; industrial city; industrial decline; old industrial base; Changchun

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Since the 1950s, with the acceleration of economic globalization, the global flow of capital, labor, and technology has led to obvious changes in the world's industrial model. Traditional industrial areas in many developed countries have experienced decline such as the Great Lakes region in the northeastern United States, Ruhr area in Germany, Birmingham and Manchester in the UK, and the Ural industrial zone in Russia in the mid-to-late 20th century. In 1985, the *Chicago Tribune* published the article "Sun on the Snow Belt", introducing the term "Rust Belt", which became popular in the United States and gave rise to heated academic discussions. In 2013, Detroit, a typical "Rust Belt" city, declared bankruptcy, contributing to further debates on decline, crisis and possible transformation paths of industrial cities.

There are following main directions in academic research on the decline and transformation of industrial cities: first, common causes of decline such as international competition determined by economic globalization, changes in industrial structure, government policy mistakes, deterioration of the investment environment, population outflow, and energy policies in the United States and additional factors (regional and local) such as location, population structure, racial conflicts and historical evolution in different "Rust Belt" cities [4; 5; 21]. Second, the impact of declining industrial cities: for instance, in the United States this impact is economic, political and social, such as the failure of social management, high unemployment rate, high crime rate, sharp racial conflicts, and radicalism as a hotbed of American populism, damaging the country's social and political stability (the "black swan" event of Trump's coming to power in 2016 was determined by the voters' support in declining industrial cities) [8; 15; 18]. Third, models for the revival of industrial cities: some scholars advocate transformation of the industrial structure of "Rust Belt" into "Smart Belt"; others focus on urban planning — the Chicago School and Los Angeles School suggested urban development paths based on industrial transformation, scientific-technological

innovation, government leadership, social autonomy, and cultural changes for "Rust Belt" cities [6; 14; 16; 19].

There are similar problems of the old industrial area decline in Northeast China, which were reflected in a series of strategies such as the New Era Northeast Revitalization and academic concepts such as "limitations of the unit system" (Tian Yipeng), "theory of institutional innovation on old industrial bases" (Lin Muxi), "Northeast culture and revitalization of industrial bases" (Zhang Fugui), "transformation of single-structure cities" (Song Donglin), etc. Studies of the decline of industrial cities in the United States became a reference point for the studies of the transformation of industrial cities in Northeast China mainly in terms of the causes of their decline. For instance, in 1992 Gong Qi considered revitalization of American old industrial bases, while Wang Xu — changes of American industrial cities in the urban history perspective; in 2005, the Jilin Province organized an expert survey on the revitalization of Northeast old industrial bases according to the "Rust Belt revival model" in the United States; in 2015, the *People's Tribune* published a series of articles on the useful experience of foreign industrial city transformation for Northeast revitalization. Many scholars have studied the "Rust Belt" cities in the United States in the perspective of sociology, history, political science, economics, etc., for instance: Han Yu's analysis of the causes of "Snow and I ce Belt" in the United States (2002), Chen Ruihua's assessment of the "Rust Belt" revival experience for creating the "New Northeast" (2015), Liu Shiwei and Zhang Pingyu's study of urbanization of "Rust Belt" area in the perspective of its application in China's Northeast old industrial base (2015), Hu Daping's analysis of the threat of Chinese cities' spatial evolution based on 'Detroitization' (2015), Ma Xiulian and Wu Zhiming's (2015) review of the theory and practice of the American post-industrial city transformation (2015), etc. Most studies emphasize the multifactorial nature of the industrial cities decline: the change in the global industrial structure due to economic globalization exerted external pressure on industrial cities, while their deindustrialization and suburbanization created internal tension. Thus, a combination of changes in political, economic, cultural, social and population structures explains the decline of traditional industrial areas.

Northeast China is an important industrial and agricultural base, ensuring the country's national and food security, environmental safety, energy and industrial security. As an old industrial base in Northeast China, the Jilin Province has such industrial cities as Changchun and Jilin, important in automotive and petrochemical industries. Changchun as the capital of the Jilin Province occupies an important and significant position among its many industrial cities. Changchun is the economic center, transportation hub and industrial center of the Jilin Province and even Northeast China, which is why it attracts population. According to the Seventh National Population Census (2023), the Jilin Province had 24 million inhabitants, among which 40% (9 million) live in Changchun (figure 1).

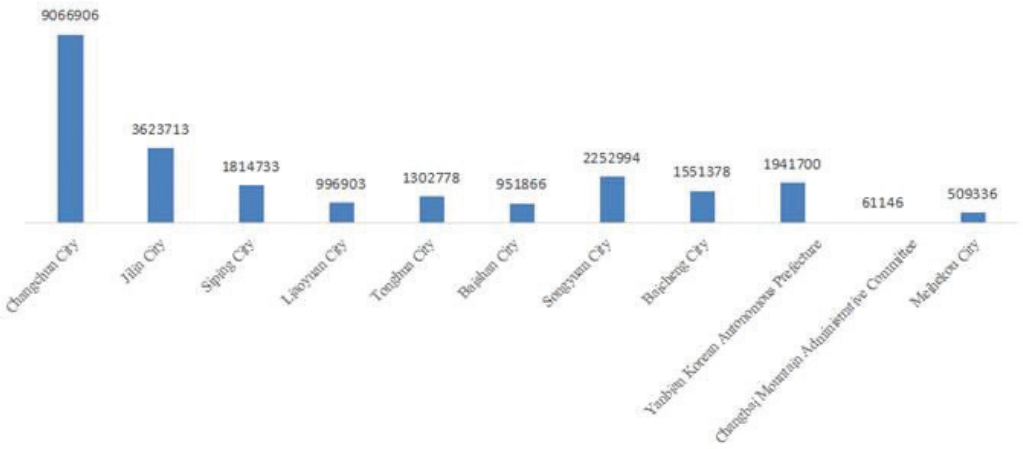

Figure 1. Data of the National Population Census for the Jilin Province [20]

As the central city of the Jilin Province, Changchun is home to such industrial enterprises as the First Automobile Plant, Changchun Railway Car Factory, Changchun Tractor Factory, and Changchun Film Studio. These enterprises played a decisive role in China's industrialization and modernization in the mid-20th century, securing Changchun a reputation of the "Eldest Son of the Republic". However, with the industrial restructuring at the end of the 20th century, Changchun faced significant development challenges: collapse of numerous traditional manufacturing enterprises, layoffs of industrial workers, mass outflow of population, lagging urban infrastructure, and a sharp change in the city's image due to its turning into a typical declining industrial city. Since Changchun is the central city of the Jilin Province and Northeast China, its successful revival is crucial for Northeast China's development. Therefore, it is necessary to analyze the causes of Changchun's decline and possible paths for its transformation from a declining industrial city into a high-quality post-industrial city, promoting the revival of Northeast China.

Causes of Changchun's decline

Changchun is a typical representative of the declining industrial cities in Northeast China, whose transformation from a developed industrial city to a declining was determined by multiple factors. The main *economic* factor is ownership and industrial structure: the city's economy was not adapted to the requirements of the market economy development, since the share of the state economy was too large, and its contribution to economic growth was declining. Although other economic elements developed rapidly, their number and share were too small. At the end of the 20th century, due to the rapid development of the non-state economy in coastal and eastern provinces, the national

ownership structure changed greatly: in 1997, the share of the national state economy was 52% lower than in 1978, while in Changchun — only 20% lower. In 1998, according to the new model of the industrial added value, the share of the state economy in the Jilin Province was 74%, which was 18% higher than the national average and made it one of the few provinces in the country with a high share of the state economy [7]. Such inflexible mechanisms and heavy burden of state enterprises led to slow economic growth, low efficiency and increasing gap in the economic development level with developed provinces. The collective economy of the Jilin Province basically did not achieve significant results, and although individual, private and other economic components have grown rapidly, there is still a large gap compared to the country in general and the developed provinces in particular.

In terms of industrial structure, as a typical representative and a pioneer of early industrialization in China, Northeast region has a remarkable feature — heavy industry is too heavy, and light industry is too light. Such an industrial structure helped Northeast China achieve success quickly at the early stage of industrialization, but at the same determined the structural contradiction (industrial development dilemma) in Northeast China. Heavy industry dominated in many cities of Northeast China: in 2000, heavy industry accounted for 80% of all Northeast industry with very high shares of material and processing industries (34.5% and 30.6% respectively, accounting for nearly 2/3 of Northeast industry) and also mining industry (14.4%), while the share of light industry was about 20.5% (agricultural products as raw materials — 14.7%, non-agricultural products — 5.8%).

There are three industries that account each for more than 10% in the Northeast: production of transportation equipment (15.7%), oil refining and coking (12.1%), and oil and natural gas production(10.9%); three industries that account each for more than 5% — melting and rolling of ferrous metals (7.9%), production and supply of electricity, steam and hot water (6.3%), and production of chemical raw materials and products (5.9%); four industries that account each for more than 3%, — food industry (4.2%), general mechanical engineering (3.6%), production of electronic and communications equipment (3.6%), and extraction and selection of non-metallic minerals (3.1%). Except for food industry, all other industries are mainly heavy. Considering the product structure, due to the long-term development of resources and primary processing of products, the industrial economy of Northeast China depends on both production of complex products and processing of primary ones, with few final products and many intermediate ones. Thus, production levels have increasingly lagged behind international standards, and national comparative advantages have weakened [11. P. 21].

The industrial structure of Changchun is in line with the industrial structure of Northeast industrial cities based on heavy industry. According

to the 2024 Jilin Statistical Yearbook, there are 3,234 industrial enterprises in Changchun, and automobile production ranks first with 447 — the largest number in Changchun. Automobile production represented by FAW became the pillar of Changchun's industrial structure, which makes its economic development closely related to the rise and fall of automobile industry: the decline of automobile industry due to the economic cycle would hinder Changchun's economic development, which threatens the economic stability of Changchun city.

The decline of Changchun city is also determined by the unbalanced *spatial* structure. Under urbanization and industrialization, the industrial space within the urban area of Changchun has become its core, reducing the share of commercial and residential functional areas due to the development of city's industrial structure. During the rapid growth period of industrialization, the problem of urban space was not significant; however, after the slowdown of Changchun's industrialization, spatial distribution dominated by industry became a limiting factor of further urban development, especially the vacancy of factory buildings caused by the closure of many industrial enterprises created a dilemma in the urban space of Changchun. Thus, the evolution of Changchun's urban spatial structure reflects the interaction between political and economic changes in specific historical periods and the practice of urban planning theories. In the early 20th century, the Middle East Railway became an important transportation infrastructure support for the rise of Changchun. According to the theory of transportation/economic belts, expansion of transport links promotes greatly the flow and agglomeration of regional factors, which is why Changchun became an important transportation hub/node of Northeast China. At that stage, the main urban function of Changchun was residential with obvious single-function attributes: residential area accounted for 87.6% of the city, while commercial services facilities — for only 0.34%. This spatial distribution reflects the early urban development model with living functions as its core — when types of urban economic activities were relatively solitary and the commercial system had not fully developed yet.

The 1932 Xinjing Urban Plan marked the new stage of Changchun's urban development, despite strong colonialism and modernization features, due to being based on the advanced western urban planning concepts of the time, such as functional zoning and garden city. According to this plan, Changchun launched a large construction project, and the scale of public administration and civil service significantly expanded. Such changes reflected an emphasis on urban administrative control and public service system construction during the colonial rule. The adjustment of spatial planning strengthened the ruling order and the efficiency of social management, objectively promoting urban modernization in Changchun.

In 1941, the decision to designate Kuanchengzi as a light industrial zone had a far-reaching impact on the spatial structure of Changchun. According to the theory of industrial location, the site selection of the light industrial zone met the requirements of transport infrastructure, land resources, and spatial relations with the central urban area. This plan suggested that industrial and warehouse space would occupy an important position in the urban area which would transfer from a residential type to a complex type. Thus, introduction of industrial production functions accelerated diversification of the urban economic structure.

After the founding of New China, Changchun as an important part of the old industrial base in Northeast China took on the important mission of ensuring national industrialization. The 1953 Changchun City Master Plan positioned the city as a mechanical production, scientific and cultural center, which was highly consistent with the national industrialization strategy of the time. Within the planned economic system, Changchun contributed to large industrial and infrastructure construction around mechanical production, which is why the industrial and warehouse areas continued to expand, reaching its peak of 29.3% in 1994. During this period, the spatial structure of Changchun became a typical "industry-dominated" one, and the expansion of industrial area became the main driver of urban spatial expansion.

In the 21st century, due the continuous improvement of China's economic system and acceleration of urbanization, Changchun's urban development has faced new challenges. Before 2011, due to multiple factors (industrial structure, consumption and real estate market development), the residential area in Changchun gradually decreased, while the share of commercial service facilities, public administration and public service facilities and mixed function areas increased (figure 2). This change reflects the trend of urban functions changing from production-oriented to services-oriented. However, the decline of industry led to the decline of urban environment in Changchun.

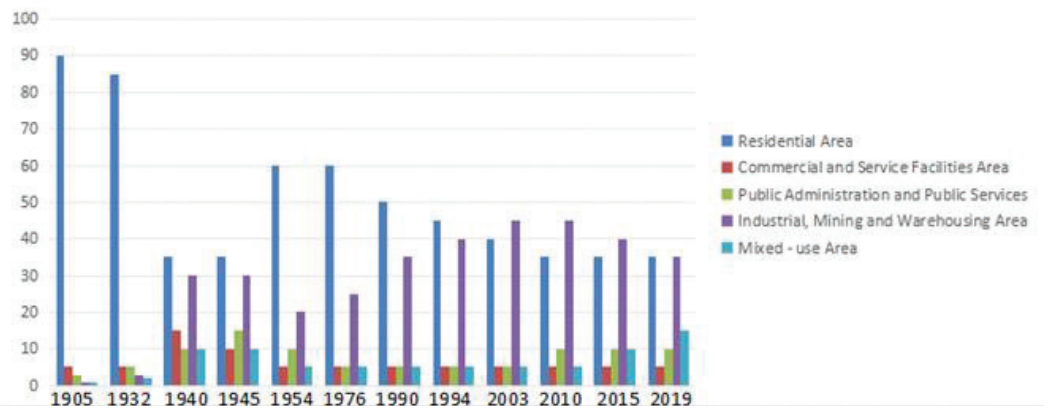

Figure 2. Ratio of areas in Changchun by function (%)

Evolution of the urban functional structure in Changchun (1905–2019) [24]

Changchun has a rich industrial heritage. As the cradle of China's automobile industry, it made great contributions to the national economic development and accumulated rich resources of automobile industry and related machine manufacturing industry. However, integration of cultural industries with these traditional advantageous industries and today's service industries has been at a low level for a long time. Since industrial and warehouse areas formed under urbanization, many factory buildings and equipment are mostly idle or underutilized but have historical value. For instance, the former site of the Changchun Tractor Factory, an important representative of China's agricultural machinery industry and a complex of buildings and production equipment with exceptionally modern characteristics for the time, failed to be timely transformed into an industrial museum, art cluster, cultural and creative industrial park during the urban renewal, which has led to underutilization of the cultural and economic values contained in the industrial heritage, to the missed precious opportunity to build a cultural cluster with Changchun's industrial characteristics, and the failure to innovatively develop cultural industries and transform industrial areas.

Priority development of commercial service facilities, influenced by orientation towards short-term economic benefits, determined insufficient policy and financial support for Changchun's cultural industries compared to much more advanced in this sense Hangzhou and Shenzhen (park construction subsidies, cultural enterprise taxes and cultural projects funding). Many cultural enterprises in Changchun experience such difficulties as lack of funding and high operating costs when renting sites, purchasing equipment and promoting talents. This situation creates uncertainty about investing in Changchun's cultural industries, which makes it difficult to attract external funding and improve cultural industries.

Changchun experiences a shortage of professional talent in the cultural sector, especially specialists who understand both cultural creativity and market mechanisms. Although local universities opened many culture-related majors, the industry-university-research cooperation with cultural enterprises is not effective, and the curriculum and practical teaching fail to meet the market demand, which makes it difficult for trained talents to quickly adapt to jobs and meet employers' requirements. For example, in animation production, the animation major students at Changchun's universities perform well in character design and story creation but lack the skills of market promotion, thus not meeting the enterprise's demand for full-process animation production. The innovative driving force of the cultural industry is insufficient, which results in homogenization of cultural products and services in the market. Many cultural and creative products in Changchun lack in-depth and innovative expression of local features such as automobile or ice-snow culture, and most of them are simple replications or souvenirs, lacking innovation

and market competitiveness and not meeting the increasingly diversified and personalized cultural demands of consumers.

The cultural industry market system in Changchun is underdeveloped, there are few large cultural enterprises and no leading enterprise with national influence, while small, medium-sized and micro enterprises are generally too weak in the ability to cope with risk. According to the statistical data, the number of influential cultural enterprises in Changchun is significantly lower compared to similar cities such as Shenyang and Dalian. The cultural industry has not formed an industrial chain of closely connected creative planning, production, promotion and marketing, i.e., there is no synergy effect in the local cultural industry. Moreover, production of cultural products and development of service and trading platforms at both online and offline cultural markets lag behind, and the unstable information flow of the cultural market results in the inefficient allocation of cultural resources. Many high-quality cultural and creative projects fail to be transformed into real products and economic benefits due to the lack of display and trading channels, which hinders marketization, cross-regional cooperation and development of the cultural industry, making Changchun's cultural industry relatively uncompetitive in the national market.

The path of Changchun's urban transformation

In Changchun, the causes of the urban decline crisis are mainly economic, spatial, and cultural; therefore, transformation/revitalization of the city should focus on these three aspects: economic — modernization of traditional industries and creating new business forms, spatial — application of regional development concepts to build a new metropolitan area and urban network system, cultural — to strengthen urban influence and the city's "soft power".

There are problems in the industrial structure of Changchun, mainly manifested in the too high proportion of heavy industry, obvious resource dependence and strong state monopoly. The industrial transformation of Changchun is to preserve its industrial tradition and find a new industrial track, to use both the city's industrial advantages and the concept of Industry 4.0 to modernize traditional industries. Today, the world's industrialization has entered the "4.0 era" marked by the transformation of industrialization by such information technologies as the Internet. The global industry shows the trend of informatization and networking — the "Internet+" has become a new business form, turning the digital economy into the focus of the global economic development. The combination of industry and the Internet has become the only way for industrial development within the digital economy in developed countries. Changchun needs to combine such technologies as the Internet (digitalization) with new industrialization to change the city's industrial structure and turn the city from traditional industrial to new industrial, based on informatization, dataization, and networking. The old industrial base plays

a special role as the basic stabilizer in Changchun and ensures the country's industrial security. Therefore, the transformation of Changchun cannot follow the model of deindustrialization but needs to choose the path of reindustrialization according to the model of "Industry 4.0", i.e., the path of improving the urban industrial structure by applying the latest achievements of the information technology revolution in the city's new industries, new business forms and new spaces of the urban economy. This means that industrial enterprises should use informatization to enhance their competitiveness and provide a solid economic foundation for the city's reindustrialization. Only a diversified and balanced industrial structure can ensure the economic sustainability of the city and improve its ability to overcome potential economic risks.

For economic development, Changchun also needs to focus on its tertiary industry, especially the cultural one. Changchun has rich cultural resources and great advantages for developing cultural industries through their combination with the Internet technology, which would make the city's cultural industry a new engine (with many data resources, creative and technological innovations, accurately understanding market demand and providing clients with personalized and individualized cultural services) for Changchun's economic development in the general course of "reindustrialization". Changchun has vigorously developed the digital economy, digital industries, digital infrastructure, digital governance, etc.: more than 50 leading enterprises such as Huawei, JD.com, Baidu, 360 and iFLYTEK built more than twenty large digital infrastructure facilities, and the digital industry has grown at an annual rate of more than 10% [1]. Today Changchun has such industrial parks as national cultural industry test parks, national cultural industry demonstration bases and provincial cultural industry demonstration zones, and showed significant progress in animation, film and television media, press and publication, network culture, etc. For instance, Changchun Film Studio World is known as Oriental Hollywood and the World Capital of Special Effects: previous 3D giant screens, 4D special effects and 5D cinemas have all been technologically upgraded, attracting many domestic and foreign tourists.

Changchun can develop cultural resources in cooperation with other cities of the Jilin Province. For example, the natural scenery tourism in the Changbai Mountain Reserve, the Manchu cultural tourism represented by the Yitong Manchu Autonomous Prefecture, and the "red education" resources of the Northeast Anti-Japanese United Army can be turned into cultural resources with both economic and social value. The general provincial planning can systematically industrially develop cultural resources of each city, creating a complex and diverse cultural industry of the Jilin Province with specific regional features, increasing the overall strength and influence of this cultural industry, and helping many cities in the Jilin Province to develop economically through urban cultural-industrial transformation.

Integration and optimization of the urban space

In the 21st century, global urbanization has accelerated. In 2007, the world's urban population exceeded rural population for the first time, and in 2023 China's urbanization rate reached 66.2%. Mankind entered the "urban era" with the city as the most important social form. From the perspective of urbanization, urban agglomerations and metropolitan areas have become the mainstream of urban development, overcoming the traditional urban-rural dual structure by creating a regional form of "city-hinterland". Therefore, the development of Changchun needs to be planned spatially to develop an urban spatial structure of the contemporary metropolitan type as a multi-core regional spatial structure, in which core cities play a hub role.

Changchun has the potential to become a hub city of the Jilin Province and Northeast China by focusing on three aspects — transportation, economy and scientific-technological innovation. Changchun's geographical location allows for the city to become a transportation hub in Northeast China and even Northeast Asia. Changchun is located in the hinterland of the Songliao Plain in Northeast China, and its vast plain area allows for urban spatial expansion. At the same time, Changchun is located in the natural geographical center of Northeast China, which explains the city's convenient accessibility. In the Northeast railway network, Changchun is the core hub node: more than ten railway lines (Jingha, Changda, Changtu, Changhui Intercity, Hada high-speed, Changbai, Liaochang and Changbaiwu) converge in Changchun. Changchun Longjia International Airport is one of the four major international airports in Northeast China and is known as the Northeast Asia Aviation Hub with more than 150 international and domestic air routes, connecting major countries in Southeast Asia. Considering highways, Changchun is an important node of the National Highways 102, 302 334, a hub city for Beijing-Harbin, Hunchun-Ulanhot and Changchun-Shenzhen expressways, i.e., one of the core nodes of the highway network in Northeast China. Such a transportation network helps Changchun develop a vast economic hinterland and a powerful metropolitan area with regional influence.

Changchun's economic concentration creates the urban "siphon effect" by combining regional production factors, which makes the city a regional economic hub. In the 2023 National Primary Capital Index, Changchun ranked among the top in the country with 51.7% of high urban concentration in the Jilin Province [9]. Most of the capital, labor, technology and production factors of the Jilin Province are combined in Changchun, thus forming a dominant regional center which leads to rich capital, technology, labor and consumer markets, determining inter-industry collaboration and improving economic efficiency by using scale effects. At the same time, Changchun has a reasonable industrial structure and social division of labor, which makes it the city with the highest degree of professional division of labor in the Jilin Province and the highest economic production capacity. Although secondary industries such as FAW still occupy the main position

in Changchun's industrial structure, the city's tertiary industry has made great progress and gradually becomes the leading industry of Changchun, contributing to its new industrial structure with the coordinated and balanced development of primary, secondary and tertiary industries. The balanced industrial structure expands Changchun's urban influence as a driver and leader of the development of surrounding cities, which determines the formation of a regional urban structure with Changchun as its core.

Changchun has outstanding scientific-technological innovation potential that contributes to its urban positioning as a scientific and technological research and development hub. Changchun has many universities and research institutes, especially the high-level ones represented by two institutes and five universities that have the talent foundation for Changchun's scientific-technological innovation. At the same time, the city collects cutting-edge technologies from all over the world and promotes forward-looking research, Thus, Changchun develops systematic and integrated scientific-technological research to develop new forms and patterns of industrial revitalization guided by science and technology. Changchun's scientific-technological innovative capabilities can drive the transformation of cities in the Jilin Province from heavy industry centers to scientific-technological research and development centers.

Changchun's development direction of turning into a regional hub has been supported by the state. In June 2020, the State Council approved the change of the trusteeship relationship of Gongzhuling City, a county-level city under the trusteeship of Siping City, to Changchun. Thus, Changchun includes seven districts, three county-level cities, one county and one state-level new area under its trusteeship, with the urban area ranking the third among national capitals and 9.06 million inhabitants. The State Council's approval accelerated the revitalization of Northeast China, contributing to the central government's strategy of creating a new pattern of coordinated development in Northeast China, to the provincial party committee and government's "three major plates" strategy and "one main, six double" industrial space model, thus helping to expand the metropolitan area of Changchun. The city has significantly increased its population, land, economic resources, etc., turning into a major metropolitan area, urban agglomeration and urban network and further consolidating its role as the core and the development engine of the Jilin Province [10].

Cultural dimension: urban soft power

The city is not only a physical space but also a social space with cultural influence that can become the foundation of its "soft power". Northeast China, including the Jilin Province, is called a "cultural desert": its cities are stereotypically considered as lacking cultural influence as a basis of urban competitiveness. However, Changchun has a deep historical heritage; the Jilin region has successively seen the rise of such regimes as Bohai, Liao and Jin,

and each dynasty is famous for prosperous civilization, which determined a diversified cultural integration of multiple ethnic groups and cultures, reflecting the integration and coexistence of farming, nomadic, mountainous fishing and hunting culture. In modern times, large waves of immigrants "moving to the northeast" "imperceptibly changed, integrated and reshaped the local original culture that had already existed in Jilin" [13]. During the War of Resistance against Japan, Jilin waged a long heroic struggle against aggression under the leadership of the Communist Party of China, making the spirit of patriotism an important core of the Jilin culture. During the Liberation War, the Northeast People's Liberation Army fought such famous battles as the Four Battles of Siping, Three Times Crossing the Songhua River" and "Four Defenses of Linjiang". After the founding of New China, in the difficult situation of "poor and empty", the people of the Jilin Province overcame various difficulties under the leadership of the Central Committee of the Communist Party of China, established the First Automobile Plant in China and produced the first car in China, made important contributions to the smooth realization of China's first Five-Year Plan, and laid an important foundation for the development of New China's industry. The establishment of Changchun Film Studio changed the reputation of Changchun as the Film City, once again proving Changchun's cultural influence.

Thus, the Jilin Province is not a "cultural desert" but a concentration of the Northeast culture, especially Changchun's urban spirit combines patriotism, progress, unity and mutual assistance, openness and tolerance as important sources of the city's cultural influence and "soft power", on which Changchun needs to focus in its transformation and development as a center of both historical heritage and pioneering innovation. Changchun attaches great importance to scientific-technological innovation: in 2019, the Jilin-1 satellite was successfully launched by the Chang Guang Satellite Technology Co, which has such technologies as satellite-borne and airborne integration. This private technological company located in Changchun was established in 2014 and became a leader in the field of satellite technology in China in just five years, driving the development of many upstream and downstream enterprises in Changchun, so that the city formed a high-tech industry cluster. In the information age, cities in the Jilin Province aim at becoming "space city" or "satellite city". In 2022, the Jilin Province adopted the 14th Five-Year Plan for the Development of Science and Technology, promoting rapid scientific-technological innovations. According to the 2023 China Regional Innovation Capacity Evaluation Report, such capacity of the Jilin Province ranked 6th with the largest increase in the country: the number of specialized "little giant" enterprises and high-tech enterprises in the Jilin Province increased to 68,892 and 3,112 respectively, and the number of national science-technology small and medium-sized enterprises reached 4,515, increasing by 232% and 150.3% respectively compared to 2021 and 2022 [2].

In addition to scientific-technological innovation, Changchun also considers cultural innovation as a driver of urban development. Changchun is one of China's provinces where the animation industry started, and after decades of development, there are many animation and cultural creative colleges, universities and companies. For instance, the Jilin College of Arts (the only comprehensive higher art college in Northeast China) suggested the design and created the Jilin Hall of the Great Hall of the People, the Jilin float for the 50th, 60th and 70th anniversaries of the National Day, the visual image of many major events such as the 12th National Winter Games, the design of major exhibitions such as the Northeast Asia Expo, Auto Expo, Agricultural Expo, International Film Festival and International Animation Festival, and also the mascot Shuey Rhon Rhon of the 2020 Beijing Winter Paralympics. The animation industry has become a new point of growth for Changchun's economy and a model for the development of cultural and creative industries in other cities in China. Thus, historical heritage provides a historical foundation for Changchun's urban influence, while scientific-technological and cultural innovation determined Changchun's new image, contributing to its competitiveness, transformation and development.

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Urban decline is a manifestation of regional decline: as a "reverse development phenomenon", regional decline often begins with industrial decay, resource depletion, environmental crisis and social disintegration, which gradually spread to various social fields. Today, due to economic, social, environmental and other factors, large-scale cross-regional migrations have become a social norm, but regions with massive outflow inevitably show serious decay (labor shortage, brain drain, decreased regional consumption, and so on). Since China is currently in a transition from industrialization to post-industrialization, its industrial cities face the risk of urban decline.

The primary cause of industrial city decline is its unbalanced industrial structure. The industry-dominated urban economy leads to production, resource and capital dependence which reduces flexibility and resilience of the urban economy, starting a vicious cycle of economic weakness and population loss. Moreover, urban decline is a social-spatial product of the joint action of political, economic and cultural shocks and qualitative changes in the urban spatial pattern, leading to "rust beltization". Since the decline of industrial cities is the result of multiple factors, transformation of industrial cities also requires multiple measures: modernization of traditional industries to adapt to the changes of the time, development of new business forms and economic competitiveness of the city, coordinated development of urban areas and suburbs, cities and villages within a metropolitan area and network system, strengthening of urban influence, urban image and the city's "soft power",

etc. Transformation of many industrial cities, including Changchun, is a key to revitalization of Northeast China through the implementation of multi-dimensional measures.

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Путь трансформации городов, переживающих промышленный упадок в Китае: пример Чанчуня*

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Аннотация. С середины XX века многие промышленные города пришли в упадок. Традиционные промышленные районы во многих развитых странах, такие как район Великих озер на северо-востоке США, Рурская область в Германии, Бирмингем и Манчестер в Великобритании и Уральская промышленная зона в России, испытывают промышленный спад, слабый экономический рост и упадок городов как проявление регионального феномена «обратного развития». Сегодня экономические, социальные, экологические и другие факторы превратили широкомасштабную межрегиональную миграцию почти в социальную норму, тогда как регионы, для которых характерен отток населения, неизбежно приходят в упадок вследствие нехватки рабочей силы и «утечки мозгов». Основная причина упадка промышленных городов — несбалансированная структура промышленности, которая определяет зависимость производства от наличных ресурсов и капитала, снижая тем самым адаптивность и устойчивость городской экономики. Как только кризис затрагивает градообразующую промышленность, возникает порочный круг экономических проблем и оттока населения, что в конечном итоге заводит город в «ловушку развития»: экономические потрясения, вызванные дисбалансом промышленной структуры, демографические потрясения вследствие массового оттока рабочей силы, политические потрясения под влиянием роста

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городов и пространственные потрясения в условиях субурбанизации порождают качественные изменения в городской пространственной структуре — в итоге кризис промышленности влечет за собой коллапс всей городской системы. Сегодня Китай переживает этап перехода от индустриализации к пост-индустриализации, что не может не затрагивать промышленные центры страны. Город Чанчунь — столица провинции Цзилинь и национальный центр тяжелой промышленности — с середины XX века сталкивается со множеством проблем под влиянием таких факторов, как промышленный кризис, убыль населения и ухудшение состояния окружающей среды. Авторы объясняют нынешний упадок Чанчуня множеством причин, включая дисбаланс промышленной структуры, деградацию городского пространства и неразвитость городской культуры, и намечают три вектора возрождения Чанчуня — экономический, пространственный и культурный. Экономический вектор подразумевает развитие Индустрии 4.0 и диверсифицированной городской экономики и сетевых сообществ, информатизацию, цифровизацию и оптимизацию промышленной структуры с упором на сферу услуг и инновации (новые отрасли, новые продукты, новые технологии, новые формы бизнеса и новые модели городской экономики) в целях повышения экономической устойчивости города и преодоления потенциальных экономических рисков. Пространственный вектор предполагает переход к модели регионального развития в целях создания новой агломерации путем преодоления традиционного противостояния города и деревни: Чанчунь должен стать транспортным хабом и центром экономических, научных и технологических инноваций для провинции Цзилинь и всего Северо-Восточного Китая, а также моделью и ядромвозрождения сельской местности (всей «периферии») провинции Цзилинь. Культурный вектор подразумевает изменение образа и духа города с помощью его «мягкой силы» — культурного влияния: с одной стороны, речь идет об историческом наследии Чанчуня как древнего города с богатой историей; с другой стороны, необходимо развивать его потенциал как инновационного центра, способного идти в ногу со временем.

Ключевые слова: возрождение Северо-Восточного Китая; городская трансформация; промышленный город; упадок промышленности; старая промышленная база; Чанчунь

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