Research on Comprehensive Zoning of Qinghai Province in the New Era--Based on the Perspective of Differential Economic Development of Counties

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Abstract

Taking the per capita GDP data of Qinghai province from 2000 to 2018 as the data, using gini coefficient, Theil index, global and local spatial autocorrelation and other mathematical methods, with the support of Arcgis software and GeoDA spatial statistical analysis software, the empirical analysis of the temporal and spatial local and overall differences of county economy in Qinghai Province was carried out. On this basis, the comprehensive economic regionalization of Qinghai province is divided. The following conclusions are drawn: 1. The first-order decomposition of Gini coefficient and Theil index shows that the overall difference of county economy in Qinghai province from 2000 to 2018 shows a decreasing trend despite of ups and downs, and the contribution of the difference between cities (prefectures) to the total difference is greater than that within cities (prefectures). 2. The global and local county economy of Qinghai Province were calculated by using the per capita GDP of the county. The results show that the development of county economy in Qinghai Province has agglomeration from 2000 to 2018, and the difference of county economy in Qinghai Province has a narrowing trend, and there are only two significant correlation types: "high" and "low". 3. Based on the proportion of industries and combined with the natural conditions of qinghai province and the law of regional economic distribution, the comprehensive economic division of qinghai province is made. The division results are as follows :(1) the resource development economic zone of qaidam basin (western industrial economic zone and eastern qaidam mixed economic zone); (2) Grassland pastoral ecological economic zone (Yushu Animal Husbandry Economic District, Guoluo Economic District); (3) Eastern comprehensive Economic Zone (Lake tourism Economic Zone, Xining Urban Economic Zone, Yellow River Agriculture and Animal Husbandry Economic Zone, eastern Tourism Economic Zone).

Keyword: *Economic zone; Comprehensive economic zone; County economy difference; Qinghai Province*

1.INTRODUCTION

Economic zone refers to a territorial economic unit that is zoned according to certain purposes and indicators for the whole country or a certain region by the law of socialization of commodities and geographical division of labor [11][23], mainly including two types of single-function economic zones and comprehensive economic zones, single-function economic zones are zones formed to solve a specific goal in social and economic development and pursue the maximum benefit in a certain aspect; comprehensive economic zones are zones formed to give full play to the natural, social, economic and technological advantages of each region. Comprehensive economic zone is a region formed to give full play to the natural, social, economic, technological and other comprehensive advantages of each region, optimize the regional industrial structure and urban-rural structure, and establish a reasonable inter-regional division of labor and collaboration system [12].

The idea of zoning in China can be traced back to the Warring States period, "Shang Shu - Yu Gong",

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which divided the country into nine states according to the different natural environments [6], modern scholars for the study of economic zoning began in 1919, to the middle of the last century, the theory of economic zoning has reached maturity, but the background of zoning are in developed countries, while China's research on economic zoning is a little later, the scale of research mainly has two types of national and provincial areas. Since the founding of the country, in order to restore and develop the national economy as soon as possible, economic zoning has gone through several stages of division, and there have been "four-level" economic zone division method, "five-level" economic zone division method, inland and coastal economic zone division method, third-line economic zone division method and ten major economic zones division method [9]. In addition, many other scholars have proposed national-scale economic zones and theories. Hongling Sun [10] believes that there are two methods of dividing economic zones: homogeneity and agglomeration, and that the vertical homogeneity of existing economic zones should be replaced by horizontal heterogeneity according to the characteristics of agglomeration economic zones, and that the new economic zones of Pan-Pearl River Delta, Pan-Yangtze River Delta and Greater Bohai Rim should be constructed. Yong Mai (2006) divides the country into three major economic zones from the perspective of location using the systematic clustering method, but does not take into account the geopolitical continuity of each unit and the excessive scope of individual economic zones, which is still inadequate in general. Qisheng Wang [14] believes that the "gradient-push" model of dividing the country into three major economic zones cannot improve the disparity of economic and technological levels among regions, and on this basis, the country is divided into two major economic zones and ten economic regions in the east and west. Xiaoming Xu [18] re-divides China into five major economic zones (coastal zone, coastal inland zone, inland core zone, deep inland zone, and land frontier zone) based on the economic zones that have been divided, and divides the country into nine radiation spheres (integrated economic zones) based on the five major zones and the growth sources of each region. In general, with the diversification of theories, principles and methods of economic zone division, the scheme of economic zone division at the national scale is becoming more and more refined and diverse.

Regarding the division of provincial economic zones, Shuhuan Zheng [15] believes that the basic conditions of China and developed countries are different, so the principles and methods of other countries' economic zones should be appropriately adjusted, and Hebei Province should be divided into four primary zones and eleven secondary zones according to natural conditions, transportation and economy. Dunyi Chen [7] believes that the provincial economic zones should be divided into two levels, with the first level zone focusing on specialized sectors of national significance as a symbol to form a more complete economic system in the region; the second level zone mainly takes into account the characteristics of economic development in different parts of the province, regional differences, the development of specialized production, auxiliary production sectors and local industries in different parts of the province, and the economic center in the region as the core to form a certain range of economic ties. Yanshi Zhou [21] takes 86 counties and cities in Xinjiang as the research unit, and uses principal component analysis, systematic clustering method and the constructed index system to make a comprehensive evaluation of the county economy in Xinjiang, thus dividing Xinjiang into 10 comprehensive economic zones and proposing development strategies for each zone. This paper concludes that the two-level division method of provincial economic zones is the most reasonable way to divide provincial economic zones in China at this stage, regardless of the division of labor or the socialization of commodities in different parts of the province.

Qinghai Province is located in the northwest of my country, on the Qinghai-Tibet Plateau, known as the roof of the world. It is the intersection of the eastern monsoon region, the northwest arid and semi-arid region, and the Qinghai-Tibet alpine region. The unique geographical location has created different natural features and economic structures. Tingyu Wei [16] has made an attempt to divide Qinghai Province on the basis of the discussion on the significance, guiding ideology and principles of dividing economic zones, and believes that the economic zones in Qinghai Province should be divided into two levels, the first level economic zone focuses on the natural conditions and economy in the region with strong correlation, and the second level economic zone focuses on the natural resources and economic structure in the region, and the first level economic zones are the eastern level economic zone, the first level economic zone around the lake, the first level economic zone in Qaidam and the second level economic zone in Qinghai. The first level economic zones are the eastern level economic zone, the first level economic zone around the lake, the first level economic zone in Qaidam and the first level economic zone in Qingnan. Zhongxiao Zhang [25], taking into account the provincial conditions of Qinghai, divided Qinghai province into three economic regions, and at the same time divided into ten economic zones according to the ethnic culture, economic conditions and natural conditions of each region. However, with the change of global climate and socio-economic development, the climatic conditions and economic structure of each region in Qinghai province have changed significantly, and the original comprehensive economic zones can hardly guide the socio-economic practice effectively. Therefore, in this paper, based on the previous work, the

Gini coefficient, Theil index, Nich index and spatial autocorrelation will be used to divide the integrated economic zones in Qinghai province based on the county economic differences.

2.RESEARCH METHODS AND DATA SOURCES

2.1. Overview of the study area

Qinghai Province is located in the northwest of China, in the northeast of the Qinghai-Tibet Plateau, with a variety of landform types, and the area above 3000 m above sea level accounts for 85% of the total area of the province [3]. The climate type is a plateau continental climate, with low temperature throughout the year, large temperature difference between day and night, precipitation is decreasing distribution characteristics from south to north. since 2000, the economy of Qinghai Province has developed rapidly, in 2019, the GDP of Qinghai Province exceeded 296.595 billion yuan, the added value of primary, secondary and tertiary industries were 334.30 billion, 114.355 billion, 152.807 billion, accounting for 10.18%, 39.10%, 50.72%, per capita GDP reached 48796 yuan, the province's GDP and per capita GDP compared to 2000 increased by 10.3, 8.6 times respectively. Tourism industry is growing rapidly, the output value of tourism industry accounted for 4% of the province's GDP in 2000, and the total tourism revenue of Qinghai province reached 56.133 billion yuan in 2019, accounting for 15.72% of GDP, tourism has become the leading industry of Qinghai province.

2.2. Research Methodology

2.2.1. Gini coefficient

The Gini coefficient, an indicator to determine the degree of inequality in income distribution, was proposed by the Italian economist Gini at the beginning of the last century with the formula

$$G = 1 - \sum_{i=1}^{n} p_i\,(2Q_i - w_i) \tag{1}$$

where.$Q_i = \sum_{k=1}^{i} w_k$ is the cumulative share of income from the first group to the ith group.p_i is the share of the ith county in the total population of the province, andw_i is the share of the ith county in the province's GDP. When G<0.2, it means that the regional income distribution is highly balanced; when G is between 0.2 and 0.3, it means that the regional income distribution is relatively balanced; when G is between 0.3 and 0.4, it means that the regional income distribution is relatively reasonable; when G is between 0.4 and 0.5, it means that the regional income distribution gap is large; G>0.6 means that the income distribution gap is huge.

2.2.2. Theil exponential first-order decomp-osi tion

Both the Theil index and the Gini coefficient can be used to express the degree of regional economic disparity, the Gini coefficient is suitable for in-depth factor dissection when analyzing the mechanism of the phenomenon, and the Theil index is suitable for decomposition at different spatial scales [5].There are two algorithms for the Theil T index and the Theil L index, the Theil T index is calculated by weighting the economic weight, and the Theil L index is calculated by weighting the population weight. The Theil T index is weighted by the economic weight, and the Theil L index is weighted by the population weight, and the Theil T index (hereinafter referred to as "T index") is used in this paper.

$$T = \sum_{i=1}^{N} y_i \log_2 \frac{y_i}{p_i} \tag{2}$$

where$N$ is the number of areas, andy_i denotes the number of$i$ district's GDP as a proportion of the province's GDP, andp_i denotes the proportion of$i$ A larger t-index indicates a greater difference in economic development level among counties, while a smaller t-index indicates a smaller difference in economic development level among counties.

The first-order decomposition of the T-index is given by

$$T = T_{WR} + T_{BR} = \sum_i \left(\frac{Y_i}{Y}\right) \sum_i \left(\frac{Y_{ij}}{Y_i}\right) \log_2 \left(\frac{Y_{ij}/Y_i}{P_{ij}/P_i}\right) + \sum_i \left(\frac{Y_i}{Y}\right) \log_2 \left(\frac{Y_i/Y}{P_i/P}\right) \tag{3}$$

where T_{WR} denotes intra-city (state) economic differences, andT_{BR} denotes the economic difference between cities (states). Y is the province's gross domestic product, and$P$ is the total population of the province, andY_i is the city (state) gross product, andP_i is city (state) population, andY_{ij} is the gross domestic product of the county and city.

2.2.3. Relative development rate (Nich)

Looking only at the growth rate of each county and urban area cannot fully reflect the actual development of each county and urban area [20], while the Nich index can reflect the relative growth amount of each region and can indicate the relationship between the change of GDP per capita of each county and urban area and the province in the same period. Its formula is as follows.

$$\text{Nich} = (y_{2i} - y_{1i})/[(y_2 - y_1)] \tag{4}$$

in the formy$_{1i}$ andy_{2i} denote the GDP per capita of the urban area of county i at time 1 and time 2, respectively.y_1 andy_2 denote the GDP per capita of the province at time 1 and time 2, respectively. if$\text{Nich} > 1$, means that the GDP per capita growth rate of the county-urban area in a certain time period is greater than

the GDP per capita growth rate of the province in the same period, andNich < 1 , means that the GDP per capita growth rate of the county and urban area in a certain time period is less than the GDP per capita growth rate of the province in the same period.Nich The larger the index is, the higher the economic development rate of the county and urban area in time 1 and time 2, and vice versa.

2.2.4. Global spatial autocorrelation

Global Moran′s I is a global indicator used to measure spatial autocorrelation, which reflects the degree of similarity of attribute values of spatially adjacent or spatially proximate regional units, and is given by

$$I = \frac{\sum_{i=1}^{n}\sum_{j\neq 1}^{n} w_{ij}(x_i-\bar{x})(x_j-\bar{x})}{S^2\sum_{i=1}^{n}\sum_{j\neq 1}^{n} w_{ij}} \quad (5)$$

Where I is the Moran index, thei ≠ j, , n denotes the number of study subjects, andx_i is the observed value, and$\bar{x}$ denotes the mean of the observed values of all study subjects, andW_{ij} Represents the spatial weight matrix between the study objects , $S^2 = \frac{1}{n}\sum_i(x_i - \bar{x})^2$ .Moran′I The value of is generally between -1 and 1, less than 0 means negative correlation, equal to 0 means no correlation, and greater than 0 means positive correlation.

2.2.5. Local spatial autocorrelation (LISA)

Global Moran′s Ireflects the correlation of things in the region as a whole, and in order to further explore the spatial correlation of local units, here we adoptLocal Moran′s I to reflect the spatial correlation and heterogeneity of local units, and its formula is

$$I_i = Z_i \sum_{i=1}^{n} W_{ij} Z_j \quad (6)$$

in the form Z_i and Z_j are the normalization of observations on regions i and j, andW_{ij} are the spatial weights.

2.3. Data sources

The data materials were obtained from the Qinghai Statistical Yearbook and the statistical yearbooks of Qinghai cities (states), and 19 years from 2000-2018 were taken for the analysis of the results. The research object of this paper includes 4 districts of Xining, 3 districts of Haidong and 38 other counties, totaling 45 administrative units, and the population and economic data of Lenghu town are included in Dachaidan administrative committee for the convenience of calculation.

3.EMPIRICAL ANALYSIS

3.1. Time series analysis of regional ec-onomic differences in Qinghai Pr-ovince

The Gini coefficient of Qinghai province from 2000-2018 was calculated based on the GDP and population of each county and urban area, and then the first-order nested decomposition of the Theil index was performed based on the geographical administrative unit of the three-level structure of province-city (state)-county, and the total regional economic differences were decomposed into intra-city (state) economic differences and inter-city (state) economic differences. For comparative analysis, the data of Gini coefficient and Theil index decomposition (total differences, inter-municipal (state) differences, and intra-municipal (state) differences) results were superimposed to obtain the trend graph from 2000-2018 (Figure 1).

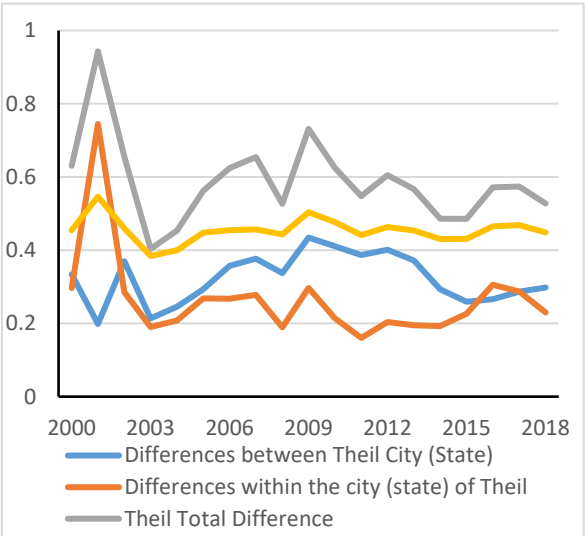

Figure 1: Decomposition results of Theil index and change trend of Gini coefficient of economic differences from 2000 to 2018

From Figure 1, it can be seen that the trend of change of Gini coefficient and Theil index (total disparity) is basically the same. In terms of the total economic disparity between counties in Qinghai Province, the largest economic disparity between counties in Qinghai Province was in 2001, and the smallest disparity was in 2003. 2000-2009, the economic disparity between counties in Qinghai Province showed an increase, then a decrease, and then an increase. 2009-2018, although the Gini coefficient and Theil index (total disparity) have ups and downs, but the overall trend is decreasing, indicating that the economic disparity between counties in Qinghai Province have been gradually reduced. In terms of inter-municipal (state) differences and intra-municipal (state) differences, except for 2001 when inter-municipal (state) economic differences were different from the

total differences of the province, inter-municipal (state) and intra-municipal (state) economic differences maintained the same growth trend with the total economic differences of the province in all years. In terms of contribution, the contribution of intra-city (state) economic differences to the total county economic differences in Qinghai Province in 2001, 2016 and 2017 is greater than that of inter-city (state) economic differences, and the average values of the contribution of inter-city (state) differences and intra-city (state) differences in all years are 55.94% and 44.06%, respectively, which shows that inter-city (state) economic differences are the main factors affecting the total county economic differences in Qinghai Province. From the existing studies, it is known that the smaller the spatial unit studied, the stronger the spatial heterogeneity [13], and the main factor affecting the total economic variation of counties in Qinghai Province is the inter-city (state) economic variation, which reflects the large variability of economic composition of cities (states) in Qinghai Province and provides an important basis for the comprehensive economic zoning below.

3.2. Spatial correlation analysis of county economy in Qinghai Province

3.2.1. Global spatial autocorrelation

Using 45 (merging Lenghu town and Dachaidan administrative committee) county-level administrative units in Qinghai province as the basic spatial units for the study, the global spatial autocorrelation coefficients from 2000-2018 were calculated using Geoda software (Mran′s I , as shown in Figure 2). The globalMran′s I ranged from 0.02 to 0.53, and the statistics Z values were all greater than the critical value (1.96) at the 0.05 confidence level, and all passed the significance test. It indicates that the county GDP per capita in Qinghai Province from 2000-2018 exhibits positive spatial autocorrelation, i.e., the economic development of counties in Qinghai Province is agglomerative.

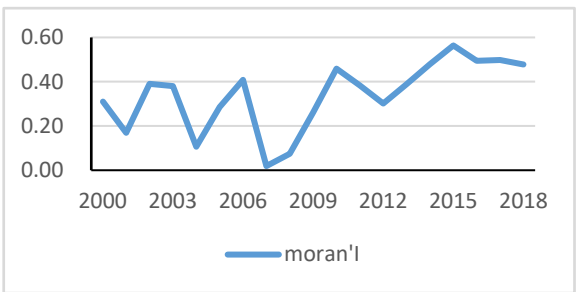

Figure 2: Global index of Per capita GDP at county level in Qinghai Province from 2000 to 2018

3.2.2. Local spatial autocorrelation

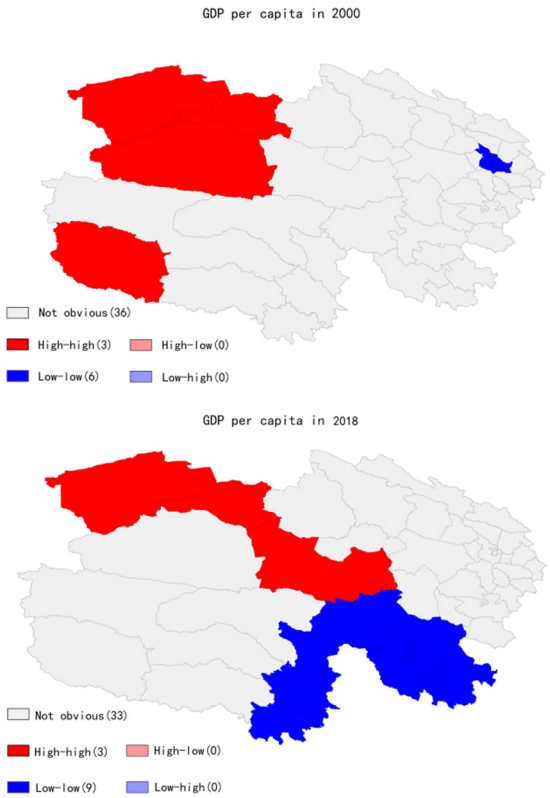

Figure 3: Lisa cluster diagram of per capita GDP at county level in Qinghai Province in 2000 and 2018

Lisa is a measure of the similarity and dissimilarity of spatial units with surrounding units and their significance [17]. The Lisa values of county GDP per capita in Qinghai province were calculated using GeoDa software and tested using Z-values, and the Lisa clusters of county GDP per capita in Qinghai province in 2000 and 2018 were made (Fig. 3), and the significant association types were only "high high" and "low low". "In 2000, the "high" type was mainly concentrated in the northwestern part of Qinghai Province, accounting for 6.67% of the GDP per capita, respectively, in three counties (cities) of Golmud City, Monya City and Dachaidan Administrative Committee, indicating the strong economic agglomeration in this area and the obvious economic driving effect on the surrounding areas. The "low" type is mainly concentrated in the south of Qinghai Province, accounting for 13.33%, respectively, in Chengzhong District, Chengdong District, Chengbei District, Chengxi District, Huanzhong County and Pingan District, indicating that these areas are not closely connected with the surrounding counties and have weak economic agglomeration. 2018 "high The areas of "high" type and "low" type have changed, and the areas of "high" type are Monya city, Dachaidan administrative committee and Duran county, accounting for 6.67%, compared with 2000, Golmud city no longer belongs to Compared with 2000, Golmud City no longer belonged to the "high"

type, but Duran County was added; the "low" type counties and urban areas included 6 counties in the whole of Guoluo Prefecture and 3 counties in Yushu Prefecture (Nangqian County, Yushu City and Weiduo County), accounting for 20% of the total, which was a big change compared with 2000.

3.3. Differences in relative economic growth rates

Nich index can be used as an indicator to measure the vitality of county economic development, and the Nich index of per capita GDP of 45 counties and urban areas in Qinghai Province from 2000-2009 and 2009-2018 were calculated and visualized according to equation (4), and the time period of the study was indicated by the end of the period, it can be seen that the development of county economy in Qinghai Province has the following two characteristics.

The economic development vitality of counties in Qinghai Province is positively correlated with the development level, i.e., counties and urban areas with high Nich index also have higher economic development level, and those with low Nich index also have lower economic development level. From Fig. 4, we can see that Monya City and Tianjun County in northwest Qinghai Province have changed a lot in two time periods, the Nich index changed from positive to negative, and the GDP per capita dropped from the original leading position in the province to the second rank, because the two counties are located in the Qaidam Basin and rich in natural resources, but in recent years, the sustainable development strategy has been implemented, and Qinghai Province has implemented the ecological protection policy, which originally relied on natural resources for economic development. As a result, the GDP of the two counties has decreased compared to the original.

The distribution of county GDP per capita and Nich index in Qinghai province has significant clustering characteristics and can be roughly divided into three regions, namely, northwest, east and south. In terms of GDP per capita alone, during the whole study period, the economic development level of the counties and cities in the northwest is the highest in Qinghai Province, and the reason for this is that Haixi Prefecture, which is vast and sparsely populated, is rich in natural resources, so GDP per capita is the highest in Qinghai Province, while Xining and Haidong, which are in the east of Qinghai, have the highest total economic volume, but due to the high population density, GDP per capita is lower instead. The southern regions of Qinghai Province, namely Yushu, Guoluo and Huangnan, are not suitable for industrial development due to their high altitude, so the economic development level and development vitality of these regions are relatively backward compared with the eastern and western parts of Qinghai Province.

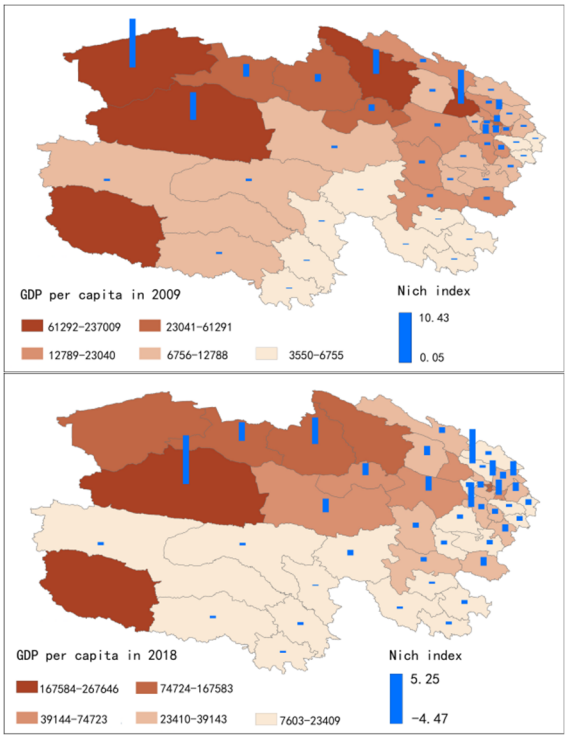

Figure 4: Spatial pattern of county economy in Qinghai Province

3.4. Economic zone division

3.4.1. The principles followed by the integ-ra ted economic zoning

(1) The principle of combining economic center and economic hinterland [8]

The economic center and the economic hinterland are a relative relationship; there is an economic center before there is an economic hinterland, and without the economic hinterland, there is no such thing as an economic center; the economic center defines the size of the economic zone in terms of rank, and the economic hinterland defines the size of the economic zone in terms of spatial extent. Likewise, the economic center plays a role of radiation and attraction to its economic hinterland, and the closer it is to the economic center the stronger the gravitational force is, and the further it is the weaker the gravitational force is.

(2) The principle of consistency with administrative boundaries as appropriate [19]

The division of integrated economic zones is not only because of similar characteristics within a certain geographical area, but also for the better development of the region. Proper alignment with administrative boundaries facilitates the formulation of policies by local governments and is conducive to the formulation and management of local government policies.

(3) The principle of dividing ethnic areas [22]

Qinghai is a multi-ethnic province with a unique humanistic charm, where Chinese, Tibetan, Islamic and nomadic cultures of the Mongolian plateau collide and intermingle, thus creating a unique geographic culture that is very different from other provinces in Qinghai today [1].The geographical and cultural characteristics must be fully taken into account in the delineation of the general economic zone.

(4) Principle of close intrinsic economic ties (principle of homogeneity)

The principle of close internal economic ties is the basis for the division of economic zones. The principle of close internal economic ties is to divide many regions with the same or similar economic, cultural and natural conditions together, avoiding the contradictions caused by geographical differences and facilitating the "right remedy" according to the actual situation of different regions.

3.4.2. Integrated Economic Zoning Program

Zhang Zhongxiao divided Qinghai province into three comprehensive economic zones (eastern comprehensive economic zone, Qaidam Basin resource development economic zone, and grassland-pastoral ecological protection economic zone) and ten economic zones (Xining urban economic zone, eastern agricultural economic zone, Menyuan pastoral agricultural economic zone, south Yellow River agricultural and pastoral economic zone, eastern oasis agricultural economic zone, western Industrial Economic Zone, Southern Huangnan Pastoral Economic Zone, Guoluo Pastoral Economic Zone, Yushu Pastoral Economic Zone, and Huanhu Pastoral Agricultural Economic Zone), as shown in Figure 5. After years of development, the economic districts of each city (state) in Qinghai province have changed, but still have certain representativeness. Therefore, this paper further divides the regions based on regional economic distribution rules and natural geographical characteristics, and based on three industrial structures. The leading industries are used to divide the regions and their corresponding economic zone types. If the industrial structure of a region has the largest proportion of pastoralism, the region is considered a pastoral economic zone. At the same time, if an industry accounts for more than 30%, it is considered to have a greater impact on the economy of the county and urban area. If two or more industries account for more than 30% in a region at the same time, the maximum value is considered to be the dominant one. Therefore, the comprehensive economic zone of Qinghai Province is adjusted as follows (Figure 6).

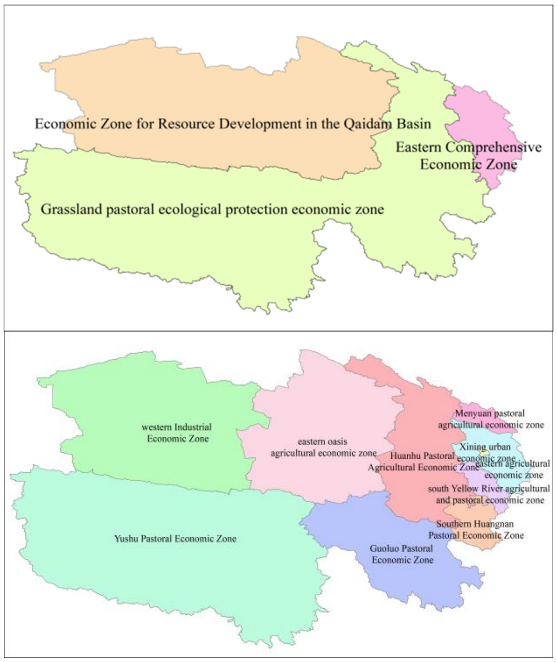

Figure 5: Comprehensive Economic Regionalization of Qinghai Province (Zhang Zhongxiao)

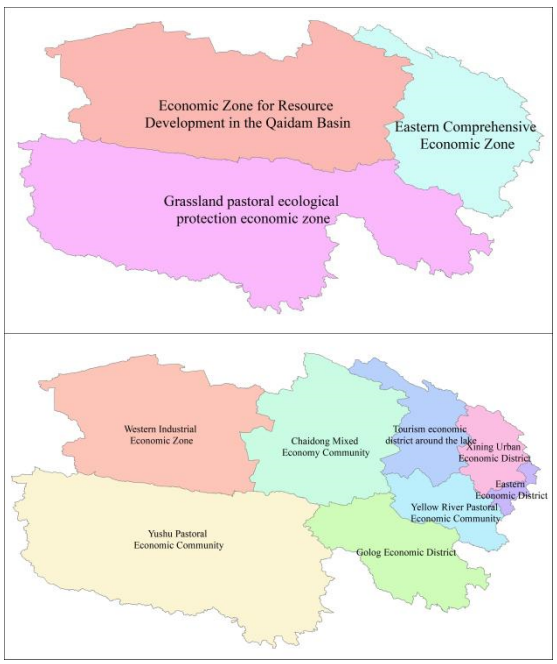

Figure 6: Comprehensive Economic Regionalization of Qinghai Province (article)

(1) Eastern Comprehensive Economic Zone

The region is located in the eastern part of Qinghai Province between the East Qilian Mountains and the Animaqing Mountains. The altitude of the region increases sequentially from east to west, between 1650-4671 m. The average precipitation of the whole economic zone is 400-500 mm, with a plateau continental monsoon climate [2]. The region includes Haibei state, Xining city, Haidong city, Huangnan state and Hainan state, with a regional area of 117,000 square kilometers, accounting for 17.25% of the province's

area.The total population of the region in 2018 was 4,845,000, accounting for 82.56% of the province's total population, with Han Chinese as the main group and multi-ethnic groups such as Tibetan, Mongolian and Hui living together.The gross domestic product of the region in 2018 reached 211.41 billion yuan, accounting for 77.04% of the total production value, the economic zone has good momentum in the development of industry and service industry, the industrial output value in 2018 reached 41.55 billion yuan, accounting for 19.66% of the region's GDP, and the service industry output value reached 112.56 billion yuan, accounting for 53.24% of the region's GDP.

The economic district of tourism around the lake is Qilian, Gangcha, Haiyan and Republican counties around Qinghai Lake, and compared with the original "economic district of pastoral agriculture around the lake", Xinghai County, Guinan County and Tongde County have been reduced. From the proportion of the three industries in Qilian, Gangcha, Haiyan and Republican counties in 2018, the proportion of tertiary industries in the four counties reached 44.27%, 42.14%, 62.49% and 34.86%, respectively, occupying a great share in the regional GDP, which shows that the tourism industry in the above four counties is developing rapidly based on the geographical conditions, especially in the area around Qinghai Lake, where tourism is gradually becoming a leading industry in some places. Therefore, the four counties are divided into tourism economic districts.

Xining metropolitan economic district includes 14 counties and urban areas, including Chengxi district, Chengdong district, Chengbei district, Chengzhong district, Huangyuan county and Huanzhong county. This economic district is the economic center of the eastern comprehensive economic zone and even the province.Since the western development in 2000, Xining has experienced rapid economic development and significant economic strength.In 2018, the gross domestic product of Xining metropolitan economic district reached 168.17 billion yuan, accounting for 61.28% of the province's gross domestic product, and the ratio of the three industries was 6.55%, 35.93% and 57.52% respectively.The modernization and industrialization has given a strong impetus to the economic development of the region.

The eastern economic district includes 3 counties, Minhe County, Zunhua County and Tongren County. The economic district is located between the Lan-West urban agglomeration.The gross domestic product of the district reached 21.26 billion yuan in 2018.The secondary and tertiary industries in the district are well developed, and the tertiary industry accounts for 38.55% of the regional gross domestic product.

Yellow River pastoral economic district are distributed along the Yellow River Xinghai County, Guinan County, Tongde County, Zeku County and Henan County 5 counties, mainly pastoral economy. 2018 the total output value of the district amounted to 9.45 billion yuan, including pastoral output value of 3.25 billion yuan, accounting for 34.3% of the gross product, so the district is divided into the Yellow River pastoral economic district.

Table 1: Eastern Comprehensive Economic Zone

Secondary Area	Including counties and cities	Features
Tourism economic district around the lake	Qilian County, Haiyan County, Guncha County, Republican County	Located around Qinghai Lake, it has experienced rapid economic development in recent years based on the tourism industry.
Xining Urban Economic District	Menyuan County, Datong County, Huangyuan County, Huanzhong County, Chengxi District, Chengdong District, Chengbei District, Chengzhong District, Mutual County, Ping'an County, Hualong County, Jianzha County, Ledu District, GuiDe County	Xining as the center of the transportation network, post and telecommunications network has a certain scale, the region's tertiary industry developed.
Eastern Economic District	Minhe County, Zhuanhua County, Tongren County	Located between Lanzhou and Xining, the secondary and tertiary industries in the region are well developed.
Yellow River Pastoral Economic Community	Xinghai County, Guinan County, Tongde County, Zeku County, Henan County	The primary industry in the region is well developed, especially in the pastoral industry

(2) Economic Zone for Resource Development in the Qaidam Basin

Qaidam Basin is one of the four major basins in China, located in the northeast of the Tibetan Plateau, the basin is surrounded by Alpine Mountains, Qilian Mountains and Kunlun Mountains, altitude 2600-3100m, dry climate throughout the year, precipitation is scarce, and precipitation is decreasing from east to west, the eastern part of the plateau temperate semi-arid desert grassland, the western part of the plateau temperate arid desert [24]. Qaidam Basin Resource Development Economic Zone includes the whole territory of Haixi Mongolian-Tibetan Autonomous Prefecture, covering an area of 325,800 Km2 , accounting for 34.22% of the province's area, with a population of 405,000 people in the area, accounting for 6.9% of the province's total population, and 35 ethnic groups, including Mongolians, Tibetans, Han Chinese, Hui, etc., of which Mongolians and Tibetans are the main ones. 2018 Haixi Prefecture's statewide gross regional product reached 54.147 billion yuan, accounting for 19.73% of the province's gross domestic product. The state's industry is well developed, with an industrial output value of 29.447 billion yuan, accounting for 54.38% of the state's gross domestic product. After years of development, the western industrial economic district is still dominated by industry, while the leading industry of the former eastern agricultural economic district has changed. in 2000, the primary industry of the Chaidong region accounted for 31.36% of the regional GDP, the secondary industry accounted for 29.88% of the regional GDP, of which industry accounted for 45.26% of the total value of the secondary industry and the tertiary industry accounted for 38.76% of the regional GDP. In 2018, the primary industry in the Qaidong area accounted for 18.61% of the regional GDP, the secondary industry accounted for 44.36% of the regional GDP, of which industry accounted for 69.31% of the total value of the secondary industry and the tertiary industry accounted for 37.03% of the regional GDP, and the industrial structure of Qaidong has changed significantly, so this paper divides the economic zone of resource development in the Qaidam Basin into the western industrial economic district and the Qaidong Therefore, this paper divides the economic zone of resource development in the Qaidam Basin into two secondary economic zones: the western industrial economic zone and the Qaidong mixed economic zone.

The western industrial economic zone includes Golmud City, Mangye City and Dachaidan Administrative Committee, which is located in the highland temperate arid desert in the western part of the Qaidam Basin, with industry as the leading industry, and industry accounted for 61.93% of the region's gross domestic product in 2018.

Chaidong Mixed Economic Zone has Delingha City, Ulan County, Turan County and Tianjun County. From the perspective of the three industrial structures, Delingha City, Ulan County and Turan County, all have the largest proportion of secondary industries, reaching 46.88%, 55.56% and 40.1% respectively. In addition to the secondary industry, the proportion of tertiary industry in Delingha City is 44.91%, and in addition to the secondary industry, the proportion of primary industry in Turan County is 34.67%. The proportion of tertiary industry in Tianjun County is the largest, reaching 44.9%, while the proportion of the remaining two industries is less than 30%. However, considering that Tianjun County belongs to the same Qaidam Basin, it is included in the Qaidong Mixed Economic Zone.

Table 2: Resource development Economic Zone of Qaidam Basin

Secondary Area	Including counties and cities	Features
Western Industrial Economic Zone	Golmud City, Mangye City, Dachaidan Administrative Committee	It is the economic district with the highest GDP per capita in Qinghai Province, with industrial output accounting for 61.9% of GDP.
Chaidong Mixed Economy Community	Delingha City, Turan County, Ulan County, Tianjun County	The primary, secondary and tertiary industries in the area are mixed, and the original oasis agriculture and animal husbandry has a tendency to change to industry.

(3) Grassland pastoral ecological protection economic zone

The region as a whole is located in the southern part of Qinghai Province, including the Qingnan Plateau to the north of Tanggula Mountain south of the East Kunlun Mountains and Golog Prefecture to the southwest of the Animaqing Mountains. The average altitude of the region is above 4,000 meters, and the annual precipitation decreases from east to west, between 50-700mm, with an alpine continental climate [4].The area of the region accounts for 48.53% of the province, and the population of the region in 2018 is 618,000 people, accounting for 10.54% of the province, including Han, Hui, Mongolian and other ethnic groups, mainly Tibetans. the gross domestic product of the region in 2018 reached 8.872 billion yuan, accounting for 3.23% of the province's gross domestic product, and the region has a developed agriculture and animal husbandry industry, with an agricultural and animal husbandry output value of 4.237 billion yuan. Compared with the original zoning, there is no change in this paper for the boundary division of Yushu economic zone and Guoluo economic zone, only renaming them as Yushu

pastoral economic zone and Guoluo economic zone according to the change of industrial structure in recent years.

The Yushu pastoral economic community includes Zhiduo County, Zaduo County, Qumalai County, Weiduo County, Yushu City, Nangqian County, and Tanggula Mountain Town, which is under the jurisdiction of Golmud. Although Tanggula Mountain Town belongs to Golmud City in terms of administrative division, it is divided into the Yushu pastoral economic community because it is an enclave. Yushu Prefecture has a well-developed livestock industry, and the gross domestic product of Yushu Prefecture reached 5.361 billion yuan in 2018, with the output value of livestock industry being 2.587 billion yuan, accounting for 48.25% of the state's gross domestic product. Except for Yushu City, the three industrial structures of all the counties in Yushu Prefecture are uniquely high in the primary industry, with the industry accounting for more than 48%, while Yushu City is dominated by the tertiary industry, but its primary industry is still dominant, with a proportion of 39.62%.

Golog economic district includes the whole state of Golog Prefecture, and the gross product of Golog Tibetan Autonomous Prefecture reached 3.51 billion yuan in 2018, occupying the dominant tertiary industry, accounting for 44.64%, and the ratio of the primary industry to the gross product of Golog Economic District is 19.44%, among which the livestock industry is extremely developed, accounting for 16.03% of the gross product ratio, so it is included in the grassland-pastoral ecological economic district.

Table 3: Grassland pastoral area ecological protection economic zone

Secondary Area	Including counties and cities	Features
Yushu Pastoral Economic Community	Zhiduo County, Zaduo County, Qumalai County, Yushu City, Weiduo County, Nangqian County	Located in the Qingnan Plateau, the region's economic development level is in the lower reaches of the province, the region's pastoralism is developed, not suitable for industrial development.
Golog Economic District	Mado County, Dari County, Machin County, Gander County, Banma County, Jiuzhi County	The whole state of Guoluo, the region's primary and tertiary industries are more developed, and in recent years the tertiary industry output value growth rate is faster.

4.CONCLUSION

(1) From the Gini coefficient and Theil index of 45 counties and urban areas in Qinghai Province from 2000 to 2018, the overall economic differences between counties in Qinghai Province are generally decreasing, but the changes are small; the decomposition results of Theil index show that the economic differences between cities (states) are the main factors causing the economic differences between counties in Qinghai Province.

(2) With the support of GeoDA spatial statistical analysis software, the global and local spatial autocorrelation analysis was used to empirically analyze the spatial differences among county economies in Qinghai Province using the per capita GDP data of 45 counties and urban areas in Qinghai Province from 2000 to 2018. The results show that the global GDP per capita of counties in Qinghai Province from 2000 to 2018Mran′s I are greater than 0, indicating that the economic development of counties in Qinghai Province is agglomerative, and the globalMran′s I The results are consistent with the results of Gini coefficient and Theil index.The results of local spatial autocorrelation clustering and significance analysis of GDP per capita in counties of Qinghai province in 2000 and 2018 show that there are only "high-high" and "low-low" significant correlation types in Qinghai province. "In 2018, the counties of the "high-high" type include Monya city, Dachaidan administrative committee and Dulan county; the counties of the "low-low" type include six counties in the whole state of Guoluo and three counties in Yushu (Nangqian county, Yushu city, and Weiduo county). The number of counties of "low-low" type includes 6 counties in the whole of Guoluo Prefecture and 3 counties in Yushu Prefecture (Nangqian County, Yushu City and Xiongduo County), which is 13.33% higher than that in 2000.

(3) Using data on the natural conditions of Qinghai Province, the ratio of primary, secondary and tertiary industries and industries such as agriculture, forestry, animal husbandry, fishery and industry in each county and urban area, the economic zones of the counties in Qinghai Province were divided by combining natural geographical features and regional economic distribution rules. Compared with the original comprehensive economic zoning, it is found that Qinghai Province has diversified its industrial development in general, and the economic growth no longer relies on a single industry, and the benefits brought by tourism to Qinghai Province are gradually expanding. There is a tendency for industries in the resource development economic zone of the Qaidam Basin to shift to the east, and the regional industrial development is diversified. In the context of global warming, the temperature and precipitation in Qinghai Province are rising and increasing year by year, and the agricultural economy in the east has the momentum to

shift to the west. The industrial structure of Yushu Pastoral Economic Zone, located on the Qingnan Plateau, has changed little, with pastoralism as the leading industry, while the original "Guoluo Pastoral Economic Zone" has changed. Although the leading industry is still animal husbandry, the structure of primary, secondary and tertiary industries has changed, with the modernization process accelerating and the proportion of tertiary industries increasing. Regional growth pole can drive regional economic growth, Xining as the growth pole of Qinghai Province, radiation and drive to the surrounding areas is obvious, the surrounding counties such as Mutual County, Datong County, Huangyuan County, Huanzhong County and other counties and urban areas in the Xining City drive and radiation under the rapid industrialization process.

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