

## Article

# Spatio-Temporal Patterns and Determinants of Inter-Provincial Migration in China 1995–2015

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**Abstract:** Inter-provincial migration causes dramatic changes in the population, as well as in the development of the social economy at both origin and destination, which is related to sustainable development in any country. Using inter-provincial migration data during the periods covering 1995–2000, 2000–2005, 2005–2010, and 2010–2015, we analyze the migration volume, intensity and flow, as well as its changes over time. We also examine the determinants associated with migration by applying Poisson pseudo-maximum-likelihood (PPML) estimation techniques. The results show that migrants move mainly from inland to coastal areas; however, since 2010, the number of migrants moving from coastal to inland areas has shown a continuous increase. This inter-provincial migration was driven largely by the influence of economic factors, such as high urban income per capita. A better model for the period of 2010–2015 is established by adopting an extended set of variables. New variables that represent regional disparities and industrial upgrades have a positive impact on inter-provincial migration, which shows that regional economic disparities and economic restructuring have played an important role in migration in recent years.

**Keywords:** migration pattern; census data; gravity models; China

## 1. Introduction

Over the past four decades, the inter-provincial gap in China has risen significantly [1]. Due to this uneven economic landscape, a huge number of migrants have left their original residences for more developed regions in search of better job opportunities and to escape poverty. As a result, large numbers of people have migrated. According to China's 2015 1% Sample Survey data, China's migrants exceeded 245.97 million people, 53.27 million of whom were inter-provincial migrants. It is well known that inter-provincial migration plays an important role in redistributing population and wealth, and which is strongly related to regional sustainable development [2]. This large increase in migration has also introduced many problems, such as an increase in left-behind children, the ageing of the rural population, and the potential social risks that may arise when migrants can't integrate into the local society. Studies of the spatio-temporal patterns and determinants of inter-provincial migrants allow policy-makers to develop strategies to promote better living conditions for migrants, solve problems caused by those migrants, promote social progress and achieve sustainable development. Based on the latest released inter-provincial migration data, this paper attempts to describe the spatio-temporal patterns of inter-provincial migration and to identify critical factors, which affecting inter-provincial migration in recent years.

## 2. Literature Review

With a declining birth rate and the relaxation of the hukou system in China, migration is becoming an even more important factor in population redistribution and socio-economic sustainable development [2]. As a result, a large body of literature has been devoted to studying inter-provincial migration in China [3–8]. Previous studies of inter-provincial migration have focused primarily on two major concerns. The first concern is the spatio-temporal dynamics of inter-provincial migration. Using migration data from China's fourth and fifth censuses, Fan [2] found that the impact of inter-provincial migration on population redistribution is growing. In 1985–1990 and 1995–2000, the migration flows from central and western China to eastern China increased exponentially. The net-, in-, and out-migration intensities and their changes from 1985–2010 in China were analysed using the bicomponent trend mapping technique [8]. It was found that the main destinations are mostly located in coastal areas, while the main origins are the relatively undeveloped central and western provinces. As a result, the consistent conclusion is that the migrants were moving from the inland, less developed, and rural areas to the coastal, more developed, and urban areas in the 1980s [9]. In the 1990s, some new phenomena have appeared, Beijing and Shanghai have gradually become two major national-level strong attraction centers, while Guangdong and Xinjiang have gradually become two major regional-level strong attraction centers [10]. In the 2000s, the total volume of inter-provincial migration continues to grow, and the spatial pattern of inter-provincial migration has changed. The Yangtze River Delta (YRD) has replaced the Pearl River Delta (PRD) as the biggest concentration of inter-provincial migrants [11]. Some inland provinces have become more attractive to inter-provincial migrants, especially the provincial capital has become an important destination for migrants [11,12].

The second concern focuses on explaining or modelling migration flows. Micro-level and macro-level perspectives are the two main approaches used in migration analysis [5]. At the micro-level, researchers mainly consider the impact of the migrant's age [9,13], gender [14], educational level [9], and job skills [15], etc. Therefore, different individuals in the same region will make different relocation decisions. The study found that migrants are more likely to settle in cities when those people are female, young, unmarried, and better educated [16]. In addition, the income status, occupational characteristics, social security level, and industrial structure of settled cities are also important factors, which can influence the migration settlement intention in the cities [16]. In contrast, at the macro-level, scholars mainly consider the impact of macroeconomic factors on migration. The most classic models applied to explain migration flows are based on the gravity model (GM). The GM was first proposed by Zipf [17] and only contains the distance between the origin and the destination and the populations of each flow. Numerous extended versions of the GM were developed, and other variables that represent the socio-economic conditions of the origin and the destination were added to the GM, which improved the accuracy of the models. In addition to the three variables of the GM, Fan [4] suggested that the impact of regional disparity and migration stocks on inter-provincial flow is also important. However, some scholars found that the application of highly restrictive log-linear specifications is probably inaccurate and flawed [18]. The Poisson model is recommended in the application of model migration [19]. Therefore, many empirical studies have adopted a Poisson model to explain migration flows [20,21]. In summary, in the 1980s, the changes in inter-provincial migration were mainly caused by institutional reforms. After the 1990s, the changes in inter-provincial migration were mainly caused by unbalanced social economic development (especially in income and employment opportunities) [7]. Besides, geographical contiguity and historical ties between provinces of origin and destination, trade and foreign investment, resource and climate, demographic status are also considered as important factors affecting migration [22]. The choice of migration destinations is influenced by both government and market forces, while the latter is more influential; however, in the central and western regions, the government forces still play an important role in guiding population migration [12]. The study of inter-provincial migration presents a trend from a single period to several periods and from the general population to different demographic groups [23,24].

Although many studies have attempted to depict and explain inter-provincial migration since 1982, very few of them have described the major migration flows in each province. Some scholars have detected the largest inter-provincial migration flows [2,9]; however, few have investigated the major migration flows of each province from in-migration and out-migration perspectives.

Furthermore, in recent years, two important changes have been closely related to migration in China. First, the regional gap between provinces has been shrinking since 2004 [1]. Second, China is undergoing a process of economic restructuring and industrial upgrading. In the meantime, the employment preferences of the floating population have changed. There is an increasing proportion of migrants with more job opportunities in tertiary industries and decreasing job opportunities in secondary industries. Moreover, the proportion of employment in primary industries has not changed substantially since 2010 [25]. The above changes in recent years have had an important impact on inter-provincial migration. Nevertheless, few studies have analyzed the trends and causes of inter-provincial migration in the 2010s under these new conditions. So far, only Qi et al. [26] have visualized the inter-provincial migration from 2010–2015. However, there is no analysis about the influencing factors of inter-provincial migration, and no conduction of comparative analysis in different periods.

Under the new circumstance of regional development in China, the volume of inter-provincial migration declined for the first time since 1990. The number of migrants in China decreased from 55 million in 2005–2010 to 53 million in 2010–2015. Thus, the question arises: How is the decline in volume of inter-provincial migration reflected in the specific migration flow? Moreover, what is the impact of emerging changes on inter-provincial migration? This article attempts to answer these questions by investigating how the volume, intensity and flow of inter-provincial migration changed in China between 1995 and 2015. From the perspective of flow, we analyze the spatio-temporal dynamics of inter-provincial migration in China over the past 20 years. Next, the Poisson pseudo-maximum-likelihood regression (PPML) method is applied to analyze the driving factors of inter-provincial population mobility.

### 3. Materials and Methods

#### 3.1. Materials

In China, the census and 1% survey are widely considered to be the most accurate and credible data for studying migration. Therefore, the data used in this study come from the 2000 and 2010 National Population Censuses (NPC) and the 2005 and 2015 1% Population Sample Population Sample Surveys (PSPSS). In China, a migrant is defined as a resident who stayed in his/her usual place of residence for more than six months. The inter-provincial migration volume is selected as the dependent variable, and migrants are defined as those who used to reside elsewhere five years ago. In this paper, all migration statistics refer to recent migration (people who changed province of residence in the last five years). In the census year, migrants refer to the population aged five and above, and in the 1% sampling year, migrants refer to the population of all ages. Each observation indicates a pair of provinces, yielding 930 ( $31 \times 30$ ) pairs of flows. In our study, international and intra-provincial migrations were ignored.

We have selected variables that affect population migration from multiple perspectives. An overview of the variable descriptions and their sources are provided in Table 1.

**Table 1.** Variable definitions.

Variable	Description	Source
$M_{ij}$	The number of migrants from Province $i$ to Province $j$ , person	NPC 2000, NPC 2010; PSPSS 2005, PSPSS 2010;
$P_i, P_j$	Populations at origin and destination $POP_i$ and $POP_j$ , million	China Statistical Yearbook (CSY)
$D_{ij}$	The Euclidean distance in km between the capital city of the two provinces $i$ and $j$ , km	Ministry of Natural Resources of the People's Republic of China (MNRPRC)
$C_{ij}$	The value is 1 when province $i$ and province $j$ are adjacent, and 0 otherwise	MNRPRC
$AHS_i$	Average household size at origin, person	CSY
$RURALI_i$	Per Capita Annual Net Income of Rural Households at origin, RMB per person	CSY
$URBANI_j$	Per Capita Annual Disposable Income of Urban Households at destination, RMB per person	CSY
$SFG_j$	Share of foreign direct investment (FDI) in GDP, %	China compendium of statistics 1949–2008 Provincial statistical yearbook
$ALPC_i$	Arable land per capita at origin, ha/person	CSY
$SWR_i$	Share of wages and salaries in the per capita income of Rural Households at origin, %	CSY
$TDI_j$	Temperature difference index (average temperature differences between January and July) °C	CSY
$PD_j$	Population density at destination, person/km <sup>2</sup>	CSY
$TGDP_j$	Share of tertiary industrial added value in GDP at destination, %	CSY
$GDPG_j$	Economic growth rate at destination, %	CSY

### 3.2. Methods

In this paper, we employ the crude in-migration probability ( $CM_iP$ ) and crude out-migration probability ( $CM_oP$ ) to measure the population migration intensity. The  $CM_iP$  and  $CM_oP$  can be expressed as follows:

$$CM_iP_a = \frac{D_i}{P_a} \quad (1)$$

$$CM_oP_a = \frac{O_i}{P_a}, \quad (2)$$

where  $O_i$  is the out-migration from province  $i$ ,  $D_i$  is the corresponding in-migration, and  $P_a$  is the end-of-period total population of province  $a$  [27].

Here, we identify the key factors for inter-provincial migration during the following four periods: 1995–2000, 2000–2005, 2005–2010 and 2010–2015. The most widely used model to explain migration is the GM [21], in which the migrant volume  $M_{ij}$  is proportional to the population size of province  $i$  ( $P_i$ ) and province  $j$   $P_j$ , and it is inversely proportional to the distance between them ( $D_{ij}$ ).

$$M_{ij} = G^{\alpha_0} \times \frac{P_i^{\alpha_1} P_j^{\alpha_2}}{D_{ij}^{\alpha_3}} \quad (3)$$

This model, which is based on the extended version of the GM developed by Lowry [28], can be generalized to include all possible key variables, as follows:

$$M_{ij} = G^{\alpha_0} \times \frac{P_i^{\alpha_1} P_j^{\alpha_2}}{D_{ij}^{\alpha_3}} \times \prod_{s=1}^n X_{S,i}^{\beta_s} \times \prod_{L=1}^k X_{L,j}^{\gamma_L} \quad (4)$$

where  $X_{S,i}$  includes  $n$  variables that can force migrations for the origin  $i$ , while  $X_{L,j}$  indicates  $k$  variables that can attract possible migrations for the destination  $j$ . In Equation (4),  $G$  is a constant.

By expressing Equation (4) in logarithmic form, we get an expanded, double logarithmic equation in which  $M_{ij}$  of Equation (1) is expressed as a logarithm, and there are terms added to the right-hand side that represent the push and pull factors of  $i$  and  $j$ . Thus, the following linear equation is obtained.

$$\ln(M_{ij}) = \alpha_0 G + \alpha_1 \ln P_i + \alpha_2 \ln P_j - \alpha_3 \ln D_{ij} + \sum_{s=1}^n \ln X_{S,i}^{\beta_s} + \sum_{L=1}^k \ln X_{L,j}^{\gamma_L} + \varepsilon_{ij} \quad (5)$$

where the error term  $\varepsilon_{ij}$  is assumed to be an independent random variable that is normally distributed with zero mean and identical variance  $\sigma^2$ . In general, the log-linear GM in Equation (5) is estimated by employing the ordinary least squares (OLS) method. However, there are two problems with the OLS estimation. First, the error term  $\varepsilon_{ij}$  does not necessarily follow a normal distribution with a zero mean, because the migration flows must be a discrete random variable. Second, when a large share of cases are very small flows, the logarithmic transformation of inter-provincial migration flows can result in wide variations between the total numbers of actual and expected movers [29].

Applying the Poisson model can adequately make up for the above defects [30]. Formally, the inter-provincial migration flow  $M_{ij}$  between provinces  $i$  and  $j$  can be assumed to follow a Poisson distribution, as in:

$$\Pr(M_{ij}) = \frac{\exp(-m_{ij}) m_{ij}^{m_{ij}}}{m_{ij}!}, M_{ij} = 0, 1, \dots \quad (6)$$

The conditional mean ( $m_{ij}$ ) is linked to an exponential function of a set of exploratory variables, as in:

$$m_{ij} = \exp \left( \alpha_0 \ln G + \alpha_1 \ln P_i + \alpha_2 \ln P_j - \alpha_3 \ln D_{ij} + \sum_{s=1}^n \ln X_{S,i}^{\beta_s} + \sum_{L=1}^k \ln X_{L,j}^{\gamma_L} \right) \quad (7)$$

Silva and Tenreiro [30] proposed applying the PPML estimation method, which is preferable to model migration. Therefore, Poisson regression is implemented as our preferred specification.

## 4. Results

### 4.1. Changing Trends of Inter-Provincial Migration Volume

The number of inter-provincial migrants between 1995 and 2000 was 32.28 million, but it increased by 1.5 times to 54.99 million between 2005 and 2010. This major increase in migration between 1995 and 2010 is considered the consequence of rapid, but uneven, economic growth. However, the number of inter-provincial migrants declined between 2010 and 2015 for the first time since 1995, indicating a new trend in inter-provincial migration.

Figure 1 shows the provincial geography of China. Figures 2 and 3 shows the proportion of in-migration and out-migration of 31 provinces (including autonomous regions and municipalities) to the total inter-provincial migration in China during the four periods of 1995–2000, 2000–2005, 2005–2010 and 2010–2015. In 1995–2000, Guangdong, Zhejiang, Shanghai, Jiangsu, Beijing, Fujian and Xinjiang were the main provinces of in-migration. A common feature found in these provinces, except for Xinjiang, is that they are all located in coastal areas. During the periods of 2000–2005 and 2005–2010, the destinations of in-migration were concentrated in several main provinces, including Guangdong, Zhejiang, Jiangsu, Shanghai, Beijing, and Fujian. From 2010 to 2015, Tianjin became

a major in-migration province. Among all the major provinces, Guangdong has been the province attracting the most migrants, accounting for 20% to 35% of inter-provincial migration in the country. Due to harsh natural conditions, Tibet has always been the province with the lowest in-migration.

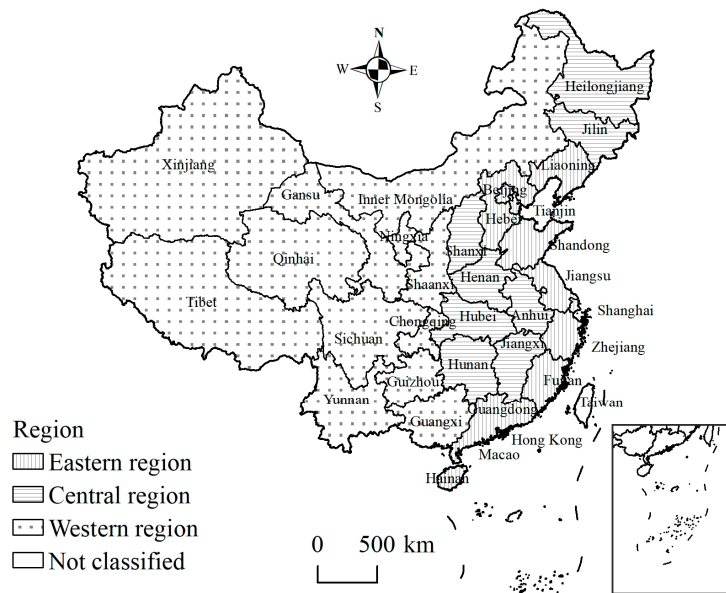


Figure 1. The provincial geography of China.

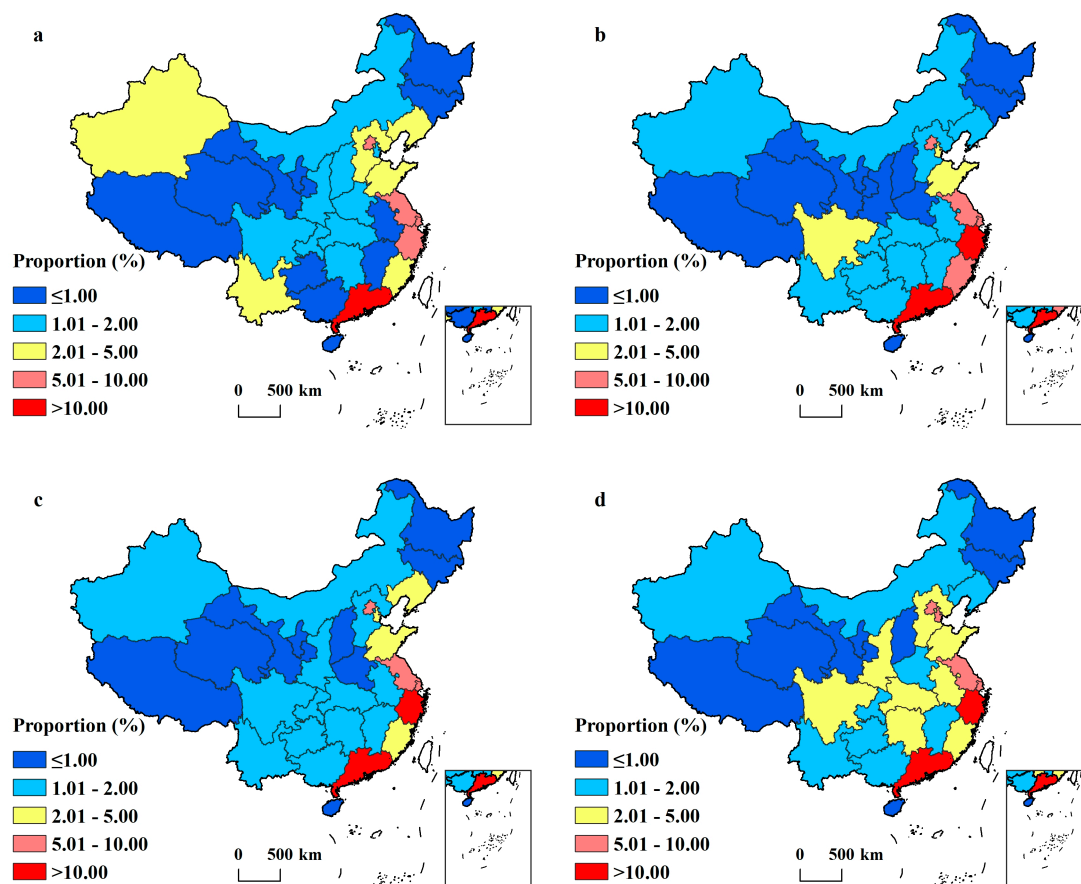
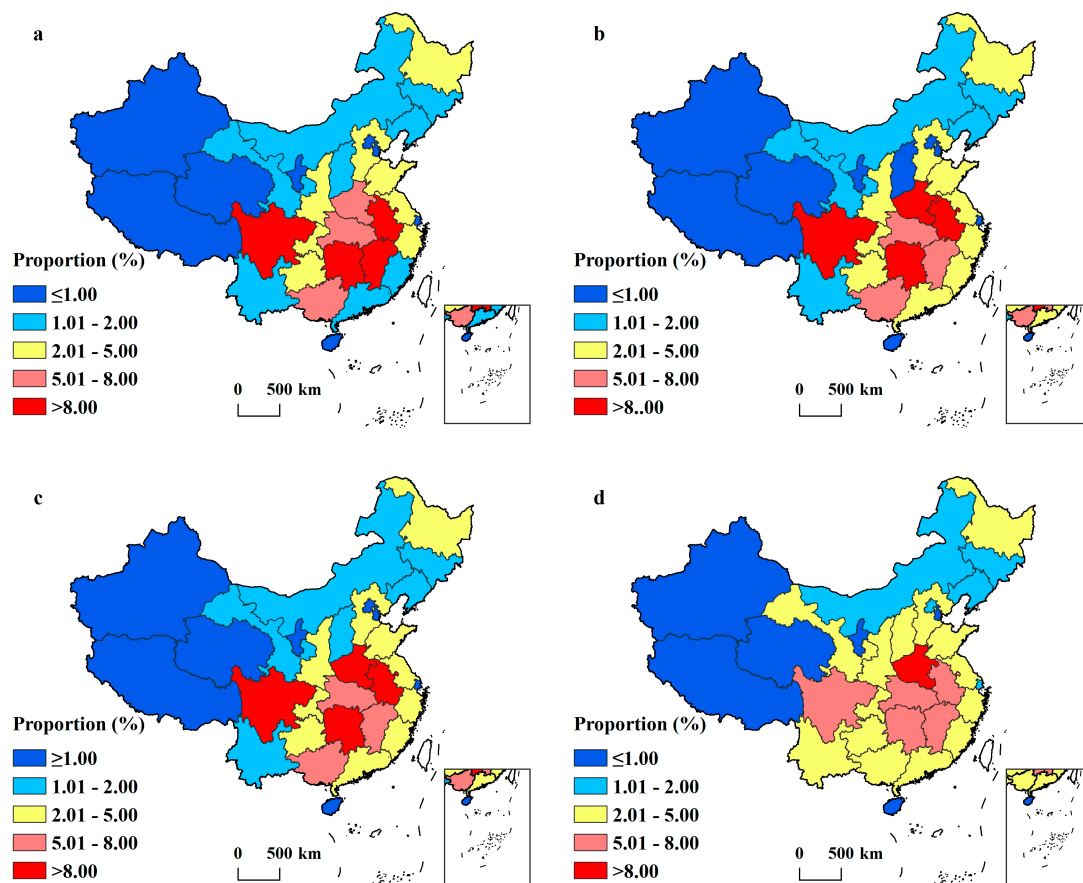


Figure 2. Distribution pattern of inter-provincial in-migration (a–d), represent 1995–2000, 2000–2005, 2005–2010, and 2010–2015, respectively.





**Figure 3.** Distribution pattern of inter-provincial out-migration (a–d), represent 1995–2000, 2000–2005, 2005–2010, and 2010–2015, respectively.

From 1995 to 2000, Sichuan, Hunan, Anhui, Jiangxi, Henan, Hubei, Guangxi, Jiangsu, Guizhou and Chongqing, which are located in central and western China, were the main provinces from where the population moved out. Guangdong became the main province of out-migration between 2000 and 2005, while it was Hubei between 2005 and 2010 and Zhejiang between 2010 and 2015. Sichuan Province had the largest population of out-migration during the periods of 1995–2000 and 2000–2005, while Anhui Province had the largest proportion from 2005 to 2010, and Henan Province did from 2010 to 2015. In contrast, Tibet has had the lowest population out-migration since 1995. It can be observed that provinces with large out-migration are mainly those with a large population base. The total population of Tibet is the smallest, and thus it had the least out-migration.

#### 4.2. Regional Patterns and Dynamics of Inter-Provincial Migration Intensity

Although the main destination and origin of migration can be identified using the migration volume, this migration volume is affected by the population size of each province. Thus, here,  $CM_iP$  and  $CM_oP$  were used to describe the attraction of a province to migrants.

Great disparities between in-migration rates were identified in China. In general, the in-migration rates in the eastern provinces were high, and those in the central and western provinces were generally low. As shown in Figure 4, the in-migration rates of most provinces in the eastern region were higher than the national average between 1995 and 2015. Beijing had the highest in-migration rate of 13.85% during the periods of 1995–2000 and 2010–2015; Shanghai had the highest in-migration during the periods of 2000–2005 and 2005–2010. Beijing is the political and cultural center of China, and Shanghai is the economic center of China. Due to their prominent political and economic status, high-quality colleges and universities and rich and diverse job opportunities, these provinces have been attracting

migrants from all over the country. However, the attraction of Beijing and Shanghai has declined, for instance, the in-migration rate in Shanghai decreased from 21.28% from 2005–2010 to 14.62% from 2010–2015. Moreover, the relatively high housing prices in Beijing and Shanghai have led to their decline in attraction [31]. As a result, a considerable segment of the population must live in Tianjin and Hebei even if they work in Beijing [32]. The situation in Zhejiang is similar to that in Beijing and Shanghai, with the in-migration rate in Zhejiang increasing from 5.80% from 1995–2000 to 15.37% from 2005–2010 and then dipping to 10.21% from 2010–2015. The in-migration rate in Guangdong also decreased from 13.29% from 1995–2000 to 9.85% from 2010–2015. The province with the largest increase in in-migration is Tianjin, its in-migration rate increased from 4.91% from 1995–2000 to 17.64% from 2010–2015. This is due to Tianjin's rapid economic growth since 1995, which has ranked fifth, second, second, and second in the four time periods studied here, respectively. It is obvious that Beijing, Shanghai, Guangdong, Tianjin, Zhejiang, Fujian and Jiangsu have been the main destinations. Since 2010, the popularity of Beijing, Shanghai, Guangdong, and Zhejiang as nationwide migration magnets has decreased.

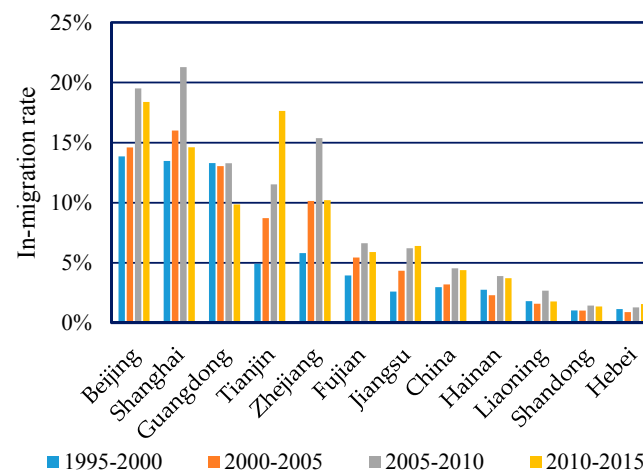


Figure 4. Crude in-migration probability CM<sub>i</sub>P in various provinces in eastern China 1995–2015 (%).

As is shown in Figure 5, all in-migration rates in central China were lower than the national average. However, among the eight provinces, the in-migration rates of seven provinces increased, especially from 2010–2015. The in-migration rates of six provinces in central China increased, in contrast to the decreasing trend of the national average.

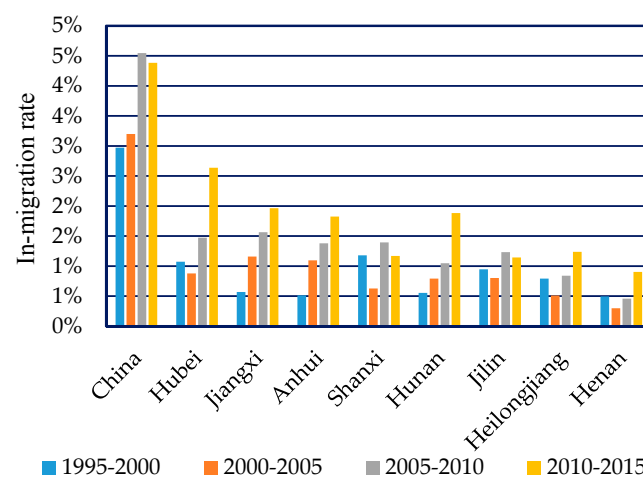


Figure 5. CM<sub>i</sub>P in various provinces in central China 1995–2015 (%).



As shown in Figure 6, almost all provinces had lower  $CM_iP$  than the national average, except for Xinjiang from 1995–2000, which had a higher  $CM_iP$  value than the national average during this period. Its  $CM_iP$  was lower than the national average since 2000, which was due to the increasingly violent terrorist activities and unstable social environment in Xinjiang, as mentioned above.

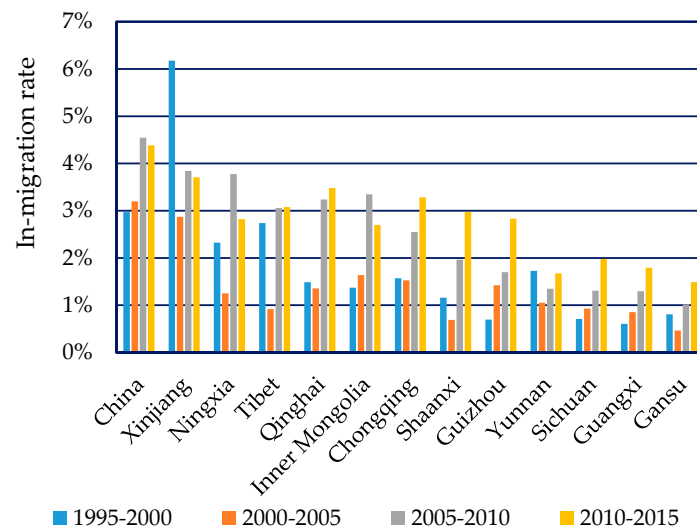


Figure 6.  $CM_iP$  in various provinces in western China 1995–2015 (%).

The spatial distribution of the  $CM_oP$  is significantly different than that of the  $CM_iP$ . The  $CM_oP$  of all provinces in eastern China is lower than the national average between 1995 and 2015 (Figure 7). Meanwhile, the  $CM_oP$  of all provinces increased. As mentioned earlier, the rising living costs in Beijing and Shanghai have forced many low-income individuals to leave, so these provinces may also have a high  $CM_oP$ . A large number of migrants during previous periods were unable to settle, resulting in an increase in population movements. For instance, the number of people who moved from Zhejiang to Guizhou increased from 11980 in 1995–2000 to 189,419 in 2010–2015.

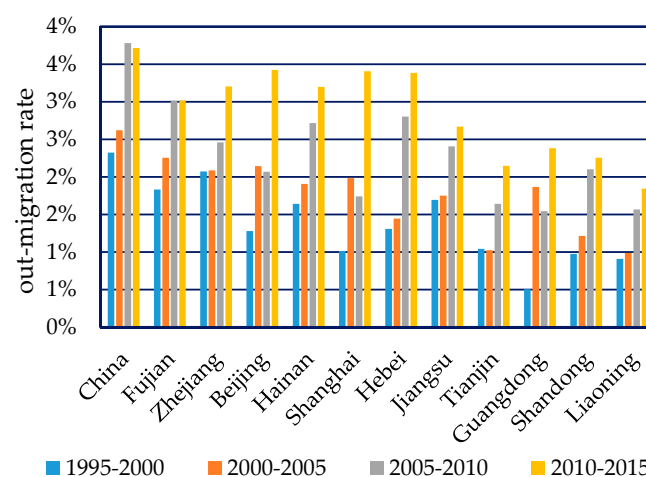


Figure 7.  $CM_oP$  in various provinces in eastern China 1995–2015 (%).

Central China had the highest  $CM_oP$  (Figure 8). Based on the average  $CM_oP$  during the four periods, Anhui, Jiangxi, and Hunan had the highest out-migration rates, reaching 6.80%, 6.47%, and 5.69%, respectively. It can be seen that the above three provinces are close to the three economically developed provinces of Guangdong, Jiangsu and Zhejiang. This geographical proximity has led a large number of people in the above three provinces to migrate to the more developed neighboring

provinces. For example, among the outgoing population in Jiangxi, 45.76% moved to Guangdong and 21.98% moved to Zhejiang. Meanwhile, from 2010 to 2015, except in Shanxi, the migration rates of all provinces in central China decreased, possibly due to the narrowing of the gap between provinces.

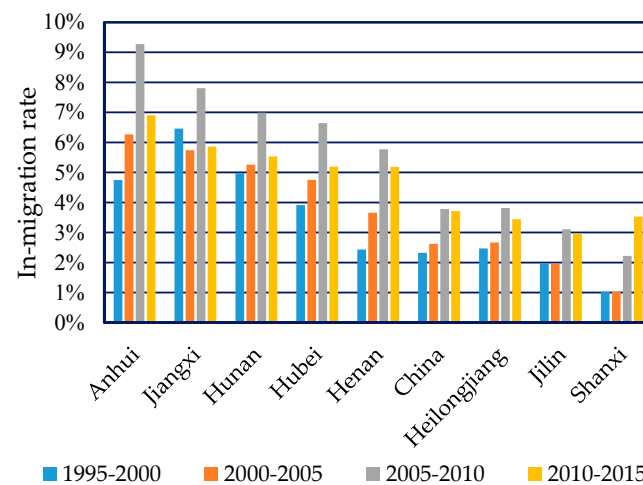


Figure 8. CM<sub>o</sub>P in various provinces in central China 1995–2015 (%).

As shown in Figure 9, in western China, the CM<sub>o</sub>P values in Guizhou, Sichuan, Chongqing and Guangxi were higher than the national average from 1995 to 2015; thus, these provinces became important sources of migrants in China. The CM<sub>o</sub>P in Gansu increased at a lower rate than the national average from 1995–2000 and from 2000–2005 and increased at a higher rate than the national average from 2005–2010 and from 2010–2015. This may be due to Gansu's weak economy; for instance, Gansu had the lowest per capita GDP in 2015. However, the out-migration rates in Shaanxi, Qinghai, Inner Mongolia, Ningxia, Yunnan, Tibet and Xinjiang were lower than the national average in 1995–2015.

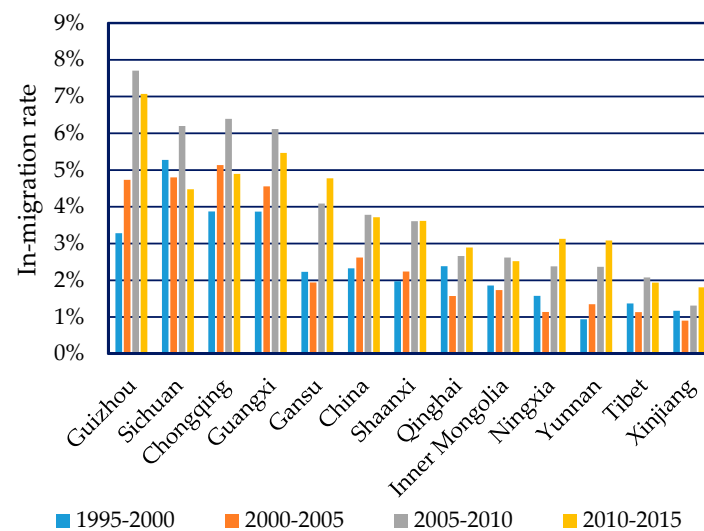


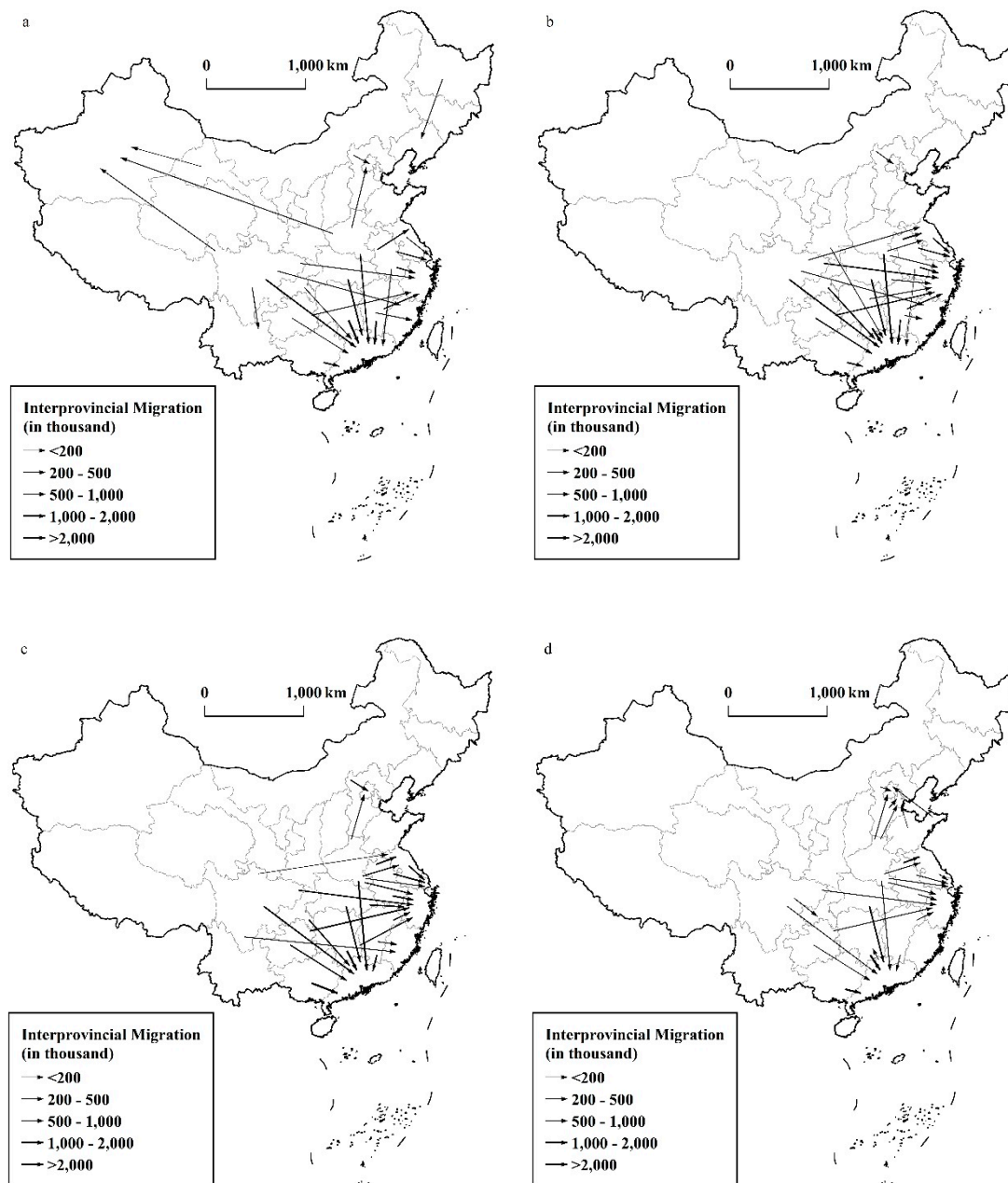
Figure 9. CM<sub>o</sub>P in various provinces in western China 1995–2015 (%).

#### 4.3. Regional Patterns and Dynamics of Inter-Provincial Migration Flow

##### 4.3.1. The Largest Inter-Provincial Migration Flows

Neither the volume nor the intensity of migration can fully describe the migration process. The analysis of migration flow can make up for this defect. Figure 10 maps the 25 largest inter-provincial migration flows, which accounted for 51.05%, 50.39%, 46.49% and 36.32% of the total

volume of migration from 1995–2000, 2000–2005, 2005–2010, and 2010–2015, respectively. Migration streams were considerably larger and relatively concentrated from 1995–2000. There are two main directions of migration flows: One from the central and western regions to the eastern region and another from Sichuan, Henan and Gansu to Xinjiang. Since the implementation of economic reforms and opening-up policies, China's eastern coastal areas have become the growth nexus of the Chinese economy. The coastal region has a strong attraction to migrants across the country. In particular, Xinjiang has attracted more migrants than most other provinces, which can be attributed to its economic growth related to cross-border trade [33]. Yunnan is another noteworthy province in terms of economic growth, which can be attributed to its success in tobacco production in the 1990s [34].



**Figure 10.** The 25 largest provincial migration flows (a–d), represent 1995–2000, 2000–2005, 2005–2010, and 2010–2015, respectively.

Of the 25 largest migration flows in 2000–2005, 19 were consistent with the largest migration flows in 1995–2000. Unlike those observed in the period of 1995–2000, the major migration streams

were towards only 6 eastern coastal provinces: Guangdong, Fujian, Zhejiang, Shanghai, Jiangsu and Beijing. Xinjiang, Yunnan and Liaoning are no longer destinations for the 25 largest migration flows. Migration to Xinjiang has decreased significantly, possibly due to social instability. The Yangtze River Delta (YRD, straddling Shanghai, Jiangsu and Zhejiang) attracted more migrants than it did in the 1995–2000 period, and its migrants were not only from neighboring provinces, such as Jiangxi and Anhui, but also from remote provinces, such as Sichuan and Guizhou.

Among the 25 largest migration flows in 2005–2010, 23 of them were consistent with the largest migration flows in 2000–2005, suggesting that the migration flows were highly stable during this period. As was the case during the previous period (i.e., from 2000–2005), the migration flows were still highly concentrated and directed towards 6 eastern coastal provinces. At the same time, flows from Shaanxi to Guangdong and Anhui to Guangdong were overtaken by flows from Henan to Beijing and Shanghai. The YRD (Shanghai, Jiangsu and Zhejiang) attracted more migrants than it did during the 2000–2005 period.

Of the 25 largest migration flows in 2010–2015, 20 were consistent with the largest migration flows in 2005–2010. The most notable changes are the following two points. First, the number of migration flows towards Beijing and Tianjin increased from 2 to 6. Economic reforms and open-door policies have been implemented and transformed from experiments to popular policies. However, in different regions, the implementation times are not the same. As a result, strong economic growth took place first in the PRD in the 1980s; it then spread to the YRD in the 1990s and to the Jing-Jin-Tang region in the early twenty-first century [7], causing Beijing and Tianjin to attract many more migrants than in previous periods. Second, for the first time since 2000, the largest migration streams included migration towards Hunan and Chongqing. From 2010 to 2015, approximately 420,000 people moved from Guangdong to Hunan and 410,000 people moved from Sichuan to Chongqing. From 2010 to 2015, the growth rate of the gross domestic product (GDP) in Chongqing was the fastest in China. Chongqing was originally part of Sichuan, but was separated from it in 1997. The culture and customs of the two provinces are very similar. As a result, Sichuan, which is adjacent to Chongqing, is an important source of migration. With the rapid development of Chongqing's economy, Sichuan people have changed their destinations and tend to migrate to Chongqing, with which they are familiar. Hunan is another case in which the increasing migration from Guangdong to Hunan is considered the reflux of the previous migration trend from Hunan to Guangdong.

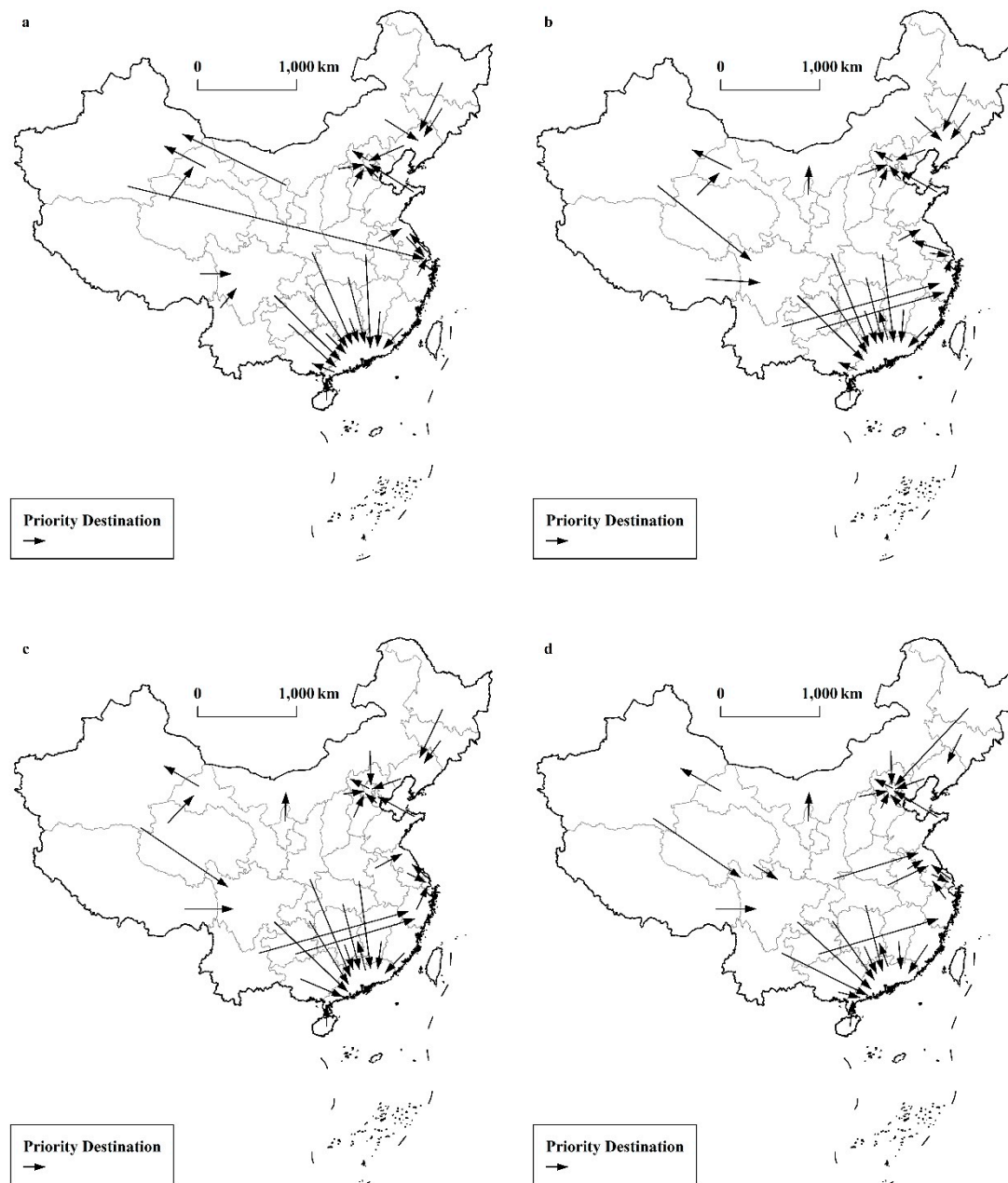
#### 4.3.2. The Largest Out-Migration Flows and In-Migration Flows of Each Province

The largest flow is a good illustration of China's major migration flows. However, many provinces with smaller migrations have been neglected. Determining the priority migration destination and source province of each province can address this shortcoming. Figure 11 maps the priority destinations of each province from 1995–2000, 2000–2005, 2005–2010 and 2010–2015. As seen in Figure 11, the priority destination of each province shows a high level of spatial concentration. In 1995–2000, among the 31 provinces, the priority destinations of eleven, five, and three provinces were Guangdong, Beijing, and Shanghai. Beijing, Shanghai, and Guangdong are the three most developed provinces in China, with more job opportunities and higher incomes. Upon further observation, one can observe that Beijing is the priority destination for the northern provinces, Guangdong is the priority destination for the southern provinces, Liaoning is the priority destination for the northeastern provinces, and Xinjiang is the priority destination for Gansu and Ningxia.

From 2000 to 2005, 24 out of 31 priority destinations from 1995 to 2000 persisted, suggesting that the priority destinations were highly stable. Zhejiang has become a new priority destination for the remote provinces of Guizhou and Yunnan. This is due to the rapid economic growth of Zhejiang during this period.

From 2005 to 2010, 28 out of 31 priority destinations from 2000 to 2005 persisted, and from 2010 to 2015, 25 out of 31 priority destinations from 2005 to 2010 persisted. The priority destinations of various provinces have fairly high stability. However, the only changes that are especially worthy of

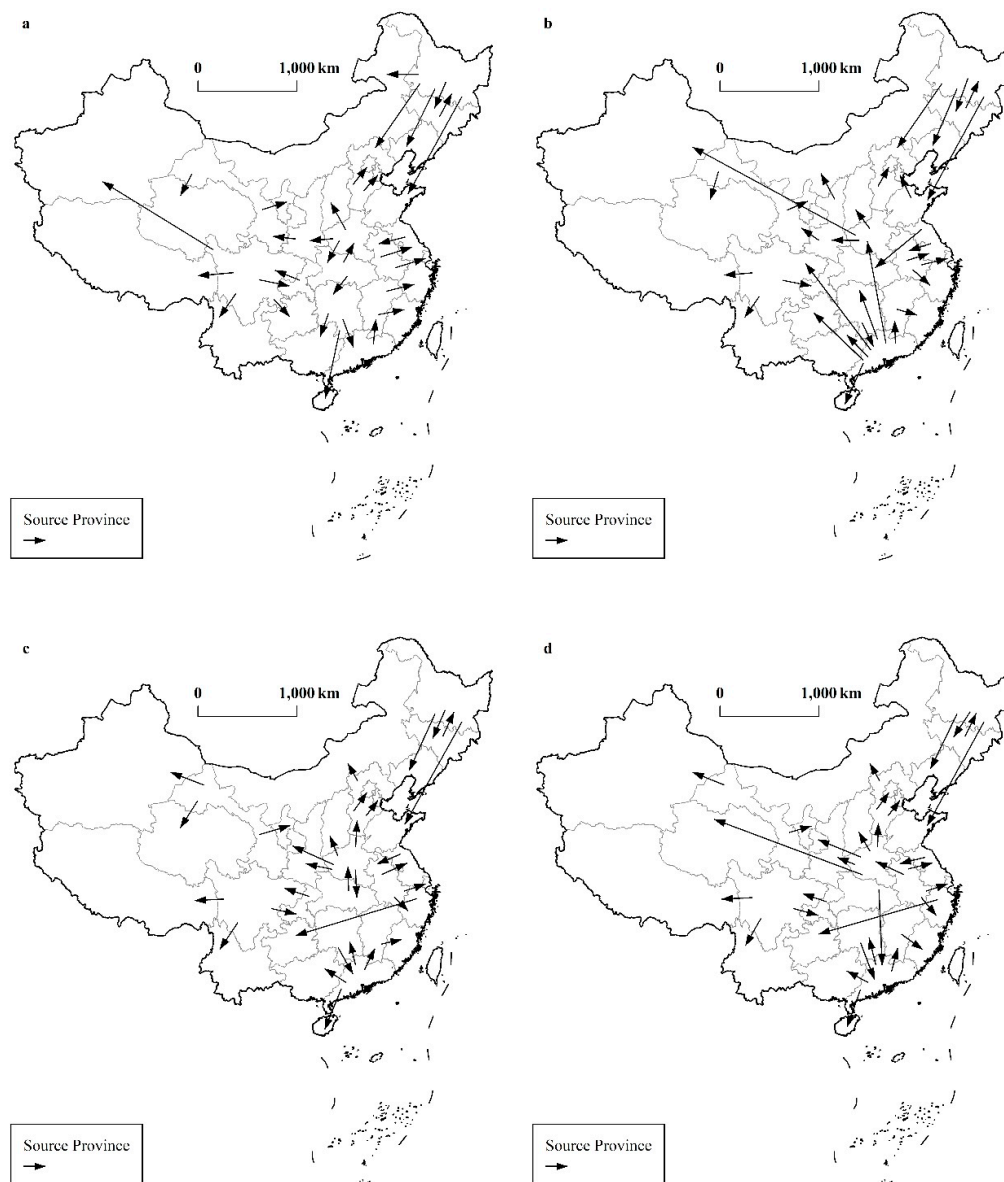
attention are that the number of provinces with Guangdong as their priority destination decreased from 11 from 1995 to 2000 to nine from 2010 to 2015, that the number of provinces with Beijing as their priority destination increased from five from 1995 to 2000 to 7 from 2010 to 2015, and that the number of provinces with the YRD as their priority destination increased from five from 1995 to 2000 to seven from 2010 to 2015. Guangdong's attractiveness to migrants has further declined, and Beijing's attractiveness to migrants has further increased. The center of gravity of migration continues to move north.



**Figure 11.** Priority destination of each province; (a–d) represent 1995–2000, 2000–2005, 2005–2010, and 2010–2015, respectively.

Figure 12 maps the largest in-migration flows of each province from 1995–2000, 2000–2005, 2005–2010 and 2010–2015. As is shown in Figure 12, the source province of each destination province shows a certain extent of spatial concentration, but its spatial agglomeration is weaker than those of the priority destinations. From 1995 to 2000, among the 31 provinces, the source provinces of five,

five, three, and three provinces were Sichuan, Heilongjiang, Henan, and Hunan, respectively. Except for Heilongjiang, the other three provinces are large provinces with large populations. Their large population base makes them a main source of migration for other provinces. These provinces are mainly the primary sources of neighboring provinces; for example, Sichuan is the source province of Tibet, Yunnan, Guizhou, Chongqing, and Xinjiang. Except for Xinjiang, these provinces are all adjacent to Sichuan. More interestingly, Heilongjiang and Shandong are not adjacent, but far apart; however, Heilongjiang is the primary source for Shandong. This is due to the large number of Shandong people who have historically migrated to Heilongjiang [29].



**Figure 12.** Largest in-migration flows of each province in China; (a–d) represent 1995–2000, 2000–2005, 2005–2010, and 2010–2015, respectively.

From 2000 to 2005, the source province of 7 provinces was Guangdong. Interestingly, the priority destination of these seven provinces was also Guangdong from 1995 to 2000. In the periods of 2005–2010 and 2010–2015, the source province of four and six provinces, respectively, was Guangdong. Guangdong has become an important source province, mainly because of the large number of people who moved to Guangdong during previous periods, but did not settle down, and have returned to their hometowns. From 2000–2005, 2005–2010, and 2010–2015, the source province of three, five and five



provinces, respectively, was Henan; the source province of three, three, and four provinces, respectively, was Anhui; the source province of three, three, and three provinces, respectively, was Sichuan; and the source province of four, three, and three provinces, respectively, was Heilongjiang. There are five provinces, including Anhui, Guangdong, Henan, Heilongjiang, and Sichuan, that comprise the most important source provinces.

Combined with the priority migration destination and source province of every province, an interesting phenomenon—the “couple province”—can be observed. The “couple province” can be explained as follows: For a pair of provinces, A and B, among those who migrate out of province A, province B is the most popular destination; in turn, among those who migrate out of province B, province A is the most popular destination. The numbers of couple provinces were 6, 12, 10, and 11 in the periods of 1995–2000, 2000–2005, 2005–2010, 2010–2015, respectively. Guangdong and Hunan were the most typical representatives. From 2010 to 2015, approximately 2.2 million people migrated from Hunan to Guangdong, and 420,000 people moved from Guangdong to Hunan; these were ranked first and 19th among all 930 migration streams, respectively. Therefore, the phenomenon of population reflow should receive more attention.

#### 4.4. Identifying the Main Factors of Migration from 1995–2000, 2000–2005, 2005–2010, and 2010–2015

##### 4.4.1. Determinant Variables

In essence, the migration process is the migrants’ response to the difference between origin and destination provinces, which may be jointly affected by climate change [35], income disparity [36], institutions [3], foreign direct investment (FDI) and many other factors [37,38]. These forces, including ‘pull’ and ‘push’ forces, affect the migration flow from province  $i$  to province  $j$ . The pull forces, which are also called attraction forces, can be understood as follows: The higher the variable associated with ‘pull’ force in a province is, the more it attracts migrants. Similarly, for push or emission forces, the higher the variable associated with the ‘push’ force in a province is, the stronger migration incentive the residents of the province tend to have.

Here, the population size (P), distance (D), contiguity variable (C), average household size (AHS), income (RURALI; URBANI), share of FDI in GDP (SFG), arable land per capita (ALPC), share of wages and salaries in the per capita income of Rural Households (SWR), temperature difference index (TDI), and population density (PD) were selected as the determinant variables used to explore the factors of inter-provincial migration in China.

Among them, the distance  $D_{ij}$  and populations of origin and destination provinces,  $P_i$ ,  $P_j$ , are the three original variables from the classic GM. The AHS at the origin (AHS<sub>i</sub>) is employed to measure the probability of labour migration in rural areas and is expected to have a positive effect on migration [21]. According to previous studies, migration is largely caused by uneven regional development, since migrants tend to migrate to high-income provinces [4,39]. In China, the migration process mainly occurs from rural to urban areas [40]. Therefore, RURALI at the origin (RURALI<sub>i</sub>) is used to represent the rural income per capita at the origin, which has a negative effect, and URBANLI at the destination (URBANLI<sub>j</sub>) is used to represent the urban income per capita at the destination, which has a positive effect. FDI is an important driving force for China’s industrialization, and the SFG at the destination (SFG<sub>j</sub>) measures the FDI intensity; the higher the SFG is, the stronger the attraction to migrants is. The ALPC at the origin (ALPC<sub>i</sub>) [5] refers to land pressure; the higher the land pressure is, the higher the probability of farmers going out to work [21]. The PWR at the origin (SWR<sub>i</sub>) is used to represent the stability of farmers’ income; the higher the PWR is, the lower the chance of migration is [5]. Furthermore, migrants prefer provinces with temperate climates [41]. Therefore, the TDI at the destination (TDI<sub>j</sub>) is used to indicate regional climatic amenities; the higher the TDI is, the lower the attraction to migrants is [21]. The PD at the destination (PD<sub>j</sub>) is employed to represent the population pressure; the higher the population pressure is, the lower the attraction to migrants is [21]. All variables were averaged for the corresponding study periods—1995–2000, 2000–2005, 2005–2010, and 2010–2015.

## 4.4.2. Estimated Results in 1995–2000, 2000–2005, 2005–2010 and 2010–2015

Table 2 shows the estimated results in the four periods. In all periods, almost all variables passed the significant level test, except for  $AHS_i$  in 2010–2015.

Table 2. Estimated results in the four periods.

Variables	1995–2000		2000–2005		2005–2010		2010–2015	
	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value	Parameter	t-Value
$P_i$	1.0434 **	11.11	1.1747 **	12.31	1.1888 **	12.94	1.0327 **	14.44
$P_j$	0.8143 **	9.09	0.8216 **	10.41	0.7459 **	9.57	0.7265 **	7.69
$D_{ij}$	−0.8063 **	−6.20	−0.8769 **	−6.79	−0.8552 **	−7.02	−0.8458 **	−8.20
$C_{ij}$	0.7514 **	3.86	0.4562 **	2.41	0.4455 **	2.05	0.3652 *	1.91
$AHS_i$	−3.8553 **	−3.81	−3.5797 **	−3.76	−2.2735 **	−2.76	−1.0923	−1.54
$RURALI_i$	−1.6937 **	−5.70	−2.1029 **	−6.52	−2.0418 **	−6.18	−1.7043 **	−4.97
$URBANI_j$	4.6924 **	13.73	4.2896 **	14.68	4.8946 **	15.54	3.8258 **	12.89
$SFG_j$	0.4369 **	5.25	0.3948 **	5.04	0.2315 **	2.47	0.2495 **	2.48
$ALPC_i$	−0.5130 **	−2.75	−0.8719 **	−4.18	−0.3992 **	−2.23	−0.4352 **	−2.93
$SWR_i$	−0.6126 **	−2.81	−0.8285 **	−3.39	−0.5528 **	−2.21	−0.7996 **	−2.57
$TDI_j$	0.7871 **	2.39	−0.4678 **	−2.11	−0.9425 **	−3.98	−1.0327 **	−4.87
$PD_j$	−0.5612 **	−6.31	−0.3727 **	−5.19	−0.3997 **	−6.87	−0.2623 **	−4.93
Constant	−21.3839 **	−4.35	−14.5976 **	−3.18	−21.5302 **	−4.47	−15.3710 **	−3.41
R2	0.8138		0.7997		0.7031		0.6356	
Pseudo log-likelihood	−10,827,826		−12,696,191		−16,115,789		−15,806,808	

\*\* Significant parameter at the 0.05 level, \* Significant parameter at the 0.1 level.

The Poisson migration model explained over 81.38%, 79.97%, 70.31%, and 63.56% of the variations in the number of migrants in all flows in the four periods, respectively. The results of the regression model are satisfactory, and the specific explanation of all variables is as follows:

The parameters of  $P_i$  and  $P_j$  are all positive and significant, and the parameter of  $P_j$  is less than  $P_i$ , which is consistent with previous studies [4,5,21]. Indeed, in provinces with large populations, the number of people moving in and out is correspondingly higher. However, some of the most popular migration destinations, such as Beijing, Tianjin and Shanghai, have a relatively small population, so the parameter of  $P_j$  is less than  $P_i$ . Meanwhile, the parameter of  $D_{ij}$  is negative and significant, suggesting that distance is a deterrent to migration, as observed in Shen [5], Fan et al. [42] and Stillwell et al. [43]. Additionally, the results show that the level of migration flows is positively related to the contiguity variable, which suggests that migrants have obvious preferences for neighboring provinces.

The variables  $URBANI_j$  and  $SFG_j$  have positive values of 4.6924 and 0.4369, respectively. The effect of these two variables is the same as expected. This shows that, if other conditions are the same, provinces with a high  $URBANI$  and a high  $SFG$  were attractive to migrants from 1995 to 2000. Moreover, the  $URBANI$  at the destination is the most important pull factor affecting migration. The results of this study are consistent with previous research findings [5].

The variables  $RURALI_i$ ,  $ALPC_i$ ,  $SWR_i$  and  $PD_j$  have the negative parameters of −1.6937, −0.5130, −0.6126, and −0.5612, respectively. The effect of these four variables is the same as expected. This shows that, if other conditions are the same, provinces with a low  $RURALI$ , less  $ALPC$ , low  $SWR$ , and a high  $PD$  were not attractive to migrants from 1995 to 2000. The  $RURALI$  at the origin is the most important push factor affecting migration.

The effect of  $AHS_i$  is negative and is not consistent with our expectations. This can be explained by the fact that the regions with large household sizes tend to be far from the core areas of economic growth. For instance, the province with the largest  $AHS$  is Tibet, which also has a small total population. It is far from the eastern coastal areas and is the province with the smallest out-migration.

The  $TDI$  at the destination ( $TDI_j$ ) has a positive impact on migration from 1995 to 2000 and a negative and significant impact on migration from 2000–2005, 2005–2010 and 2010–2015. The provinces with the largest  $TDI$  in China are mainly located in the northeast. With the economic recession in these provinces, the out-migration rate is rising. For instance, the out-migration rates in Liaoning increased from below 0.94% from 1995 to 2000 to over 1.62% from 2005 to 2010 and to over 1.85% from 2010 to 2015.

In different periods, the regression results of the model are basically similar. Among the 12 variables, the direction of action and the level of significance of the 10 variables did not change. There are also some changes during different periods. For instance, the distance parameter decreases in absolute value from 2000 to 2005 and from 2010 to 2015. The contiguity parameter also decreases in absolute value. These changes show that the effect and importance of distance declined over time, which might be caused by the popularization of transport facilities, the improvement of transport infrastructure and the use of high-speed trains.

However, as previously mentioned, China is experiencing a narrowing of regional disparities, economic restructuring and industrial upgrades. The following question remains: Do the above changes have an impact on the migration process? According to the 1995 constant price, China's per capita GDP increased from 5091 yuan to 26,944 yuan, an increase of 5.29 times. At the same time, the regional disparity in China has been decreasing since 2004. For instance, in 1995, the GDP per capita of Shanghai, the wealthiest province, was nearly 10.52 times more than that of the poorest province. However, in 2015, The GDP per capita of Tianjin, the wealthiest province, was nearly 5.12 times more than that of the poorest province. At the same time, China's industrial structure has undergone dramatic changes. The composition ratio of the primary, secondary and tertiary industries has changed from 19.6:46.8:33.7 in 1995 to 8.6:39.9:51.6 in 2015. The proportion of the tertiary industry has increased by 17.9 percentage point. In 2015, the proportions of China's floating population in the primary, secondary and tertiary industries were 1.4%, 43.7% and 54.9%, respectively [25]. The proportion of migrants who chose to work in the tertiary industries was the highest. Therefore, the share of the tertiary sectors as a percentage of GDP at the destination,  $TGDP_j$ , which is used to reflect the extent of industrial upgrades, indicates that a developed tertiary industry has a strong appeal to migrants. The narrowing of regional disparities means that the underdeveloped provinces have a faster growth rate. The economic growth rate at the destination  $GDPG_j$  is used to measure regional disparities, and a high economic growth rate is expected. Previous studies have shown that the regional disparity in China has been decreasing since 2004. Therefore,  $TGDP_j$  and  $GDPG_j$  were selected as the determinant variables to identify the factors of inter-provincial migration from 2005 to 2010 and from 2010 to 2015. Table 3 shows the estimated results from 2005 to 2010 and 2010 to 2015.

**Table 3.** Estimated results from 2005 to 2010, and from 2010 to 2015.

Variables	2005–2010		2010–2015	
	Parameter	t-Value	Parameter	t-Value
$P_i$	1.1967 **	13.11	1.0339 **	14.55
$P_j$	0.9169 **	7.51	0.9865 **	8.57
$D_{ij}$	−0.8625 **	−7.18	−0.8174 **	−8.00
$C_{ij}$	0.4504 **	2.16	0.3908 **	2.12
$AHS_i$	−2.3599 **	−2.96	−0.9948	−1.42
$RURAL_i$	−2.0607 **	−6.35	−1.5985 **	−4.64
$URBAN_i$	4.2552 **	11.28	3.7064 **	10.24
$SFG_j$	0.3826 **	3.64	0.2192 **	2.17
$ALPC_i$	−0.4136 **	−2.35	−0.4169 **	−2.93
$SWR_i$	−0.5547 **	−2.23	−0.7673 **	−2.56
$TDI_j$	−0.7829 **	−3.47	−0.8348 **	−4.03
$PD_j$	−0.4706 **	−6.17	−0.3180 **	−5.44
$TGDP_j$	0.9978 **	2.2	1.5783 **	3.58
$GDPG_j$	−1.0532	−1.23	2.6790 **	3.01
Constant	−9.5936	−1.45	−30.5830 **	−3.69
R2	0.7271		0.6573	
Pseudo log-likelihood	−15,722,443		−15,109,954	

\*\* Significant parameter at the 0.05 level, \* Significant parameter at the 0.1 level.

The Poisson migration model explained 72.71%, and 65.73% of the variations in the number of migrants in all flows in the periods of 2005–2010 and 2010–2015, respectively. It can be observed that the

directions of other variables, except  $TGDP_j$  and  $GDPG_j$ , are consistent with previous results. We mainly analyse the variables  $TGDP_j$  and  $GDPG_j$ . In 2005–2010,  $TGDP_j$  had a positive impact on migration, as the parameter has implied; in 2010–2015, this parameter became larger. This shows that industrial upgrades have driven migration flow, and their role is becoming increasingly important. In recent years, the Chinese government has continuously promoted the adjustment of industrial structure. Affected by overcapacity, wage growth in resource-based industries and labor-intensive industries is slow. At the same time, the adjustment of economic structure has promoted the rapid development of science and technology promotion and application services industries. Besides, wage growth in these industries is faster. As a result, the number of migrant workers engaged in manufacturing, agriculture, forestry, animal husbandry, fishery, construction, etc., declined in 2013–2015 [25]. Among them, the number of migrant workers in the construction industry decreased by 1.6 percentage points compared with the same period of last year. While the number of migrant workers in the wholesale and retail industry, social service industry, transportation, warehousing and postal industry increased. Especially in the social service industry, there is an increase of 4.1 percentage points over the same period [25]. From 2005 to 2010,  $GDPG_j$  had a negative, but insignificant, impact on migration. In contrast,  $GDPG_j$  had a positive and significant impact on migration from 2010 to 2015. These significant changes indicate the narrowing of regional disparities and their decreased impact on migration from 2005 to 2010. However, from 2010 to 2015, the impact of regional disparities on migration became extremely important. The narrowing of regional disparity makes the income and employment opportunities of migrant in various provinces tend to be balanced, and a large number of migrant returns to their hometown to work. As mentioned above, from 2010 to 2015, approximately 420,000 people moved from Guangdong to Hunan.

## 5. Discussion

Along with the continuous expansion of regional disparities in China, the number of inter-provincial migrations has increased significantly. However, economic disparities have decreased continuously since 2004. Meanwhile, China is undergoing a process of economic restructuring and industrial upgrading. In recent years, different provinces in China have experienced different development processes. These tremendous changes have had an inevitable impact on inter-provincial migration. The volume of inter-provincial migration has declined from 2010 to 2015 for the first time since 1995. The change in the volume of inter-provincial migration indicates that population migration may have entered a new stage, and there are many uncertainties in the future. Population migration has many impacts on both origin and destination. On the one hand, inter-provincial migration can not only promote the socio-economic development of the origin, but also promote the socio-economic development of the destination. For destinations, a large number of young and middle-aged laborers migrate from underdeveloped rural and inland areas to developed towns and coastal areas, providing a lot of cheap labor for the socio-economic development of destinations; For origin, the returning labor brought back the advanced management experience and knowledge of the destination, which cultivated the entrepreneurial spirit of returning labor, and promoted the transformation of its professional identity. Thus, the social and economic development of the origin was effectively promoted [44]. On the other hand, in provinces with large out-migration, there are many left-behind children and debilitated elders. In contrast, in provinces with large in-migration, the living conditions of the migrants are poor, and their social security level is low, so it is difficult for them to integrate into the local society. In this context, new features and trends, such as the volume, intensity and spatial distribution of inter-provincial migration are scientifically and accurately analyzed, and the driving forces behind inter-provincial migration are identified, which will help to improve population development strategies in the new era and promote the sustainable development of the regional economy.

This paper systematically analyses the spatio-temporal dynamics of inter-provincial migration from the perspective of migration volume, intensity and flow in China over the past two decades.

Lastly, the main factors affecting migration were identified, with particular attention paid to the role of regional disparities and industrial upgrading. Similar to the conclusions that from Shen [5] in the 1985–2000, Liu et al. [9] in the 1985–2010, Shen in 2005–2010 [21], and Wang et al. [11] in 1995–2010, eastern region is still the main destination for migrants, while the central and western regions are still the main source of migrants. However, different from the period 1995–2010, we found that the in-migration rate of coastal provinces showed a downward trend in 2010–2015, while the in-migration rate of central and western provinces showed an upward trend. On the contrary, out-migration rate of coastal provinces showed an upward trend in 2010–2015, while the out-migration rate of central and western provinces showed a downward trend. The findings of this research indicate that the pattern of migration from inland to coastal areas has not yet been reversed; however, the migration volume, intensity, and other determinants associated with migration all presented new changes from 2010 to 2015, and industrial upgrades and regional economic convergence also played a key role in migration. As Liu et al. [5] pointed out, some interior provinces have begun to undergo higher economic growth rates than most coastal provinces in recent years. The coastal areas will gradually lose their attractive force to migrants, due to the rising living costs, while at the same time, inland provinces can provide more job opportunities etc. This research expands and confirms Liu's [9] predictions.

This study has a few limitations. First, similar to previous studies [8,9,45], we used migration data from the 2000 and 2010 National Population Censuses and the 2005 and 2015 1% Population Sample Population Sample Surveys. There is a lack of consistency in these data. With the release of the 2020 National Population Census, research with higher data comparability will be possible. In addition, the explanatory power of the migration variables is decreasing over time. This suggests that the factors affecting migration tend to be diversified and require a more comprehensive identification. Except to the macro factors involved in this paper, population migration is also affected by the natural conditions and cultural characteristics of the origin and destination, as well as the age, gender, education level, social network, family and community characteristics of the migrants [22]. At present, the purpose of migration has changed from simply seeking well-paid occupation to diversifying purposes, such as enjoying urban public services, experiencing urban life, and seeking opportunities for development [25]. At the same time, although the willingness of migrants to settle in destination has gradually increased, many families do not have the ability to settle down. The return to hometown is still a rational choice for many migrants. Because the above influencing factors are difficult to quantify, the analysis of the influencing factors of the population migration in this paper is not enough comprehensive. Therefore, how to more deeply and comprehensively explore the factors influencing migration should be a focus of future research.

## 6. Conclusions

To obtain a deep understanding of the changes in inter-provincial migration in China, we have undertaken an analysis of the spatio-temporal dynamics and determinants of inter-provincial migration during the period of 1995 to 2015.

The spatio-temporal dynamics of inter-provincial migration were first explored using the migration volume and intensity in the periods of 1995–2000, 2000–2005, 2005–2010, and 2010–2015. From the point of view of migration volume, it was found that Guangdong, Zhejiang, Jiangsu, Shanghai, Beijing, and Fujian in the eastern region are still the main areas of in-migration, while Hunan, Anhui, Jiangxi, Henan, Hubei, Guangxi, Jiangsu, Guizhou and Chongqing in the central and western regions are the main areas of out-migration. As for migration intensity, since 1995, the in-migration rates of most provinces in the eastern region have been higher than the national average; however, after 2010, the in-migration rates of most provinces in the eastern region began to decline. Since 1995, the in-migration rates of all provinces in central and western China have been lower than the national average, except for Xinjiang in 1995–2000; however, the in-migration rates of most provinces in central and western China have increased. Since 1995, the out-migration rates of most provinces located in eastern China have been lower than the national average. Meanwhile,



the out-migration rates of all provinces in eastern China have been increasing. Central China had the highest out-migration rate from 2010 to 2015, except for Shanxi, and the out-migration rates of all provinces in central China have declined. In the western region, the out-migration rates and their change patterns in various provinces remain diverse.

We also analyzed the changes in migration from the perspective of migration flow. In general, migrants move mainly from inland to coastal areas, and since 2010, the number of migrants moving from coastal to inland areas has increased. Although Jing-jin-Tang, the YRD, and the PRD are still the major migration destinations for in-migration, their importance is declining. As the gap in China continues to shrink, the economy of the inland provinces is growing rapidly, and the out-migration of interior provinces is decreasing.

Lastly, the determinants associated with migration are examined. The research findings indicate that the GM has a strong explanatory power for inter-provincial migration in China. Socio-economic factors are still the main factors affecting migration, while regional economic disparities and economic restructuring have played an important role in migration in recent years.

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