

# Analysis on Influencing Factors of Foreign Talents Introduction in Dalian

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**Abstract.** In recent years, the economic development of Northeast China is relatively slow, and the economic transformation is not thorough enough. Dalian, as the best city in Northeast China, also faces the same problem. To solve this phenomenon, the most important point is to introduce and retain talents, but under the current economic conditions, Dalian does not have any advantages in attracting domestic talents. Therefore, in the domestic and foreign double cycle mode, how to attract foreign talents to even the work of talent introduction is the key. Based on previous studies, this paper selects the housing price and industrial structure of Dalian City to study its influencing factors. The results show that the adjustment of industrial structure has a negative impact on the introduction of foreign talents in the short term due to the long adjustment process, but has a significant positive promoting effect on the introduction of foreign talents in the long term, while the housing price has little impact on the introduction of talent. This study can provide a theoretical basis for talent introduction and economic development in Dalian.

**Key words:** Foreign Talent Introduction, Industrial Structure, Housing Price fluctuation, VAR Model

## 1. Introduction

In the domestic and foreign double cycle mode, in order to ensure the rapid development of the city, the introduction of talents has become the normal work of governments at all levels at the present stage. The economic development needs more talents to participate in, and the introduction of talents will continuously improve the tertiary industry structure of the city, which also promotes the upgrading of the secondary industry structure. Together with the national development of various regions, such as the Beijing-Tianjin-Hebei integration, the Guangdong-Hong Kong-Macao Greater Bay Area, the Yangtze River Economic Belt and other national strategies, the approach promotes the flow of talent, not only domestic talent flow, but also foreign talent flow. Secondly, with the rapid rise of service industry and Internet economy, talents gradually flow from the primary industry to the secondary and tertiary industries, especially the secondary and tertiary industries in the first and second-tier cities. This flow of talents will also be affected by the local housing price. Therefore, the analysis of foreign talent flow in Dalian from the perspective of housing price fluctuation and industrial structure is more helpful for us to analyse its influencing factors and provide research basis for relevant policy suggestions.

This paper studies the relationship between the flow of foreign talents, industrial structure and real estate price fluctuation in Dalian, establishes a model, and analyses the influencing factors of attracting foreign talents in Dalian through the analysis of the current situation of foreign talents in Dalian. This study will help us to deeply understand the reasons for the flow of foreign talents in Dalian, effectively control it from the perspective of policy, and realize the healthy development of Dalian talent market.

## **2. Literature Review**

The flow of talent affects the industrial structure, which affects the real estate price, and the flow of population can also directly affect the real estate price, so there is a certain connection between them. Among them, Kashnitsky and Gunko (2016) found that the development of the housing market and the increasing material inequality intensified the socio-economic polarization in urban areas and changed the population density in different areas<sup>[1]</sup>. Zamyatina and Goncharov (2018), when comparing Arctic cities in Russia with their counterparts in the southern part of the country, found that the adjustment of industrial structure led to large-scale migration of talents<sup>[2]</sup>. Liu (2020) proposed that population structure would have an impact on industrial structure, which would have an impact on housing price, and the change of population structure would also indirectly affect the change of real estate price<sup>[3]</sup>. Based on the panel data of 105 industrialized cities, Yang et al. (2020) analyse the action mechanism of talent flow caused by industrial structure to further price real estate, and found that the national industrial structure has a significant impact on land price, which indirectly leads to the fluctuation of housing price<sup>[4]</sup>. Chen Huan (2021) use of panel data and empirically-analyses the relationship between housing price, human capital and industrial structure at provincial level. The final result shows that housing price, human capital and industrial structure promote each other, but different regions have a large yield difference<sup>[5]</sup>. Based on the above research, we find that three factors can influence each other and play an important role in social stability. However, the current research does not focus on the relationship between Dalian, a representative city in Northeast China, so this paper uses data analysis and model building methods from these two perspectives to put forward reasonable suggestions for the introduction of foreign talents in Dalian.

## **3. Current situation analysis**

Since it is not easy to query the data of foreign talents in Dalian, this paper uses the difference between permanent resident population and registered population in Dalian to represent the number of foreign talents from one side. As shown in Figure 1, the number of registered populations in Dalian did not increase significantly from 2004 to 2020 and basically remained stable, while the permanent resident population in Dalian increased steadily. Only in 2011 did its resident population fall sharply, largely as a result of the economic slowdown. After the economic slowdown, Dalian's demand for migrant workers decreased; On the other hand, the economic downturn has also led to a drop in income and an increase in living expenses such as rent, resulting in higher living costs and making some people choose to stay at home. It can be inferred that the number of foreign talents coming to work in Dalian also increases to a certain extent, but the growth rate is not large. Meanwhile, according to wind database data, Dalian's

attractiveness index for overseas returnees in 2019 and 2020 is 1.13 and 1.11, ranking 19th and 17th in China, which further indicates that Dalian is in the national scale. Dalian is not a good city for attracting foreign talents. Its data is shown in Figure 1

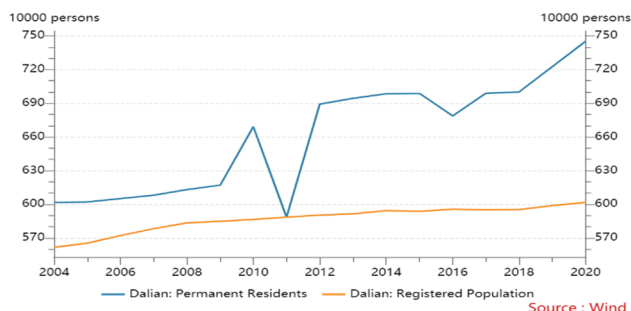


Figure 1. Current situation of floating population in Liaoning Province.

## 4. Empirical analysis

### 4.1 Data and variables

In order to study the relationship between industrial structure, foreign talent flow and housing price, we take Dalian City as an example and select the data from 2004 to 2020 for empirical study. For the number of foreign populations, we mainly take the permanent resident population minus the registered population as the representative, and the industrial structure is represented by the GDP of the tertiary industry divided by the GDP of the secondary industry. Meanwhile, in order to ensure the stability of the time series, this paper takes logarithm of the number of foreign population and housing price. Our data are mainly from wind database and Dalian Statistical Yearbook.

### 4.2 The Construction of Model

This paper takes Dalian City as an example and uses the time series data from 2004 to 2020 to build the VAR model. Its form is shown in formula 1:

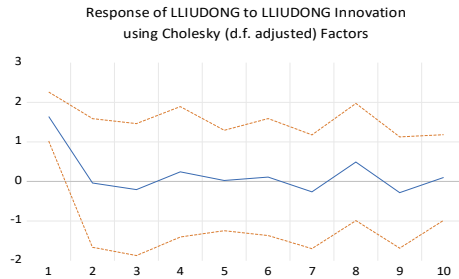
$$y_t = \beta_1 y_{t-1} + \beta_2 y_{t-2} + \dots + \beta_p y_{t-p} + \mu_t \quad (1)$$

Among them,  $y_t$  represents the 3-dimensional endogenous variables of floating talent, housing price and industrial structure, and  $p$  represents the lagged order.

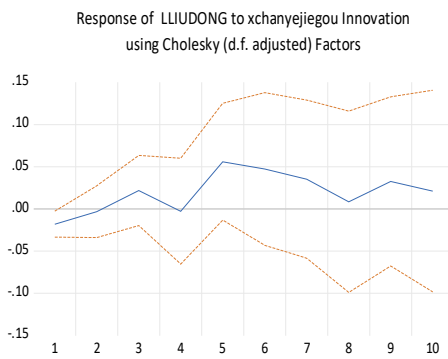
### 4.3 Results of empirical analysis

The VAR model was used for impulse response analysis, and the results were shown in Figure 2. As can be seen from the figure, housing price has little effect on the flow of foreign talents, while industrial results have a negative correlation on the flow of foreign talents in the short term, and a positive effect after the second period. It shows that whether foreign talents come to work in the company, the housing price is not the key factor they consider. At the same time, the adjustment of industrial structure has a certain lag, so the impact on foreign talents in the

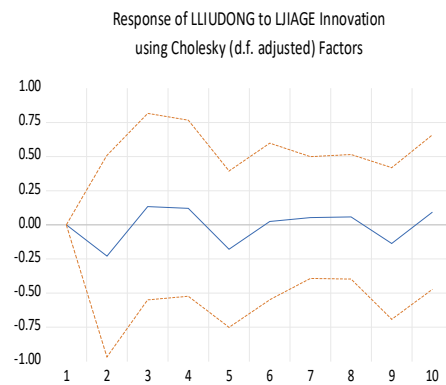
early stage is negative, but a good industrial structure layout can attract foreign talents to work in the company. The pulse response is shown in Figure 2 to Figure 4



**Figure 2.** The impulse response function of foreign talent introduction to foreign talent introduction.



**Figure 3.** Influence of industrial structure on foreign talent introduction.



**Figure 4.** Influence of housing price on foreign talent introduction.

At the same time, in order to further analyse the impact of industrial structure and housing price on the introduction of foreign talents, this paper conducts variance decomposition. Variance decomposition is to analyse the contribution of each structural impact to endogenous change, and the impulse response function further evaluates the importance of different structural impacts. Thus, the variance decomposition of the impulse response function gives information about the relative importance of each random disturbance that affects the variable maximum in the VAR model. As can be seen from the following table, the main factors affecting the introduction of foreign talents are internal factors, accounting for 77.8% of the influencing factors, reflecting the talent aggregation effect, while the impact of housing price on the introduction of foreign talents only accounts for 3%, which is consistent with the analysis result of impulse response function, and the impact on talent introduction is negligible. At the same time, the influence of industrial structure on foreign talents gradually increases with the increase of the number of periods, accounting for 18.5%. The specific values of variance decomposition are shown in Table 1

**Table 1.** Variance Decomposition.

Period	Foreign talent introduction	Housing Price	Industrial Structure
1	100.0000	0.000000	0.000000
2	83.15903	1.626022	15.21495
3	80.76957	2.079096	17.15133
4	80.04377	2.438854	17.51737
5	79.31643	3.325162	17.35841
6	77.70612	3.260416	19.03347
7	77.04309	3.230554	19.72636
8	78.15845	3.109465	18.73209
9	77.93445	3.478471	18.58708
10	77.80436	3.674745	18.52090

## 5. Relevant Suggestions

If the government firmly supports the development of a single industry, it will lead to the imbalance of the overall industrial structure, resulting in market turmoil, which is not conducive to the introduction of foreign talents. Therefore, it requires the government to take into account the development of different regions and the original urban industrial structure when formulating policies, reposition the industrial functions of different urban areas in accordance with scientific methods, fully combine the industrial advantages of the original cities, effectively improve labor production efficiency, invest funds in the adjustment of the original industrial structure, and pay attention to the long-term changes in the industrial structure. We will adopt Internet technology to coordinate the development level of the three existing industries and promote the balanced development of the industrial structure.

## 6. Conclusion

This study takes Dalian City as an example to analyze the relationship between foreign talent introduction, industrial structure and housing price. In the VAR model, through impulse response analysis, the results show that industrial structure adjustment takes a long time and has a certain lag, so it will have a negative impact on talent introduction in the initial stage, but from a long-term perspective, it is still positive. The housing price has little effect on the introduction of talents. Based on the empirical analysis, this paper can provide relevant policy suggestions for promoting population stability and foreign talent introduction in Dalian.

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