

## Contribution of textile intangible cultural heritage to consumption based on SAR model

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**Abstract:** Textile intangible cultural heritage (hereinafter referred to as textile non-legacy) includes spinning, weaving, printing, dyeing, embroidering and national costumes. Textile non-legacy presents agglomeration characteristics in spatial distribution, and this feature has a positive effect on local consumption. This paper selects provincial and national textile non-legacy projects as research objects, and explores the contribution of textile non-legacy to consumption by establishing a spatial lag model. It is found that textile non-legacy agglomeration helps to promote consumption growth.

### 1. Introduction

China is a multi-ethnic country with 5,000 years of historical civilization, which has formed rich cultural resources and created diverse intangible cultural heritages. These heritages show the unique history and culture of the Chinese nation. Among these intangible cultural heritages, one is closely related to people's daily life, that is, textile intangible cultural heritage. Textile non-legacy is produced in a specific living environment, lifestyle and ethnic customs, fully embodying the life wisdom and exquisite skills of all ethnic groups. In November 2017, the China Textile Industry Federation hosted China's first textile non-legacy conference in Hangzhou. The conference clarified the connotation of textile intangible cultural heritage, which including spinning, weaving, printing, dyeing, embroidering and national costumes.

This study counted 606 provincial and national textile non-legacy projects, using ArcGIS10.6<sup>[5]</sup> to examine the spatial layout characteristics. It is found that the textile intangible cultural heritage shows the distribution characteristics of the aggregation, as shown in Figure 1. The deeper the color in the figure, the more the number of textile non-legacies. And a red area is often gathered around the dark purple area, meaning high values condense.

The agglomeration nature of the spatial distribution of textile non-legacy promotes the scale effect, which is an important force to accelerate industrial development, according to the basic theory of industrial development<sup>[1][2]</sup>. One of the reasons why textile non-legacy is different from others is that they can enter the general consumer market easily. Textile intangible cultural heritages are integrated into all aspects of people's lives through the development of the textile industry<sup>[3]</sup>. Therefore, it is wise to determine the contribution of textile intangible cultural heritage to consumption, as it strongly helps to properly formulate protection policies, explore conservation paths, and conduct sound industrial planning<sup>[8]</sup>.

### 2. Research Methods

This paper studied the problem by establishing a spatial lag model. The spatial lag model (SLM) is also called the spatial autoregressive model (SAR), and its expression is:

$$y = \lambda Wy + X\beta + \varepsilon \quad (1)$$

Where **X** is the n\*k data matrix, including the k-column explanatory variables; and the corresponding coefficients reflect the influence of the independent variables on the dependent variables. The spatial lag dependent variable **Wy** is an endogenous variable that reflects the effect of

spatial distance on regional behavior. Regional behavior is strongly influenced by the cultural environment and the migration costs associated with spatial distance. The spatial lag model mainly discusses whether each variable has an overflow effect in one area. Before establishing the spatial lag model, the correlation test is carried out. This paper uses index, Moran's I, for spatial correlation test. Moran's I is defined as follows:

$$Moran's I = \frac{\sum_{i=1}^n \sum_{j=1}^n W_{ij} (Y_i - \bar{Y})(Y_j - \bar{Y})}{s^2 \sum_{i=1}^n \sum_{j=1}^n W_{ij}}$$

Where:  $s^2 = \frac{1}{n} \sum_{i=1}^n (Y_i - \bar{Y})^2$ ;  $\bar{Y} = \frac{1}{n} \sum_{i=1}^n Y_i$ ;  $Y_i$  indicates the number of textile non-legacy items in region  $i$ , and  $n$  is the total number of regions.  $W$  is a binary adjacent space weight matrix,  $W_{ij}$  represents any of these elements. This article uses proximity criteria to define the mutual proximity of spatial objects. If the  $z$  value of the normal statistic of the Moran's I is greater than the critical value of the normal distribution function at the 0.05 (0.01) level, it shows that the textile intangible cultural heritage has a clear positive correlation in spatial distribution, and a positive spatial correlation indicates clustering trends for similar eigenvalues in adjacent regions.



Fig.1. Distribution of textile intangible cultural heritage

### 3. Data Sources

This study selected provincial and national textile intangible cultural heritage projects as research objects, and the data come from China Intangible Cultural Heritage Database. The geographic coordinate data of textile non-legacy are derived from the Gaode Map API. Other data are derived from the 2017 China Urban Statistical Yearbook, and the missing data in the Statistical Yearbook are supplemented by the city's statistical bulletin data for the year.

### 4. Variable Selection

The explained variables are measured by the total retail sales of social consumption, and this paper takes the logarithm of the dependent variable to eliminate the magnitude effect. The definition of the core explanatory variables draws on the research of Yihang Shao and Zeyang Li (2017)<sup>[7]</sup>. Based on the latitude and longitude geographic information of textile non-legacy, the index sag was constructed to describe the degree of spatial distribution. And  $sag = -\ln(CV_{longitude} * CV_{latitude})$ ,

where CVlongitude and CVlatitude respectively represent the longitude variation coefficient and the latitude coefficient of variation of the declared addresses of provincial and national textile non-legacy projects<sup>[4][6]</sup>.

Considering that there is only one textile non-legacy project in some cities, it will show very high spatial agglomeration, but these regions are not representative, therefore, this paper excludes it in the subsequent measurement to rule out its interference with the measurement results. In the end, 76 cities with more than one project were selected as research objects. In addition, other variables are selected as shown in Table 1. In this part, the availability, consistency and continuity of data statistics are fully considered when selecting all variables.

Table 1: Variable Descriptions and Descriptive Statistics

Variable name	Variable definitions	Unit	Mean	Standard deviation	Min	Max
Explained variable	Growth rate of total retail sales of consumer goods(Intrscg1)	none	1.938	1.734	-8.34	4.7
Core explanatory variable	Agglomeration of textile non-legacy project(sag)	none	12.622	3.465	4.92	25.8
	Square of Agglomeration of textile non-legacy project(sagg)	none	171.156	105.196	24.206	665.64
Control variable	Growth rate of wage income(lnsalary1)	none	1.805	0.221	1.42	2.51
	Public finance expenditure(pfe1)	Million Yuan	5.909	11.368	0.2	69.19
	population(pop1)	hundred million	0.572	0.464	0.05	3.39

## 5. Spatial Correlation Analysis

### 5.1 Global spatial correlation test

Before using spatial measurement methods, it is well known that firstly need to examine the spatial correlation of consumption growth. The spatial correlation test usually uses the index, global Moran's I, where  $-1 \leq \text{Moran's I} \leq 1$ . The results as shown in Table 2, where the p value is 0.000, which is significant at the level 0.01, so it can be judged that there is spatial correlation in consumption growth.

Table 2: Moran's I Test

variable	Moran's I	z	p-value
Intrscg1	0.091	5.774	0.000***

\*\*\*: significant level of 1%

### 5.2 Local spatial correlation test

To further analyze the spatial correlation of consumption growth, this paper draws a local Moran's I scatter plot of consumption growth, as shown in Figure 2. It can be seen from the figure that the Moran index scatter is concentrated in the first and third quadrants, indicating that the consumption growth of each city presents a "high - low" cluster in space, That is, cities with high consumption growth tend to gather with cities with high consumption growth, and cities with low consumption growth tend to gather with cities with low consumption growth.

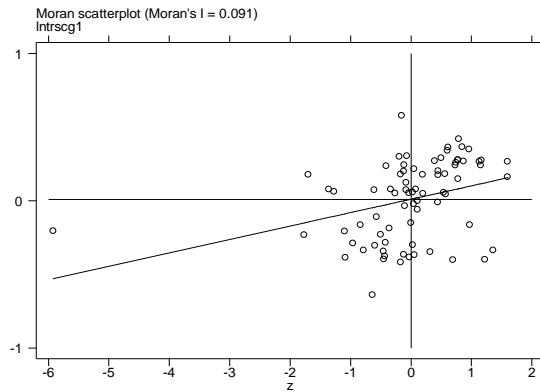


Fig.2. Moran scatter plot of consumption growth in textile non-legacy agglomeration cities

## 6. Spatial Measurement Model Setting Andresult Analysis

### 6.1 Model Settings

Before the model is set, the model selection test is first performed. In this paper, the LM test is performed, as shown in Table 4. At a 5% significance level, the SAR model passed two tests with p values of 0.005 and 0.003, respectively; the SEM model passed a test with a p-value of 0.027. Therefore, the SAR model is established. According to the formula (1), the following SAR model is established:

$$\text{Intrscg1} = \partial_0 + \rho W \text{Intrscg1} + \partial_1 \text{sag} + \partial_2 \text{sagg} + \partial_3 \ln \text{salary1} + \partial_4 \text{pfe1} + \partial_5 \text{pop1} + \varepsilon \quad (2)$$

Table 3: LM Test Results

Statistics	value	P-value
LM-Error	3.583	0.058
Robust LM-Error	4.880	0.027
LM-Lag	7.753	0.005
Robust LM-Lag	9.049	0.003

### 6.2 Spatial lag Model Regression Results

The SAR model is used for estimation according to formula (2), Table4 shows the regression results. It can be seen that the spatial agglomeration of textile non-legacy has a sTable driving effect on local consumption. Under the premise of controlling other conditions, when the aggregation degree sag is increased by 1 unit, it can promote local consumption growth by 0.5%. In addition, the accumulation of textile intangible cultural heritage in a city will have a spillover effect on the consumption of products in its neighboring cities. Specifically, the accumulation of textile intangible cultural heritage can promote the growth of consumption in adjacent cities by about 1%. Besides, wage income growth has a significant positive effect on consumption growth, and the impact is the most obvious. Fiscal expenditure is an important fiscal policy tool to promote consumption. Population is a direct manifestation of consumption potential, and these factors can boost consumption growth<sup>[9]</sup>.

Table 4: SAR Model Regression Results

variable	(1)	(2)	(3)	(4)
sag	0.5648385**	0.4782785*	0.5125413**	.5079415**
sagg	-0.0163862*	-.0125117	-.0135316*	-.0134462 *
lnsalary1		2.949644***	1.594683*	1.545304*
pfe1			.043194**	0.3643919*
pop1				0.6291504**
rho	0.6015783**	.0128071**	0.0103997**	0.0057693

Significant level ,\*: 10%; \*\*: 5%; \*\*\*: 1%

In the whole regression process, nested regression is used. And the four regression results form a robustness test with each other, which proves the reliability of the results.

## **7. Conclusions and Recommendations**

By establishing SAR model, using the latitude and longitude coefficient of variation to construct the textile non-legacy aggregation index, and further exploring the contribution of textile intangible cultural heritage to consumption, the research results show that textile non-legacy contributes to the growth of local consumption. Based on this conclusion, this paper attempts to put forward the following suggestions. It is expected to provide reference for the macroscopic understanding of the distribution of textile intangible cultural heritage, the formulation and exploration of protection policies, and the pursuit of industrialization.

Firstly, Industrial development is a path applicable to the protection of textile intangible cultural heritage. It can be seen from the above analysis that the agglomeration of textile intangible cultural heritage projects has a significant role in promoting consumption, and this promotion has an inverted U shape, which means in the early stage, the aggregation has a positive effect on consumption, however, this effect has a peak, and after reaching this peak, it has a negative effect. This is because the unique practical value and artistic value of textile intangible culture can promote consumers' consumption, but this kind of consumer goods is different from others. With the increase in sales volume, manufacturers will over-commercialize textile non-legacy products in order to maximize profits and ultimately destroy their originality. Then the destruction of authenticity makes textile intangible cultural heritage lose its unique attraction, showing inhibition of consumption. Therefore, in the protection of industrialization, it is necessary to make rational use of its consumption effect and carry out industrial development within a reasonable range.

Secondly, the government should formulate policies to promote the gathering of textile intangible cultural heritages. For example, the government may supervise to establish the industrial park of textile non-legacy, and concentrate related projects in remote mountainous areas in industrial parks. On the one hand, this will help protect the textile intangible cultural heritage in remote areas and make it inherit and develop. On the other hand, it can fully exert the effect of aggregation. The projects in the park can learn from each other, and it is conducive to the release of innovation of the textile intangible cultural heritage throughout the park. This kind of innovation and development will greatly contribute to the products in line with the consumer demand of contemporary consumers.

In short, textile intangible cultural heritage presents a natural agglomeration feature in spatial distribution, which not only promotes local consumption, but also contributes to consumption growth in adjacent areas. It inspires us in case of carrying out industrialization to protect textile intangible cultural heritage, we should make proper use of its own advantages to protect and inherit the excellent textile intangible cultural heritage in the new era.

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