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## Data Article

# Data on spatiotemporal patterns of the foundation of Japanese companies in China from 1980–2016

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## ARTICLE INFO

## Article history:

Received 22 September 2017

Received in revised form

10 October 2017

Accepted 2 November 2017

Available online 4 November 2017

## Keywords:

China

Japan

Industry

Heatmap

## ABSTRACT

This data article provides spatiotemporal patterns of the foundation of Japanese companies in China. The data for companies in the food manufacturing, wholesaling, and service industries were collected from published lists of Chinese companies founded through the investment of Japanese companies. The data are provided in a matrix heatmap format, a two-dimensional visualization of data using color to represent the magnitude of two variables: year of foundation and area in China where the company is located.

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## Specifications Table

Subject area	<i>Economics</i>
More specific subject area	<i>Business administration</i>
Type of data	<i>Matrix heatmap</i>
How data were acquired	<i>Processing of data sources taken from published lists of Chinese companies.</i>

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<https://doi.org/10.1016/j.dib.2017.11.009>

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Data format	<i>Analyzed</i>
Experimental factors	<i>The number of companies were accumulated from a published list.</i>
Experimental features	<i>The number of companies that are included in the matrix heatmap comprise two variables: year of foundation and area in China where the company is located.</i>
Data source location	<i>China</i>
Data accessibility	<i>Data are presented within this article.</i>

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### Value of the data

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- The data in a heatmap format concomitantly visualize two company variables (year of foundation and area in China where the company is located), allowing researchers to capture an overview of the trends in each industry, and to compare the trends specific to each industry.
  - The data can be used by researchers to examine the effects of historical events, geographical features, and Chinese policies on industrial exchanges between countries for Japan and other countries.
  - The data can aid discussion on the business partnership between China and Japan.
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## 1. Data

To date, there have been four booms in Japanese companies' investments in China: in 1985–1990, 1991–1999, and 2000–2007, and after 2008 [1–3]. Each boom is tightly related to factors such as historical events, geographical features, and Chinese policies. However, previous reports show line or bar graphs indicating annual amounts of investments or numbers of companies founded. The graphs do not include spatial trends, an important factor related to historical events and geographical features. Heatmaps are often employed to represent variable data, including spatiotemporal factors such as gene expression experiments [4,5]. Hence, we employed the heatmap format (Figs. 1–6) to visualize the spatiotemporal profiles of the foundation of Japanese companies in China. This article contains data in a heatmap format of the number of Chinese companies founded through the investment of Japanese companies. The vertical dimension indicates the year of foundation, while the horizontal dimension indicates the area in China where the companies are located. The color of the cells represents the magnitude of the number of the companies in that cell. The heatmaps for companies in the food-manufacturing industry are in Figs. 1 and 2; those for wholesaling are in Figs. 3 and 4. The maps for the service industry are in Figs. 5 and 6. The companies were divided into two categories each, based on whether the investment company was listed (Figs. 1, 3, 5) or unlisted (Figs. 2, 4, 6).

## 2. Experimental design, materials, and methods

### 2.1. Design

According to a previous report, the food industry was included in all booms of Japanese companies' investments in China [2]. Here, we chose the companies in the food manufacture, wholesale, and service sectors, as food industry and its related industries.

### 2.2. Source of data

The number of Chinese companies founded through investment of Japanese companies was collected from references of the 21st Century China Research Institute [6,7] that lists such data, including established year and location, on Japanese companies investing to build Chinese companies.

Food manufacture (listed)	Beijing	Tianjin	Hebei	Shanxi	Neimenggu	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Shandong	Hainan	Hubei	Jiangxi	Hunan	Guangdong	Guangxi	Guangchuan	Hainan	Chongqing	Sichuan	Guizhou	Yunnan	Shaanxi	Gansu	Ningxia	Inner Mongolia	Xinjiang	Sum (year)			
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1984	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1988	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	2	
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1991	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
1992	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1993	1	1	0	0	0	1	0	0	3	0	0	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	
1994	1	0	0	0	0	0	1	0	2	0	1	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	
1995	0	1	0	0	0	2	0	0	3	3	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	
1996	2	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	
1997	0	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	
1998	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1999	0	0	0	0	0	0	0	0	2	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	
2000	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
2001	0	0	0	0	0	1	0	0	2	1	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8	8	
2002	0	0	0	0	0	1	0	0	5	0	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	11	
2003	1	1	0	0	0	2	0	0	3	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	
2004	1	1	0	0	0	2	0	0	11	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	
2005	0	0	0	0	0	0	0	0	10	0	1	0	0	5	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	
2006	2	0	0	0	0	0	0	0	7	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	13	
2007	2	2	0	0	0	0	1	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	10	10	
2008	1	0	1	0	0	0	0	0	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	
2009	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	
2010	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	
2011	1	0	0	0	0	0	0	0	4	1	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	
2012	1	1	0	0	0	0	0	0	6	3	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	13	13	
2013	2	1	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	9	
2014	0	0	0	0	0	0	0	0	2	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	
2015	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum (city)	20	8	2	0	0	11	2	0	75	14	12	0	7	40	2	0	0	0	16	0	1	0	1	0	0	0	0	0	1	1	1	1	1		

Fig. 1. Heatmap representing the number of Chinese companies in the food-manufacturing industry founded by investment of Japanese listed companies.

2.3. Heatmap preparing

The number of such companies was obtained from the list in the source, and filled into a Microsoft Excel for Mac worksheet (version 15.31; Redmond, WA, USA) as shown in Figs. 1–6. The colors of the cells were determined by the color scale option in Excel, in which the minimum number is indicated in white, and the maximum number is indicated in red. The sum of each year and area was calculated using the auto sum option in Excel. The color scale option was separately applied to a line or row of cells for sum.

Food manufacture (unlisted)	Beijing	Tianjin	Hebei	Shanxi	Neimenggu	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Shandong	Hainan	Hubei	Jiangxi	Hunan	Guangdong	Guangxi	Guangdong	Hainan	Chongqing	Sichuan	Guizhou	Yunnan	Shaanxi	Gansu	Ningxia	Inner Mongolia	Xinjiang	Sum (year)		
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1985	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1990	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1991	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1992	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1993	1	0	0	0	0	1	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6
1994	1	1	0	0	0	1	1	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1995	2	1	0	0	0	4	0	0	3	5	1	0	0	6	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	26
1996	0	0	0	0	0	1	0	0	2	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1997	0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1998	0	0	1	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6
1999	0	0	0	0	0	1	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2000	2	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2001	0	0	0	0	0	3	0	0	6	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	12
2002	1	0	0	0	0	4	0	0	2	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	11
2003	0	2	0	0	0	2	0	0	4	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	11
2004	1	0	0	0	0	0	0	0	4	1	0	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
2005	1	0	0	0	0	0	0	0	5	1	2	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	14
2006	0	2	0	0	0	0	0	0	5	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
2007	0	0	0	0	0	0	0	0	4	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
2008	0	0	0	0	0	0	0	0	6	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
2009	0	0	0	0	0	0	0	0	3	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
2010	2	0	0	0	0	0	0	0	11	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
2011	0	0	0	0	0	0	0	0	1	9	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
2012	0	1	0	0	0	0	0	0	5	1	1	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	11
2013	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2015	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
2016	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Sum (city)	11	8	1	0	1	24	0	2	76	17	11	2	6	39	1	1	0	0	8	0	0	0	3	0	1	0	0	0	0	0	0	1		

Fig. 2. Heatmap representing the number of Chinese companies in the food-manufacturing industry founded by investment of Japanese unlisted companies.

Wholesaling (listed)	Beijing	Tianjin	Hebei	Shanxi	Neimenggu	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Shandong	Hainan	Hubei	Jiangxi	Hunan	Guangdong	Guangxichuangzu	Hainan	Chongqing	Sichuan	Guizhou	Yunnan	Shaanxi	Gansu	Ningxiahuizu	Xinjiangweiwuerzu	Sum (year)
1980	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
1981	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1982	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1983	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1984	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1985	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
1988	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	7
1989	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1990	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1991	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4
1992	0	0	0	0	0	3	0	0	4	2	1	0	0	1	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	15
1993	4	3	0	0	0	4	0	0	12	4	0	0	0	3	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	34
1994	6	4	0	0	0	5	1	0	15	8	4	0	0	5	0	1	0	0	15	0	0	0	1	0	0	0	0	0	0	65
1995	7	9	7	0	1	9	0	0	24	14	3	2	4	8	1	1	0	1	15	0	0	0	0	0	0	0	0	0	0	106
1996	2	2	1	0	0	4	0	0	13	7	4	0	0	4	1	0	0	0	5	1	0	0	2	0	0	0	0	0	0	46
1997	3	1	0	0	0	2	0	1	17	1	0	1	0	3	0	0	0	0	5	0	0	0	1	0	0	0	0	0	0	35
1998	4	0	0	1	0	0	0	1	8	1	2	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	20
1999	0	2	0	0	0	0	0	0	4	3	0	0	0	1	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	15
2000	0	0	3	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	14
2001	1	1	0	0	0	0	0	0	17	5	4	0	0	1	0	1	0	0	7	1	0	0	0	0	0	1	0	0	0	39
2002	2	0	2	0	0	8	0	0	33	12	4	0	0	3	0	0	0	0	8	0	0	0	0	0	0	1	0	0	1	74
2003	0	7	0	0	0	5	2	0	39	12	4	0	0	5	0	0	0	0	12	0	0	0	1	0	0	0	0	0	0	87
2004	3	7	0	0	1	3	2	0	23	12	8	0	2	7	0	4	0	0	32	0	0	0	0	0	2	0	0	0	0	106
2005	8	4	0	0	2	6	2	0	15	9	4	0	3	8	0	3	0	0	29	0	0	1	2	0	0	0	0	0	0	96
2006	7	2	0	0	0	4	0	0	25	7	3	1	0	8	0	0	1	0	13	0	0	1	0	0	0	0	0	0	1	73
2007	4	2	1	0	0	0	1	0	23	8	6	1	2	3	0	0	0	0	18	0	0	2	1	0	0	0	0	0	0	72
2008	0	1	0	0	1	3	1	1	8	5	0	0	0	4	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	32
2009	2	1	0	0	0	4	0	0	8	0	3	0	1	1	0	0	0	0	6	0	0	0	1	0	0	0	0	0	1	28
2010	1	0	0	0	1	2	0	0	6	8	2	0	1	2	0	5	3	0	7	0	0	2	2	0	0	0	0	0	0	42
2011	4	3	0	0	0	2	0	0	20	9	1	1	2	2	0	1	1	1	9	0	0	0	0	0	0	1	0	0	0	57
2012	1	3	0	0	0	2	3	0	19	7	1	0	0	4	2	0	0	1	9	0	0	0	2	0	0	0	0	0	0	54
2013	0	0	0	0	0	1	1	0	5	10	3	1	0	3	0	0	0	0	2	0	0	5	0	0	0	0	0	0	0	31
2014	0	1	0	0	0	1	0	0	4	4	5	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	18
2015	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum (city)	74	55	15	1	6	72	13	3	360	149	63	8	15	76	5	18	6	4	214	2	2	11	17	0	2	5	0	0	4	

Fig. 3. Heatmap representing the number of Chinese companies in the wholesaling industry founded by investment of Japanese listed companies.

Wholesaling (listed)	Beijing	Tianjin	Hebei	Shanxi	Neimenggu	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Shandong	Hainan	Hubei	Jiangxi	Hunan	Guangdong	Guangxi	Chongqing	Sichuan	Guizhou	Yunnan	Shaanxi	Gansu	Ningxia	Xinjiang	Sum (year)	
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1986	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1989	1	2	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1990	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1991	0	0	0	0	0	2	0	0	1	2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7
1992	1	0	0	0	0	1	0	0	1	4	1	1	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	13
1993	0	0	0	0	0	5	0	0	6	5	1	0	3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	22
1994	2	3	0	0	1	4	0	0	15	8	3	0	2	2	0	1	0	0	9	0	0	0	0	0	0	0	0	0	0	50
1995	2	4	2	0	0	8	0	0	18	6	4	1	6	8	0	0	0	0	6	0	0	1	0	0	0	0	0	0	0	66
1996	0	0	1	0	0	0	0	1	20	2	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	28
1997	0	2	0	0	0	3	0	0	21	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	29
1998	0	1	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	6
1999	0	0	1	0	0	4	0	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	17
2000	4	1	2	0	0	4	0	0	8	4	0	0	0	0	1	0	1	0	4	0	0	0	0	0	0	0	0	0	0	29
2001	1	1	1	0	0	1	0	0	26	5	3	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	43
2002	2	4	0	0	1	1	0	0	59	17	3	0	0	2	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	93
2003	0	4	0	0	0	9	0	0	55	17	4	0	1	4	1	0	0	1	4	0	0	0	0	0	0	0	0	0	0	100
2004	2	7	0	0	0	5	0	0	47	18	3	1	0	4	0	2	0	0	16	1	0	0	0	0	0	0	0	0	1	107
2005	2	3	0	0	0	3	0	0	44	5	4	0	1	4	0	0	0	0	14	1	0	1	0	0	0	0	0	0	0	82
2006	7	0	0	0	0	4	0	0	50	7	4	0	0	4	0	2	1	0	12	1	0	0	0	0	0	0	0	0	0	92
2007	2	4	0	2	0	1	0	0	46	2	3	0	0	1	0	1	0	0	11	0	0	2	1	0	0	0	0	0	0	76
2008	3	2	0	0	0	4	0	0	26	5	0	0	1	0	0	0	0	0	5	0	0	0	1	0	0	0	0	0	0	47
2009	1	1	0	0	0	0	0	0	19	1	0	0	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0	0	0	28
2010	2	2	1	0	0	0	0	0	34	1	0	0	0	3	0	0	1	0	6	0	0	0	0	0	0	0	0	1	0	51
2011	4	0	0	0	0	1	0	0	59	11	1	0	0	8	0	0	1	0	8	0	0	0	2	0	0	0	0	0	0	95
2012	1	1	1	0	0	2	1	0	15	8	4	0	0	2	2	0	0	0	8	0	0	2	2	0	0	0	0	0	0	49
2013	0	0	0	0	0	1	0	0	11	3	1	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	20
2014	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
2015	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sum (city)	37	42	9	2	2	67	1	1	601	137	42	3	16	52	4	10	4	1	123	3	0	7	10	0	0	0	0	1	1	

Fig. 4. Heatmap representing the number of Chinese companies in the wholesaling industry founded by investment of Japanese unlisted companies.

Service industry (listed)	Beijing	Tianjin	Hebei	Shanxi	Neimenggu	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Shandong	Hainan	Hubei	Jiangxi	Hunan	Guangdong	Guangxi	Guangchuan	Hainan	Chongqing	Sichuan	Guizhou	Yunnan	Shaanxi	Gansu	Ningxia	Inner Mongolia	Xinjiang	Sum (year)
1980	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1988	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1992	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
1993	0	0	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	6	
1994	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
1995	1	1	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	7	
1996	3	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
1997	1	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
1998	3	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
1999	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
2000	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
2001	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	
2002	2	0	0	0	0	1	0	0	5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	9	
2003	6	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	13	
2004	3	0	0	0	0	1	0	0	6	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	13	
2005	7	2	0	0	0	4	0	0	7	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	23	
2006	3	1	0	0	0	1	0	0	7	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	18	
2007	5	0	0	0	0	1	0	0	8	1	0	0	0	0	1	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	19	
2008	6	0	0	0	0	0	0	0	4	3	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	15	
2009	3	0	0	0	0	1	0	0	7	0	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	16	
2010	7	1	0	0	0	0	0	0	11	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	22	
2011	3	0	0	0	0	2	0	0	13	1	1	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	24	
2012	5	2	1	0	0	1	0	1	9	4	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	26	
2013	4	0	0	0	0	0	0	1	9	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	20	
2014	1	0	0	0	0	0	0	0	4	1	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	10	
2015	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sum (city)	70	9	1	0	0	14	0	2	112	21	4	0	2	6	1	3	0	0	26	0	1	0	2	0	0	2	0	0	0	0		

Fig. 5. Heatmap representing the number of Chinese companies in the service industry founded by investment of Japanese listed companies.

Service industry (unlisted)	Beijing	Tianjin	Hebei	Shanxi	Neimenggu	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Shandong	Hainan	Hubei	Jiangxi	Hunan	Guangdong	Guangxi	Chongqing	Sichuan	Guizhou	Yunnan	Shaanxi	Gansu	Ningxia	Xinjiang	Sum (year)
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1990	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1991	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
1993	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1994	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	7
1995	2	0	0	0	0	0	0	6	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	10	
1996	1	0	0	0	0	2	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
1997	1	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
1998	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	
1999	0	0	0	0	0	1	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
2000	1	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
2001	2	0	0	0	0	0	0	8	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
2002	1	0	0	0	0	2	0	11	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	19	
2003	2	2	0	0	0	7	0	17	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	31	
2004	7	0	0	0	0	1	0	22	5	0	0	1	0	0	0	0	0	3	0	0	1	0	0	0	1	0	0	41	
2005	9	0	0	0	0	1	0	17	2	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	33	
2006	3	0	0	0	0	4	0	15	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	25	
2007	5	0	0	0	0	0	0	14	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0	0	1	0	0	25	
2008	3	1	0	0	0	0	0	19	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	26	
2009	1	0	0	0	0	1	0	11	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	15	
2010	4	0	0	0	0	1	0	24	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	33	
2011	8	0	0	0	0	1	1	42	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	55	
2012	1	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	12	
2013	0	0	0	0	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
2014	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
2015	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	
2016	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Sum (city)	52	4	0	0	0	23	1	246	17	5	1	3	3	0	1	0	0	27	0	1	0	2	0	0	2	1	0	0	

Fig. 6. Heatmap representing the number of Chinese companies in the service industry founded by investment of Japanese unlisted companies.

## Acknowledgements

The authors thank Mr. Masafumi Ando, a staff member at the Information Center for Education and Research, Tokyo University of Agriculture, for his invaluable cooperation in collecting the data. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2017.11.009>.

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