

Pet Economy and City Wages: Evidence from Chinese City Panel Data

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Abstract. This paper examines whether the growth of China's pet market is associated with higher wages and more jobs in Chinese cities. This paper uses two datasets: one is from the China Pet Industry White Paper, and the city data come from the China City Statistical Yearbook. From these datasets, this paper constructs a pet-shock measure by combining the 2019 share of pet owners reported for 20 cities with changes in national spending on dogs and cats. This paper then uses the lagged pet-shock variable as the independent variable to estimate regression models for wages and employment with city and year fixed effects. This paper finds that cities with greater lagged exposure tend to have higher average wages and more jobs in urban non-private units. The estimates are also positive for employment in health and social welfare and in accommodation and catering. These results suggest that growth in the pet market is associated with stronger local labor demand and with higher wages and employment in some urban service sectors.

Keywords: pet economy, labor market, shift-share exposure

1. Introduction

China's pet market has grown rapidly. Its expansion increases consumption and labor demand in related sectors, including pet food, retail shops, animal hospitals, grooming, boarding, insurance, delivery, hotels, and leisure services. Many studies describe pets as family members, consumer goods, and a source of regular household spending [1]. In the data used here, spending, measured in Chinese renminbi (RMB), rose from RMB 122.0 billion in 2016 to RMB 300.2 billion in 2024.

People may view pets not as ordinary goods but as friends, part of themselves, or family members [2, 3]. Emotional attachment and daily routines can sustain this spending over time [4]. As a result, pet owners may purchase more than food and basic supplies, increasing demand in related markets and demand for pet-related labor.

Studies [5] and [6] provide empirical evidence that the pet market can affect both sales and the number of workers needed to provide local services.

This paper therefore focuses on how the pet economy may affect the labor market and relates the analysis to the literature on service-sector transformation [7-12].

It constructs a shift-share exposure measure, following studies [13-18], and calls it PetShock.

The measure provides a first look at the relationship between growth in China's pet market and city wages and employment. Higher lagged exposure is associated with higher wages and more jobs

in urban non-private units, as well as more employment in health and social welfare and in accommodation and catering.

2. Literature review

This section reviews two strands of literature. The first treats pets as family members and links pet ownership to recurring market demand rather than one-time purchases. The second examines labor markets and service-sector transformation.

2.1. Pet-related consumption

The first strand of previous studies shows that pets are not simply consumer goods; they can shape family identity and spending choices [1-4]. When people treat a pet as part of the family, they may pay for care repeatedly, so a higher share of pet owners can increase consumption and demand in related markets. For example, studies [5] and [6] show that the cost of veterinary care and payment options can affect demand. Together, these studies support a link between pet-market growth and local services, but they do not test city labor markets.

2.2. Service-sector transformation

The second strand of research examines service-sector transformation. As society changes over time, services and labor demand also change [7-11]. Research on economic change helps explain why service work grows and evolves. Evidence in [12] shows how demand and technology can create local service jobs. Pet care fits this literature because demand for pet-related services can shape local labor markets.

3. Theoretical mechanisms and hypotheses

This paper proposes two hypotheses about how the pet shock may affect wages and employment. Outcomes in a city may depend on both firms' demand for workers and the number of people willing to work. Growth in the pet market may change either labor demand or labor supply, and the two channels can have opposing effects. The net effect on wages and employment is therefore uncertain.

Two simple channels may explain these possible effects.

First, the pet shock may shift the labor demand curve to the right because a larger pet market can increase demand for pet goods and local services. Firms may therefore need more workers.

Second, pet ownership may shift the local labor supply curve to the right if owning a pet makes people less willing to move away. Local firms may then have more workers to choose from, which could lower wages while increasing employment. These two channels lead to the following hypotheses:

- Hypothesis 1: Cities with greater pet-market exposure will have higher wages and more jobs.
- Hypothesis 2: If pet ownership primarily increases the local labor supply by making people less willing to move away, wages will decrease while employment will increase.

4. Data and methods

This section explains the data, the pet-exposure measure, the outcome variables, and the regression model.

4.1. Data sources and sample

The first source is the China Pet Industry White Paper. It reports the size of China's urban dog and cat market for each year. Figure 1 shows the actual, backcast, and forecast values used in this study [19].

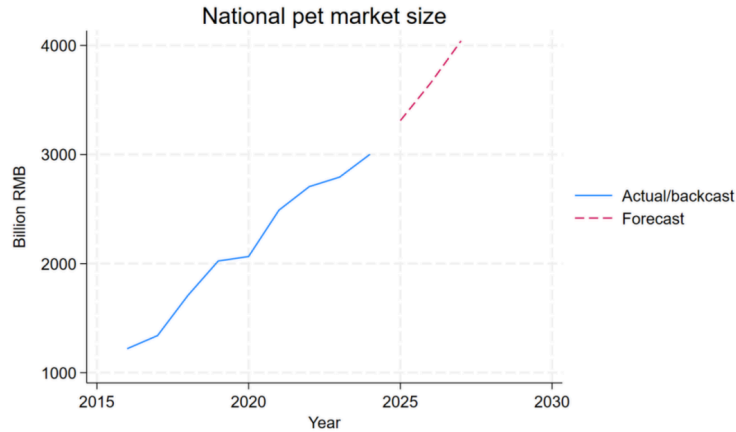


Figure 1. National urban dog and cat consumption market size, 2016-2027

Source: China Pet Industry White Paper series [19]. Solid line: actual or backcast values. Dashed line: forecasts.

This paper matches the China Pet Industry White Paper data to city-level data from the China City Statistical Yearbook [20]. The sample covers 300 cities from 2017 to 2023, with 2,100 city-year observations. Table 1 summarizes the variables used in this paper.

Table 1. Descriptive statistics for selected regression variables

Variable	N	Mean	SD	Min	Max
2019 pet exposure (%)	2,100	0.219	1.405	0.000	19.800
Urban non-private wage (RMB)	2,100	85,592	23,945	34,343	243,634
Urban non-private employment (10,000)	2,093	55.805	82.661	3.000	819.000
Private and individual employment	2,100	886,635	1,400,247	3,578	18,400,000
Tertiary employment share (%)	2,100	60.116	14.487	17.000	103.000
Unemployment proxy (%)	2,100	2.608	5.097	0.031	99.700
Gross domestic product (GDP) per capita (RMB)	2,100	67,850	36,843	11,693	264,699
Population (10,000)	2,100	448.156	384.602	24.000	3,208.999
Retail sales per capita (RMB)	2,100	25,182	12,908	4.902	87,831

Notes: The sample covers 2017-2023. N = observations; SD = standard deviation; Min = minimum; Max = maximum.

4.2. Exposure construction

The main independent variable is a pet-shock measure constructed according to the basic idea of shift-share studies [13-18]. It combines a fixed city share with growth in the national pet market.

Equation (1) shows the pet-market exposure for city i in year t :

$$PetShock_{it} = Exposure_{i,2019}^z \times [\ln(M_t) - \ln(M_{2016})] \quad (1)$$

The PetShock variable has two parts. The city component is the 2019 percentage of residents who own pets in the 20 cities reported by the white paper. All other cities are assigned zero because no ownership share is reported for them; the superscript z identifies this zero-filled exposure measure. The national component is the change in the logarithm of the urban dog and cat market from its 2016 level, which represents cumulative market growth relative to 2016. In equation (1), i indexes cities, t indexes years, and M denotes national market size.

4.3. Outcomes and controls

The dependent variables include wages and employment. The analysis also tests log employment in resident services, health and social welfare, accommodation and catering, and culture, sports, and entertainment. The controls are one-year lagged gross domestic product (GDP) per capita, population, urbanization, the service-sector share of GDP, and retail sales per capita.

4.4. Regression specification

Equation (2) gives the main model:

$$Y_{it} = \alpha + \beta PetShock_{i,t-1} + X'_{i,t-1}\gamma + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

$PetShock_{i,t-1}$ is the lagged pet-exposure measure. In equation (2), Y is the outcome; alpha is the intercept; beta is the coefficient of interest; X is the lagged-control vector and the prime denotes transposition; gamma is the control-coefficient vector; i indexes cities; and t indexes years.

μ_i denotes city fixed effects; λ_t denotes year fixed effects; and epsilon is the error term.

Controls are lagged by one year, and standard errors are clustered by city.

5. Regression results

This section reports the results of the regression models described above.

5.1. Main labor-market outcomes

Table 2 reports the coefficient on lagged pet exposure in each main model. The wage coefficient is 0.0156 and is significant at the 1 percent level.

The coefficient for employment in urban non-private units is 0.0158 and is significant at the 5 percent level. These results support Hypothesis 1.

Table 2. Fixed-effects estimates for main labor-market outcomes

Outcome	Coefficient	N	Within R ²
Log urban non-private wage	0.0156***	2,100	0.912
Log urban non-private employment	0.0158**	2,093	0.080
Log private and individual employment	-0.0046	2,100	0.068
Tertiary employment share	0.0544	2,100	0.415

Table 2. (continued)

Unemployment-pressure proxy	-0.0600	2,100	0.004
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Notes: Each row reports a separate regression with city and year fixed effects and one-year lagged controls for GDP per capita, population, urbanization, the service-sector share of GDP, and retail sales per capita. Standard errors are clustered by city. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

5.2. Service-industry outcomes

Table 3 reports disaggregated results for four service-industry groups. The estimated coefficients are 0.0381 for health and social welfare and 0.0325 for accommodation and catering. Both are significant at the 1 percent level. The estimates for resident services and culture, sports, and entertainment are not statistically significant. These results suggest that the positive employment association is concentrated in selected service industries.

Table 3. Fixed-effects estimates for service-industry employment

Outcome	Coefficient	N	Within R ²
Log resident-service employment	-0.0164	262	0.175
Log health and social-welfare employment	0.0381***	2,026	0.254
Log accommodation and catering employment	0.0325***	611	0.049
Log culture, sports, and entertainment employment	0.0063	395	0.034

Notes: The model is the same as in Table 2. The samples for resident services, accommodation and catering, and culture, sports, and entertainment are small and uneven, so the estimates should be interpreted with caution. *** $p < 0.01$.

6. Conclusion

This paper uses data from 2017 to 2023 to study whether growth in the pet market is associated with changes in the labor market. It finds that cities with greater lagged pet-market exposure have higher average wages in urban non-private units. The wage coefficient is 0.0156 and is significant at the 1 percent level. The study has limitations for causal inference because the dataset is incomplete. Future work could use more complete data and alternative methods. This paper is the first to construct a pet-shock measure to examine the relationship between the pet economy and labor markets.

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