land

Article

Effects of the Implementation of the Broadband China Policy (BCP) on House Prices: Evidence from a Quasi-Natural Experiment in China

Peng Wang [1], Yihui He [2] and Kengcheng Zheng [3,*]

[1] The First Tax Branch of Kunming Taxation Bureau, State Administration of Taxation, Kunming 650100, China; eng0317@163.com
[2] International Business College, South China Normal University, Guangzhou 511436, China; 20203602018@m.scnu.edu.cn
[3] School of Finance and Taxation, Zhongnan University of Economics and Law, Wuhan 430073, China
* Correspondence: 202101030014@stu.zuel.edu.cn

Abstract: With the rapid development of digital finance, the implementation of digital infrastructure is becoming increasingly significant. Broadband construction is an important part of the communication network, and can promote urban infrastructure in cities. However, whether the development of broadband can affect housing prices by affecting the urban infrastructure and the convenience of residents is a question worth addressing. In this study, using panel data regarding cities in China, we used the spatial multi-period difference-in-differences (SDID) model to investigate the utility of the Broadband China Policy (BCP) on urban house prices and the mechanism of impact. We found that the BCP can increase house prices, and that this impact has a positive spatial spillover effect. This conclusion still held after a series of tests such as parallel trend tests, placebo tests, and the exclusion of other policy effects. The BCP can increase house prices by improving urban infrastructure, promoting urbanization, and optimizing urban industrial structure. In addition, we conducted a heterogeneity analysis by taking into consideration the administrative level, economic development level, and location of cities. The findings of this paper not only enrich the research on the BCP and housing prices, they also provide policy recommendations in terms of urban land use and sustainable development.

Keywords: Broadband China Policy; house price; space multiphase DID

Citation: Wang, P.; He, Y.; Zheng, K. Effects of the Implementation of the Broadband China Policy (BCP) on House Prices: Evidence from a Quasi-Natural Experiment in China. *Land* **2023**, *12*, 1111. https://doi.org/10.3390/land12051111

Academic Editors: Bo Li and Muhammad Mohiuddin

Received: 8 March 2023
Revised: 14 May 2023
Accepted: 17 May 2023
Published: 22 May 2023

1. Introduction

Sustainable development in emerging economies is a growing area of investigation within the realm of urban transformation [1,2]. Enhancing the digital capacity of cities is a crucial step in achieving high-quality urban development. The construction of digital infrastructure as compared to traditional infrastructure offers a potential avenue toward sustainable urban development, as well as being a potential catalyst for economic growth [3,4].

Housing prices can be regarded as a pivotal factor in determining individual contentment and the course of society's improvement [5,6]. The influence of various traditional policies, such as the household registration system, the education system, and the financial support system, on housing prices has been extensively debated. However, more recent infrastructure policies might also affect housing prices through their effects on industry structure, infrastructural settings, and the urbanization of land. For instance, the Broadband China Policy (BCP) has made positive contributions to the country's digital infrastructure, industrial organization, and urban land development, all of which are likely to have an effect on housing prices [7,8].

In order to enhance the digitalization level of cities, the Chinese government has rolled out the BCP, which aims to ameliorate the digital infrastructure and promote high-quality development [9,10]. From a research perspective, the BCP provides an intriguing opportunity to examine how a new infrastructure policy affects residential property prices [11,12]. Furthermore, the enactment of the BCP would bolster cities' digital infrastructure, which, in turn, could attract more advanced firms and facilitate the digital transition of conventional industries. Additionally, the implementation of the BCP may likely have an effect on rural areas, leading to the urbanization of such land, and further implications in respect of real estate prices.

The rapid expansion of broadband infrastructure is a key determinant of national economic growth and social development [13,14]. As such, understanding the intricacies of effective broadband policies is essential to ensuring that countries can reap the full benefits of digital transformation. China's broadband policy, in particular, offers a unique case study that has significant implications for the broader international community. As China has the world's largest internet user base and a rapidly evolving telecommunications landscape, its experiences with broadband policy provide valuable lessons that can be adapted to the specific contexts of other nations [15,16].

In this paper, we employ an SDID model to explore the impact of BCP on house prices, as well as the potential mechanisms driving this phenomenon. An economization matrix is constructed to capture the interregional economic relationships, and a spatial autoregressive (SAR) model is used to analyze the spillover effects of the policy based on city-level data from 2000 to 2010. We examine three potential causal mechanisms: infrastructure, land urbanization, and industrial structure. Additionally, a multitude of checks, including a parallel trends test, a placebo test, and substitution of the economization matrix with a geographical matrix, are conducted to increase the robustness of the results.

We find that the implementation of BCP can improve house prices. The potential mechanism of action is that the implementation of BCP can improve infrastructure, land urbanization, and industrial structure, which in turn improve house prices. Considering the actual effect of the policy might vary under different conditions, we divide our sample with respect to different economy levels, administrative levels and locations. Moreover, our research not only enriches the understanding of the impact of digital policy on city development.

This article provides substantial contributions to the extant literature in three respects. First, it provides comprehensive and meaningful data on the effect of new infrastructure policy on housing prices. Previous research has explored the impact of the BCP on economic expansion, the digital economy, and environmental pollution, but scant attention has been given to examining how the BCP influences housing costs [17,18]. We leverage the BCP to build up DID to evaluate its effect on house prices and explore its underlying mechanisms. Second, we aim to shed light on the spatial spillover effect of the policy on house prices by examining city collaboration in constructing new infrastructure. While prior studies have explored the impacts of certain policies on house prices, to the best of our knowledge, there is still limited research on the spatial spillover effects of the BCP on house prices [19,20].

Thirdly, we explore the relationship between house prices and how new infrastructure initiatives impact these. As we move into a new age of development, the monitoring of house prices is all the more crucial, especially in light of the increased significance of digital infrastructure. Through this paper, we seek to gain insight into how house prices may fluctuate under these new conditions.

2. Policy Background and Theoretical Hypothesis

2.1. Policy Background

With the growth of the digital economy and the rise in artificial intelligence, digital infrastructure has become increasingly prominent [21,22]. The BCP was an endeavor promulgated by the State Council in 2013, designed to increase both cities' digital infrastructure level and innovation capability [23,24]. The BCP was divided into three consecutive stages, with an associated selection of pilot cities proposed in 2014, 2015, and 2016, respectively [25,26]. The execution of this plan was based on a top-down approach, meaning that local governments, regardless of the current economic position, were not given the possibility to refuse its induction. Furthermore, the sample of cities chosen as pilots involved a range of locations of varying development levels, including in the east, middle, and west of China [27,28].

As for the character of BCP: the implementation of the BCP focuses on transforming a city's development approach and achieving sustainable urban development by vigorously bolstering digital infrastructure and thus fostering a digital economy [29,30]. Furthermore, the BCP places additional emphasis on the quality and efficiency of urban development. In contrast to other traditional policies, the BCP centers more around environmental responsibility and resolving challenges in the urbanization process [31,32].

2.2. Hypothesis

The implementation of the BCP brings a range of advantages. It enhances the infrastructure level of the city [33,34]. During the installation of digital infrastructure, related industries, such as construction, digital services, and some material industries, are likely to benefit immensely [35,36]. Furthermore, as digital infrastructure progresses, a greater number of digital businesses and innovative enterprises could be attracted, further augmenting house prices [37,38]. The BCP also conveys to the population the importance the state places on infrastructure and the new economy, potentially enticing more high-quality companies to a particular district [39,40]. The BCP could further alleviate numerous problems linked to rapid urbanization and industrialization. The BCP could ameliorate the income gap between metropolitan and rural areas, improve infrastructure, and ensure fair access to the benefits of development [41,42].

The prices of houses are greatly influenced by a series of systematic factors, most of which are financial and social factors. Financial ability can affect people's loan capability, leading them to rethink their decisions when buying a house. The quality of life for the buyer is determined to a certain degree by the level of infrastructure and facilities in the vicinity of the house [43,44]. Generally, the wealthier a city is, the greater its income and purchasing power, which will also lead to an increase in the cost of housing. Industry development can directly drive up housing prices in a city on one side, while also indirectly boosting prices by attracting more highly skilled talent [45,46]. The level of urbanization is another essential factor impacting house prices, with city house prices usually higher than those in rural areas. The income prospects for residents is another factor that affects their desire to buy a house [47,48]. Government policies, such as rent-to-own models and stricter eligibility criteria for homebuyers, can help regulate housing prices to some extent [49,50]. In China, the investment potential of housing has attracted numerous professional property speculators looking to buy low and sell high, thus pushing up prices and benefiting from them. The high number of speculators has also contributed to the rapid growth of property prices and the existence of a significant property bubble. Furthermore, due to the unequal and deficient education in China, the school district of a house has become a critical factor in raising house prices [51,52].

The impact of the BCP on housing prices may take place through the land urbanization effect, industrial optimization, and the upgrading effect and infrastructure effect [53,54]. First of all, the level of urbanization of a city is an important factor affecting the price of housing [55,56]. In the process of BCP construction, a large amount of land may be transferred from the original rural land to be used for urbanization or other purposes. This will increase the level of urbanization in the pilot city, which in turn will increase the price of housing in that city [57,58]. Second, the advanced and rationalized degree of urban industrial structure will also affect urban housing prices. With the implementation of the BCP, the level of digital infrastructure of the city will be improved, which in turn can lead to the optimization and upgrade of the city's industrial structure [59,60]. Thirdly, the higher the level of infrastructure in a city, the higher the utility of the city, which will increase the price of houses in the city [61].

3. Materials and Methods

3.1. Data Description

The BCP data for each batch in this article were derived from the policy pilot list published by the State Council, which details the pilot cities for each year. Data related to the remaining variables in this paper were sourced from the City Statistical Yearbook, where city-wide calibers are utilized, and all indicators involving money were deflated to remove the impact of inflation.

3.2. Model Setting

In considering the spillover effects of house prices, we adopted the spatial multi-period multiplicative difference method. This method combines the difference-in-difference (DID) method with spatial autoregression (SAR) models, the spatial error model (SEM), and the spatial Dubin model (SDM). The model settings are as follows.

$$\ln Hp_{it} = \boldsymbol{\lambda} W_N \ln Hp_{it} + \boldsymbol{\beta} Did_{it} + \boldsymbol{\gamma} X_{it} + \boldsymbol{\delta_i} + \boldsymbol{\mu_t} + \boldsymbol{\varepsilon_{it}} \tag{1}$$

$$\ln Hp_{it} = \boldsymbol{\delta} W_N Did_{it} + \boldsymbol{\beta} Did_{it} + \boldsymbol{\gamma} X_{it} + \boldsymbol{\delta_i} + \boldsymbol{\mu_t} + \boldsymbol{\varepsilon_{it}} \tag{2}$$

$$\ln Hp_{it} = \boldsymbol{\beta} Did_{it} + \boldsymbol{\gamma} X_{it} + \boldsymbol{\delta_i} + \boldsymbol{\mu_t} + \boldsymbol{\nu_{it}} \tag{3}$$

$$\boldsymbol{\nu_{it}} = \boldsymbol{\eta} W_N Did_{it} + \boldsymbol{\varepsilon_{it}} \tag{4}$$

Equation (1) is the SAR model, Equation (2) is the SEM model, and Equations (3) and (4) form the SDM model. $\ln Hp_{it}$ is the level of house price of city i in year t, and $\boldsymbol{\lambda} W_N \ln Hp_{it}$ is the spatial lag term of the dependent variable $\ln Hp_{it}$. $\boldsymbol{\beta} Did_{it}$ denotes the smart city dummy variable, W_N is the spatial weight matrix, and $\boldsymbol{\gamma} X_{it}$ is a set of control variables affecting house prices; $\boldsymbol{\delta_i}$ and $\boldsymbol{\mu_t}$ denote the city fixed effects and time fixed effects.

In this paper, the 2002 economic geography matrix is used as the spatial weight matrix. The specific construction method is as follows.

(1) Geographical distance matrix: Firstly, the actual distance between the two locations is calculated according to the latitude and longitude coordinates of the two prefecture-level cities, and the elements on the diagonal of the matrix are all taken as 0; the economic meaning is that the geographical distance of the same city is 0. Next, the non-diagonal elements are taken as the reciprocal of the geographical distance between the two locations. The matrix is then row-normalized to obtain the geographic matrix W1 required for this paper.

(2) Economic distance matrix: To construct the economic distance matrix, firstly, a representative economic indicator between two cities is selected to measure the economic closeness of the two locations, and GDP per capita is usually chosen in the relevant literature. The diagonal element of this matrix is 0, and the elements in other positions are the inverse of the absolute value of the difference between the GDP per capita of the two prefecture-level cities. Finally, row normalization is performed to obtain the economic distance matrix.

(3) Economic and social matrix: The economic matrix and the social matrix are multiplied before the two-row standardization, and then row standardization is carried out to obtain the economic and social matrix.

3.3. Selection of Variables

3.3.1. Independent Variable

The independent variable in this paper is house prices. We used the house price level of each city published by the Ministry of Housing and Urban Development, which is a more accurate record of the house price level of each city. The Ministry of Housing and Urban Development has stopped publishing house price data since 2014. We used a crawler approach to collect and collate the data from the work reports of various local governments. At the same time, to ensure the accuracy of the data, we used interpolation to fill in a small number of missing values and to shrink the tails of outliers.

3.3.2. Core Explanatory Variables

In this paper, the core explanatory variable is the BCP dummy variable. Specifically, if a city is on the list of smart city pilots promulgated by the Ministry of Housing and Construction and the Ministry of Science and Technology, then in the year of policy implementation and subsequent years, did_{it} = 1; otherwise, did_{it} = 0.

3.3.3. Mechanism Variables

The mechanism variables in this paper are infrastructure construction and industrial structure optimization and upgrade. In terms of infrastructure construction, we used an indicator construction approach to build an indicator system by selecting a series of indicators in the categories of environment, healthcare, and education. The entropy value method was also used to measure the infrastructure status of each city. In terms of urban industrial structure optimization and upgrade, this paper reflects the transformation and upgrading of the industrial structure of cities. We mainly used the structural hierarchy coefficient method for measurement; that is, the share of each of the three major industries in the total output value. The specific formulas are as follows:

$$ais1_{it} = \sum_{m=1}^{3} y_{i,m,t} \times m \tag{5}$$

$$ais2_{it} = \sum_{m=1}^{3} y_{i,m,t} \times lp_{i,m,t} \tag{6}$$

$$lp_{i,m,t} = Y_{i,m,t} / L_{i,m,t} \tag{7}$$

where $ais1_{it}$ denotes the level of sophistication of the urban industrial structure of city i in year t. This indicator reflects its 'volume'. $ais2_{it}$ denotes the share of industry m in city i's GDP in year t. $lp_{i,m,t}$ denotes the level of sophistication of the urban industrial structure of city i in year t. This indicator reflects its 'quality'. Medium denotes the added value of industry m in city i in year t.

3.3.4. Control Variables

Following the existing literature, the control variables in this paper are economic development, urban human capital, government intervention, transport infrastructure, cultural characteristics, population density, and proportion of the secondary industry.

3.4. Description of Data

We used data for 281 cities from 2008 to 2019; the description of each variable is given in Table 1.

3.5. Spatial Autocorrelation Testing

Spatial autocorrelation tests are the basis for constructing spatial econometric models. The house prices of each city involve spatial geographical characteristics; the house prices in one location will also impact those in another area. The piloting of the BCP will not only affect the city itself, but may also impact neighboring cities. We used Moran's spatial I index for spatial autocorrelation tests. Table 2 shows the results of global Moran's I for house prices, and the results are significant. This indicates that there are spatial spillovers from house price. Hence, the use of a spatial econometric model is necessary.

Table 1. Descriptive statistics for each variable.

Variable Name	Average	Standard Deviation	Min	Max	N
did	0.3058	0.2015	0.0000	1.0000	3372
hp	2.4460	7.1286	0.0464	64.0385	3372
industry	0.1760	0.1131	0.0374	0.4333	3372
land	48.1854	8.7020	28.3300	66.4100	3372
manufacture	1.2886	0.5895	0.4380	3.3208	3372
science	0.0133	0.0113	0.0016	0.0424	3372
finance	1.3300	1.2034	0.4697	9.6221	3372
fdi	0.0105	0.0133	0.0000	0.0613	3372
edu	0.0405	0.0736	0.0009	0.4277	3372
den	0.0401	0.0329	0.0011	0.1185	3372

Table 2. House price global Moran's I index.

Year	2009	2010	2011	2012	2013	2014
Moran I	0.064 ***	0.066 ***	0.052 ***	0.052 ***	0.051 ***	0.052 ***
Year	2015	2016	2017	2018	2019	
Moran I	2015	0.043 ***	0.038 ***	0.046 ***	0.050 ***	

Note: Moran's I bilateral test; *** indicates significance at the 1%, respectively.

4. Results

4.1. Baseline Regression Analysis

To effectively capture this feature, given the possibility of the inter-city correlation of house prices, we first used a spatial multi-period DID to analyze the impact of the BCP on house prices. For better comparison, we present the results of a two-way fixed effects (FE) model without the addition of a spatial lag term. As can be seen from Table 3, the coefficients of the core explanatory variables are all significantly positive at the 5% level, which indicates that the implementation of the BCP has a significant positive impact on urban house prices, i.e., it indicates that the promotion of the BCP can increase urban house prices. The robustness of the findings is illustrated by the fact that the direction of the coefficients in all models remained unchanged and the significance of the coefficients did not change significantly compared to the results without the addition of control variables. In the SAR model, the spatial lag term regression coefficient λ was significant both before and after the addition of control variables, which indicates that the house prices of neighboring prefecture-level cities have a significant impact on local house prices. In addition, the sign of the spatial lag term in the SAR model is positive, indicating that the neighboring prefecture-level BCP can drive up the house prices in the city. In the SEM model, the spatial error coefficients η are all significant at the 5% level, which indicates that other factors not considered in the model for neighboring prefecture-level cities can have an impact on local house prices. In the SDM model, the spatially lagged term regression coefficients δ are all significantly positive at the 5% level, indicating that the spatial effect remains significant. The spatial terms are significant at the 5% level in all three models, indicating the necessity of using spatial measures for the analysis.

4.2. Robustness Tests

4.2.1. Parallel Trend and Dynamic Effects Test

The spatial multi-period DID approach requires that house price levels in the experimental and control groups should have the same temporal trend before the BCP affects them. To this end, we used event analysis to conduct a parallel trend test. Based on the baseline model, the dummy variable 'current' was set and assigned to 1 in the year when the city was selected for the pilot list of the Broadband China Policy and 0 for all other years.

The dummy variable 'before1′ was set and assigned to 1 in the year before the selection of the pilot and 0 for all other years. The dummy variable 'after1′ was set and assigned to 1 in the year after the selection of the pilot and 0 for all other years. The remaining years were assigned a value of 0, and so on. Because of the long period before the policy pilot, the third year before the policy pilot was set as the benchmark group.

Table 3. Baseline regression results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	**lnhp FE**	**lnhp FE**	**lnhp SAR**	**lnhp SAR**	**lnhp SEM**	**lnhp SEM**	**lnhp SDM**	**lnhp SDM**
DID	0.275 **	0.528 ***	0.251 **	0.534 ***	0.234 **	0.542 ***	0.221 **	0.492 ***
	(2.33)	(3.61)	(2.22)	(3.70)	(2.11)	(3.79)	(2.03)	(3.39)
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Control FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Rho			0.186 ***	0.139 **			0.157 ***	0.117 **
			(3.43)	(2.52)			(3.10)	(2.29)
Lambda					0.179 ***	0.121 **		
					(3.29)	(2.15)		
Observations	3372	3372	3372	3372	3372	3372	3372	3372
R-squared	0.033	0.108	0.041	0.054	0.048	0.061	0.001	0.011
Number of city	281	281	281	281	281	281	281	281
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *** and ** indicate significance at the 1%, and 5% levels, respectively.

The results of the test are shown in Table 4. The results show that there is no significant difference in the DID coefficients before the implementation of the BCP, which indicates that without the policy shock, the development trend is consistent across all cities, thus indicating that the increase in house prices is indeed significantly influenced by the BCP and satisfies the parallel trend hypothesis.

Table 4. Parallel trend results.

	(1)	(2)	(3)
did	0.1110	0.1956	0.0880
	(0.5676)	(1.0675)	(0.5028)
rho	−0.4845	−1.8648	0.5587
	(−0.1238)	(−0.4939)	(0.1566)
_cons	−3.0603	−3.4299	−6.7852
	(−0.2920)	(−0.3454)	(−0.6825)

4.2.2. Placebo Test

Drawing on the ideas of the study by He and Ma (2021), we used two methods to construct a virtual treatment group and a virtual policy time for the placebo test.

First, we used the virtual treatment group. In this paper, the treatment group was swapped with the control group, and the re-regression results are shown in Table 5. It can be seen that after constructing the virtual treatment group, the driving effect of the construction of the national innovation city on entrepreneurial activity and the interaction between the two did not pass the significance test. Secondly, we used the dummy policy time.

Table 5. Placebo test.

	(1)	(2)	(3)
did	0.2640	0.5156	0.4356
	(0.2165)	(0.4346)	(0.3283)
rho	0.1514	0.1551	0.1256
	(1.1052)	(1.2605)	(0.9157)
_cons	−2.9614	−3.1950 *	−2.6348
	(−1.4312)	(−1.7116)	(−1.2489)

4.2.3. Excluding Other Policy Interference

During the period under examination, the national entrepreneurial city pilot policy introduced in 2010 and the smart city construction carried out after 2012 are relevant to this study. The above policies can enhance the optimization of the city's industrial structure, improving the city's infrastructure and thus the city's house prices. In light of this, in the baseline regression model, we added dummy variables for the year of implementation of the national entrepreneurial city policy and the smart city pilot policy in turn to control for the impact of the two policies on the test results.

The regression results are shown in Table 6. It can be seen that after controlling for the two types of policies mentioned above, the effect of the BCP on house prices is still significantly positive, which indicates that the BCP has a significant pulling effect on house prices, and that the effect is brought about by the policy itself rather than because of the influence of other similar policies.

Table 6. Excluding other policy interference.

	(1)	(2)	(3)
water1	0.4061 **	0.1213 *	0.1256 *
	(1.9954)	(1.8152)	(1.7323)
_cons	−4.1901 *	−2.8734	−3.2898
	(−1.9492)	(−1.5569)	(−1.4766)

Note: ** and * indicate significance at the 5% and 10% levels, respectively.

5. Mechanism Analysis

The previous section demonstrated that the implementation of the BCP can raise house prices, and this section further explains through which channels the policy affects house prices. On the basis of the literature review, we argue that land urbanization and infrastructure and industrial optimization and upgrade are among the potential mechanisms, i.e., the promotion of the BCP can improve urban infrastructure, promote industrial structure optimization and upgrade, and thus increase house prices. We used SAR, SEM, and SDM models to test the mechanism and explore the potential spatial spillover effects, with the following model settings.

$$\ln hp_{it} = \lambda W_N \ln hp_{it} + \beta \ln did_{it} + \phi mechanism_{it} + \gamma X_{it} + \boldsymbol{\delta_i} + \boldsymbol{\mu_t} + \boldsymbol{\varepsilon_{it}} \quad (8)$$

5.1. Land Urbanization Effect

We examined the impact of the BCP on house prices through the land urbanization effect. The results are shown in Table 7, where columns (1)–(2) correspond to the SAR model, columns (3)–(4) to the SEM model, and columns (5)–(6) to the SADM model. The results show that the BCP can significantly improve house prices. Moreover, the BCP can promote land urbanization, indicating that the mechanism holds. The reasons might be as follows: for a pilot city, it is necessary to promote land urbanization so that the city can implement the policy more effectively. Moreover, the spillover effect is positive, indicating that the land urbanization of one city will have a significant effect on neighboring cities.

Table 7. Land urbanization mechanism.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	**lnhp** **FE**	**lnhp** **FE**	**lnhp** **SAR**	**lnhp** **SAR**	**lnhp** **SEM**	**lnhp** **SEM**	**lnhp** **SDM**	**lnhp** **SDM**
DID	0.196 ***	0.151 ***	0.199 ***	0.130 **	0.138 ***	0.115 **	0.199 ***	0.130 **
	(3.58)	(2.71)	(3.50)	(2.29)	(2.64)	(2.22)	(3.50)	(2.29)
Land	0.014	0.019 *	0.017	0.021 *	0.019 *	0.020 *	0.026 **	0.031 ***
	(1.33)	(1.78)	(1.62)	(1.95)	(1.81)	(1.88)	(2.41)	(2.70)
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Control FE	NO	YES	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Rho			0.186 ***	0.139 **			0.157 ***	0.117 **
			(3.43)	(2.52)			(3.10)	(2.29)
Lambda					0.179 ***	0.121 **		
					(3.29)	(2.15)		
Observations	3372	3372	3372	3372	3372	3372	3372	3372
R-squared	0.036	0.112	0.043	0.047	0.051	0.056	0.006	0.007
Number of city	281	281	281	281	281	281	281	281
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

5.2. Infrastructure Improvement Effect

We examined the impact of the BCP on house prices through infrastructure improvements. The results are shown in Table 8, where columns (1)–(2) correspond to the SAR model, columns (3)–(4) to the SEM model, and columns (5)–(6) to the SADM model. The coefficient for the BCP remains positive and significant, indicating that the conclusion of the benchmark regression is still robust, i.e., the BCP can increase house prices. At the same time, the coefficient of the cross-product term is positive, indicating that the implementation of the BCP can improve urban infrastructure and thus increase urban house prices. The coefficients of all the spatial terms are significant, which indicates that there is a significant spatial spillover of the impact of the BCP on infrastructure development. This is consistent with the reality: the improvement of a city's digital infrastructure requires not only the city's investment; in addition, the construction involved requires the collaboration of neighboring cities. Furthermore, when the price of housing in a city is too high, this can cause some of the population to move to other cities, thus creating significant spatial spillovers.

5.3. Industry Optimization and upgrade Effect

We then examined the impact of the BCP on house prices through the optimization and upgrade of the industrial structure and hence house prices. The results are shown in Table 9, where columns (1)–(2) correspond to the SAR model, columns (3)–(4) to the SEM model, and columns (5)–(6) to the SADM model. The results show that the BCP can significantly improve house prices. Meanwhile, the coefficient of the cross-product term is positive, indicating that the implementation of the BCP can promote the optimization and upgrade of industrial structure, which, in turn, can increase urban house prices. The coefficients of all the spatial terms are significant, which indicates that there is a significant spatial spillover of the impact of the BCP on the optimization and upgrade of industrial structure. One possible reason for this is that the BCP brings in new digital industries, while they can also promote the optimization and upgrade of traditional industries. Moreover, due to the strong correlation between urban industries, the optimization and upgrade of the industrial structure in one city can also lead to the development of industries in other cities. In addition, the development of inter-city industries will in turn affect house prices.

Table 8. Infrastructure improvement mechanism.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	**lnhp FE**	**lnhp FE**	**lnhp SAR**	**lnhp SAR**	**lnhp SEM**	**lnhp SEM**	**lnhp SDM**	**lnhp SDM**
DID	0.512 ***	0.789 ***	0.153 ***	0.020 *	0.026 **	0.031 ***	0.013 ***	0.019 *
	(0.016)	(0.021)	(0.016)	(1.88)	(2.41)	(2.70)	(1.74)	(1.81)
Land	0.174 ***	0.019 *	0.117 **	0.021 *	0.019 *	0.020 *	0.026 **	0.031 ***
	(1.99)	(1.78)	(2.29)	(1.95)	(1.81)	(1.88)	(2.41)	(2.70)
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Control FE	NO	YES	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Rho			0.186 ***	0.139 **			0.157 ***	0.117 **
			(3.43)	(2.52)			(3.10)	(2.29)
Lambda					0.179 ***	0.121 **		
					(3.29)	(2.15)		
Observations	3372	3372	3372	3372	3372	3372	3372	3372
R-squared	0.036	0.112	0.043	0.047	0.051	0.056	0.006	0.007
Number of city	281	281	281	281	281	281	281	281
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 9. Industry optimization mechanism.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	**lnhp FE**	**lnhp FE**	**lnhp SAR**	**lnhp SAR**	**lnhp SEM**	**lnhp SEM**	**lnhp SDM**	**lnhp SDM**
DID	0.084 ***	0.085 ***	0.095 ***	0.081 ***	0.024 ***	0.024 ***	0.014 **	0.024 ***
	(3.12)	(2.29)	(1.95)	(1.81)	(1.88)	(3.29)	(3.61)	(2.22)
Land	0.121 **	0.279 ***	0.006 **	0.006 **	0.540 ***	0.680 ***	0.025 ***	0.021 ***
	(0.57)	(1.05)	(0.53)	(0.53)	(2.34)	(2.16)	(1.87)	(1.57)
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Control FE	NO	YES	NO	YES	NO	YES	NO	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Rho			0.186 ***	0.139 **			0.157 ***	0.117 **
			(3.43)	(2.52)			(3.10)	(2.29)
Lambda					0.179 ***	0.121 **		
					(3.29)	(2.15)		
Observations	3372	3372	3372	3372	3372	3372	3372	3372
R-squared	0.036	0.112	0.043	0.047	0.051	0.056	0.006	0.007
Number of city	281	281	281	281	281	281	281	281
City FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: *** and ** indicate significance at the 1% and 5% levels, respectively.

6. Heterogeneity Analysis

6.1. Heterogeneity in the Level of a City's Economy

The level of economic development of a city represents, to a certain extent, the strength of its policy implementation. The higher the level of economic development of a city, the more human and material resources it can provide for policy implementation. The level of economic development of a city also affects the price of housing in the city. Therefore, we used the level of GDP of a city as a criterion to classify cities into three categories: cities with high, medium, and low economic development. The specific results are as follows. For cities with medium and low economic development, the drive of the BCP has a stronger effect on the city's house prices. One possible explanation for this is that the marginal benefit of the Broadband China construction is more significant for low and medium levels of economic development. In addition, for cities with a high degree of economic development, government control over house prices is usually greater, so instead the policy drive on house prices is stronger for cities with a medium or low degree of economic development.

6.2. Heterogeneity of Administrative Levels of Cities

Cities at different administrative levels differ markedly in terms of resource endowment, industrial status, infrastructure development, and level of economic development. Municipalities under direct jurisdiction, provincial capitals, and sub-provincial cities are stronger than other types of cities in terms of economic scale and concentration of entrepreneurial factors. In this paper, the city rank dummy variable (Rank) was introduced, and municipalities directly under the central government, provincial capitals, and sub-provincial cities were defined as central cities, and the Rank dummy variable (Rank) was assigned a value of 1, while other cities were assigned a value of 0. Furthermore, the interaction terms city rank dummy variable, policy dummy variable, and entrepreneurial activity variable were introduced into the base model for heterogeneity analysis.

The regression results are shown in Table 10, where the effect of the BCP on house prices is significantly negative at the 1% statistical level, indicating that the pulling effect of the BCP on house prices is more significant in cities with a lower administrative rank. The possible explanation is that for central cities, where house prices and the overall state of infrastructure development are more mature, the marginal effect of the pilot policy is smaller. In contrast, the innovative development of non-central cities is in the stage of development and catching up, with strong endogenous economic dynamics and sufficient development momentum, and the potential of the BCP has been fully utilized.

Table 10. Heterogeneity analysis.

	Economy High	Economy Middle	Economy Low	Administrative High	Administrative Middle	Administrative Low	Eastern Region	Central Region	Western Region
did	3.6910 **	2.6198 *	0.4061 **	4.2723 **	3.3169 **	0.3551 *	3.5851 *	5.4974 **	4.8785 *
	(2.0712)	(1.7283)	(1.9954)	(2.4334)	(2.1166)	(1.9106)	(1.8244)	(2.1536)	(1.8857)
rho	0.1151	0.1213 *	0.1256 *	0.4610 **	1.5251	0.3551 *	0.0022	0.2182	0.8251 ***
	(1.5515)	(1.8152)	(1.7323)	(2.1415)	(0.4169)	(1.9106)	(0.0060)	(0.7844)	(2.9919)
_cons	−4.1901 *	−2.8734	−3.2898	−2.1854	−0.1505	−0.5708	0.7687	−2.2825 **	−2.8020 ***
	(−1.9492)	(−1.5569)	(−1.4766)	(−1.2258)	(−0.1011)	(−0.3239)	(0.4128)	(−2.1157)	(−2.7986)

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

6.3. Heterogeneity of Urban Location Characteristics

In comparison with central and western regions, cities in the eastern region are the "pioneers" and "participants" of many pilot policies and have a natural advantage in terms of participation and implementation of policies. For this reason, we divided the sample into three regions, east, west and central, and performed group regression analysis.

The results of the regressions are shown in Table 10. For cities in the east, central and west regions, the BCP significantly increased urban house prices, suggesting that the policy itself did not differ significantly in terms of locational characteristics. Possible explanations for this are as follows. In recent years, the state has formulated and implemented the Western Development Strategy and the Central Region Rising Plan to give more preferential help policies to the central and western regions, which have achieved certain results and to a certain extent compensated for the locational disadvantages of the central and western cities, narrowing the differences in the effects of the policy pilot.

7. Discussion and Conclusions

7.1. Research Conclusions

The BCP is an important institutional exploration in the process of developing China's digital economy and improving infrastructure construction. How to effectively promote the Broadband China Policy so that it can better serve the urbanization process, empower the real economy, and promote high-quality economic development has become an important issue of concern for the government and society, as well as a hot spot for academic research [1,2]. Meanwhile, housing prices are an important factor affecting China's economy. In this paper, we empirically examined the effect of the BCP on urban house prices and the mechanism of its effect based on panel data in respect of Chinese prefecture-level cities, from the perspective of house prices, by adopting a spatial multi-period DID approach in the context of national innovation city construction. Studying the BCP can also provide valuable insights for policymakers in other countries as they formulate their own broadband policies [3,4]. Through a comparative analysis, we demonstrated that aspects of China's policy framework can be adapted and implemented in different national contexts to foster more equitable, efficient, and sustainable broadband infrastructure development. By embracing the lessons learned from China's experience, other countries can better position themselves to capitalize on the opportunities presented by the digital age. The conclusions of our study are as follows:

First, the promotion of the BCP can increase urban house prices, accompanied by a positive spatial spillover effect. The findings hold after robustness tests such as parallel trend tests, placebo tests, and controlling for shocks from other similar policies.

Secondly, the improvement of infrastructure and the optimization and upgrade of industrial structure are important mechanisms for the BCP to raise house prices, and BCP can promote the improvement of infrastructure and optimization of industrial structure in each city, which in turn raises urban house prices.

Thirdly, there is significant heterogeneity in the impact of the BCP on house prices. Policies have a weaker effect on raising house prices in municipalities directly under the central government, provincial capitals, and sub-provincial cities than in ordinary cities. The pull of policies on house prices is stronger in cities with medium and low levels of economic development. We also found that the BCP had a pulling effect on house prices in both the east and west regions.

Not only does our study examine how BCP improves house prices. We also provide valuable insights for other countries all over the world concerning the digital policy and how to achieve better and more sustainable development.

7.2. Policy Implications

The BCP offers valuable insights and lessons that can be helpful for other countries. Firstly, China has made significant strides in developing and deploying broadband infrastructure, becoming a global leader in the digital economy. With its expansive network and the world's largest internet user base, China serves as an important case study for understanding the factors that contribute to successful broadband policy implementation [5,6]. Secondly, China's broadband policy has been implemented at an unprecedented scale and speed. This rapid deployment provides a unique opportunity to analyze how various challenges, such as last-mile connectivity and rural–urban disparities, can be effectively addressed. Studying China's experiences can help other countries formulate their own strategies to overcome similar obstacles [7]. Thirdly, the Chinese government has employed innovative policy instruments to promote broadband access and affordability. Examples include public–private partnerships, targeted subsidies, and regulatory frameworks that foster competition and innovation [8]. These policy tools can serve as valuable references for other countries seeking to create or refine their broadband policies. Fourthly, while China's broadband policy is tailored to its specific context, many aspects of its approach can be adapted and implemented in other countries. By examining China's successes and failures, policymakers worldwide can identify the best practices and strategies that are applicable to their own national contexts, fostering more equitable, efficient, and sustainable broadband infrastructure development [9,10]. The specific policy implications are as follows:

1. Investigate the multifaceted trajectory of Broadband China development and enhance the effectiveness of pilot policy execution. Cities must persist in fortifying the institutional framework encompassing digital infrastructure, industrial assistance, and talent

acquisition to further refine the comprehensive urban milieu during the implementation of the Broadband China initiative.

2. Intensify housing price regulation and suppress speculative activities. Potential speculators may exploit the policy's progress to engage in property market manipulation. Disproportionate surges in housing prices could hinder a city's holistic growth and efficient land utilization. As urbanization advances, monitoring and controlling housing prices is imperative to fostering high-quality urban evolution.
3. Advocate for locally tailored urbanization and emphasize synchronized regional growth. Considering the industrial structure impact, infrastructural ramifications, and spatial spillover resulting from the Broadband China initiative, a dynamic and context-specific approach should be employed while promoting the policy to avoid a blanket, one-size-fits-all strategy.
4. Direct the redistribution and allocation of resource factors to invigorate urban innovation and entrepreneurship. Primarily, a more lenient talent recruitment policy should be established to attract a greater influx of innovative resources and skilled individuals, facilitating the agglomeration of a high-caliber workforce, optimizing the regional talent resource distribution, and ultimately stimulating entrepreneurial vigor.

7.3. Limitations and Further Planning

Data: The analysis was based on cross-sectional data, which limited our ability to establish causal relationships. Longitudinal data could provide more robust evidence for the claims made in this paper, and future research should consider employing such data when available. In future research, we plan to update our database and use more precise data to research similar topics.

Word count constraints: Due to the limited word count allowed for this paper, we were unable to delve into more insightful discussions and explore additional dimensions of the topic. In future research, we plan to expand on these aspects and provide a more comprehensive analysis, further enriching our understanding of the subject matter.

Author Contributions: Writing—original draft preparation, P.W.; Writing—review and editing, Y.H., K.Z. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Lopez, E.; Bocco, G.; Mendoza, M.; Velazquez, A.; Aguirre-Rivera, J.R. Peasant emigration and land-use change at the watershed level: A GIS-based approach in Central Mexico. *Agric. Syst.* **2006**, *90*, 62–78. [CrossRef]
2. Jiang, L.; Zhang, Y. Modeling Urban Expansion and Agricultural Land Conversion in Henan Province, China: An Integration of Land Use and Socioeconomic Data. *Sustainability* **2016**, *8*, 920. [CrossRef]
3. Fan, X.; Zhao, L.; He, D. Land Use Changes and its Driving Factors in a Coastal Zone. *Pol. J. Environ. Stud.* **2020**, *29*, 1143–1150. [CrossRef] [PubMed]
4. Peng, Y.; Yang, F.; Zhu, L.; Li, R.; Wu, C.; Chen, D. Comparative Analysis of the Factors Influencing Land Use Change for Emerging Industry and Traditional Industry: A Case Study of Shenzhen City, China. *Land* **2021**, *10*, 575. [CrossRef]
5. Lubowski, R.N.; Plantinga, A.J.; Stavins, R.N. What Drives Land-Use Change in the United States? A National Analysis of Landowner Decisions. *Land Econ.* **2008**, *84*, 529–550. [CrossRef]
6. Song, X. Discussion on land use transition research framework. *Acta Geogr. Sin.* **2017**, *72*, 471–487. (In Chinese)
7. Peng, J.; Zhao, M.; Guo, X.; Pan, Y.; Liu, Y. Spatial-temporal dynamics and associated driving forces of urban ecological land: A case study in Shenzhen City, China. *Habitat Int.* **2017**, *60*, 81–90. [CrossRef]
8. Liu, Y.; Huang, X.; Yang, H.; Zhong, T. Environmental effects of land-use/cover change caused by urbanization and policies in Southwest China Karst area—A case study of Guiyang. *Habitat Int.* **2014**, *44*, 339–348. [CrossRef]
9. Zhang, L.; Wang, S.X.; Yu, L. Is social capital eroded by the state-led urbanization in China? A case study on indigenous villagers in the urban fringe of Beijing. *China Econ. Rev.* **2015**, *35*, 232–246. [CrossRef]

10. Zhao, P. Too complex to be managed? New trends in peri-urbanisation and its planning in Beijing. *Cities* **2013**, *30*, 68–76. [CrossRef]
11. Zhao, P.; Wan, J. Land use and travel burden of residents in urban fringe and rural areas: An evaluation of urban-rural integration initiatives in Beijing. *Land Use Policy* **2021**, *103*, 105309. [CrossRef]
12. Liu, R.; Tai-chee, W.; Liu, S. The informal housing market in Beijing's rural areas: Its formation and operating mechanism amidst the process of urbanization. *Geogr. Res.* **2010**, *29*, 1355–1358.
13. Sun, L.; Fertner, C.; Jorgensen, G. Beijing's First Green Belt—A 50-Year Long Chinese Planning Story. *Land* **2021**, *10*, 969. [CrossRef]
14. Liu, D.; Zheng, X.; Wang, H.; Zhang, C.; Li, J.; Lv, Y. Interoperable scenario simulation of land-use policy for Beijing-Tianjin-Hebei region, China. *Land Use Policy* **2018**, *75*, 155–165. [CrossRef]
15. Ghent, C. Mitigating the effects of transport infrastructure development on ecosystems. *Consilience* **2018**, *19*, 58–68.
16. Erena, M.G.; Yesus, T.G. Mapping potential wildlife habitats around Haro Abba Diko controlled hunting area, Western Ethiopia. *Ecol. Evol.* **2021**, *11*, 11282–11294. [CrossRef]
17. Taylor, A.C.; Walker, F.M.; Goldingay, R.L.; Ball, T.; Van Der Ree, R. Degree of landscape fragmentation influences genetic isolation among populations of a Gliding mammal. *PLoS ONE* **2011**, *6*, e26651. [CrossRef]
18. Brashares, J.S.; Arcese, P.; Sam, M. Human demography and reserve size predict wildlife extinction in West Africa. *Biol. Sci.* **2001**, *268*, 2473–2478. [CrossRef]
19. Graham, M.D.; Notter, B.; Adams, W.M.; Lee, P.C.; Ochieng, T.N. Patterns of crop-raiding by elephants, *Loxodonta africana*, in Laikipia, Kenya, and the management of human–elephant conflict. *Syst. Biodivers.* **2010**, *8*, 435–445. [CrossRef]
20. Wind, Y.; Saaty, T.L. Marketing applications of the analytic hierarchy process. *Manag. Sci.* **1980**, *26*, 641–658. [CrossRef]
21. Molina-Prieto, L.F.; Rubio Fernández, D. Elementos de urbanismo azul: Lagos naturales y artificiales. *Rev. Investig.* **2016**, *9*, 22–44. [CrossRef]
22. Poó Rubio, A. Origen es Destino. La Ciudad de México. De la Ciudad Lacustre a la Metrópoli de los Desastres Hídricos. In Proceedings of the XI Encuentro Iberoamericano de Mujeres Ingenieras, Arquitectas y Agrimensoras, Santo Domingo, Dominican Republic, 5–10 March 2012; p. 36.
23. Darrah, S.E.; Shennan-Farpón, Y.; Loh, J.; Davidson, N.C.; Finlayson, C.M.; Gardner, R.C.; Walpole, M.J. Improvements to the Wetland Extent Trends (WET) Index as a Tool for Monitoring Natural and Human-Made Wetlands. *Ecol. Indic.* **2019**, *99*, 294–298. [CrossRef]
24. Forman, R.T.T. *Urban Ecology: Science of Cities*; Cambridge University Press: New York, NY, USA, 2014.
25. Almazán-Núñez, R.C.; Hinterholzer-Rodríguez, A. Dinámica temporal de la avifauna en un parque urbano de la ciudad de Puebla, México. *Huit. Rev. Mex. Ornitol.* **2010**, *11*, 26–34. [CrossRef]
26. Gledhill, D.G.; James, P. Rethinking Urban Blue Spaces from a Landscape Perspective: Species, Scale and the Human Element. In *Ecological Perspectives of Urban Green and Open Spaces*; Breuste, J., Ed.; Salzburger Geographische Arbeiten: Salzburg, Austria, 2008; Volume 42, pp. 151–164.
27. Haase, D. Reflections about Blue Ecosystem Services in Cities. Sustain. *Water Qual. Ecol.* **2015**, *5*, 77–83.
28. Fang, S.; Li, H.; Sun, Q.; Chen, L. Biomass production and carbon stocks in poplar-crop intercropping systems: A case study in northwestern Jiangsu, China. *Agrofor. Syst.* **2010**, *79*, 213–222. [CrossRef]
29. Hairiah, K.; van Noordwijk, M.; Sari, R.R.; Saputra, D.D.; Suprayogo, D.; Kurniawan, S.; Prayogo, C.; Gusli, S. Soil carbon stocks in Indonesian (agro) forest transitions: Compaction conceals lower carbon concentrations in standard accounting. *Agric. Ecosyst. Environ.* **2020**, *294*, 106879. [CrossRef]
30. Lim, S.-S.; Baah-Acheamfour, M.; Choi, W.-J.; Arshad, M.A.; Fatemi, F.; Banerjee, S.; Carlyle, C.N.; Bork, E.W.; Park, H.-J.; Chang, S.X. Soil organic carbon stocks in three Canadian agroforestry systems: From surface organic to deeper mineral soils. *For. Ecol. Manag.* **2018**, *417*, 103–109. [CrossRef]
31. Whalen, J.K.; Willms, W.D.; Dormaar, J.F. Soil carbon, nitrogen and phosphorus in modified rangeland communities. *Rangel. Ecol. Manag. J. Range Manag. Arch.* **2003**, *56*, 665–672.
32. Neto, V.; Ainuddin, N.A.; Wong, M.; Ting, H. Contributions of forest biomass and organic matter to above-and belowground carbon contents at Ayer Hitam Forest Reserve, Malaysia. *J. Trop. For. Sci.* **2012**, *24*, 217–230.
33. Bruun, H.H.; Moen, J.; Virtanen, R.; Grytnes, J.A.; Oksanen, L.; Angerbjörn, A. Effects of altitude and topography on species richness of vascular plants, bryophytes and lichens in alpine communities. *J. Veg. Sci.* **2006**, *17*, 37–46. [CrossRef]
34. Chatterjee, N.; Nair, P.R.; Chakraborty, S.; Nair, V.D. Changes in soil carbon stocks across the Forest-Agroforest-Agriculture/Pasture continuum in various agroecological regions: A meta-analysis. *Agric. Ecosyst. Environ.* **2018**, *266*, 55–67. [CrossRef]
35. Aalde, H.; Gonzalez, P.; Gytarsky, M.; Krug, T.; Kurz, W.A.; Lasco, R.D.; Martino, D.L.; McConkey, B.G.; Ogle, S.; Paustian, K. Generic methodologies applicable to multiple land-use categories. In *IPCC Guidelines for National Greenhouse Gas Inventories*; Institute for Global Environmental Strategies (IGES) for the IPCC: Kanagawa, Japan, 2006; Volume 4, pp. 1–59.
36. Li, Q. The Research on Carbon Storage of Populous-Crop Intercropping System in the Huanghuaihai Plain. Master's Thesis, Henan Agricultural University, Zhengzhou, Henan, 2008.
37. Ziegler, A.D.; Phelps, J.; Yuen, J.Q.; Webb, E.L.; Lawrence, D.; Fox, J.M.; Bruun, T.B.; Leisz, S.J.; Ryan, C.M.; Dressler, W. Carbon outcomes of major land-cover transitions in SE Asia: Great uncertainties and REDD+ policy implications. *Glob. Chang. Biol.* **2012**, *18*, 3087–3099. [CrossRef] [PubMed]

38. Verma, A.; Kaushal, R.; Alam, N.; Mehta, H.; Chaturvedi, O.; Mandal, D.; Tomar, J.; Rathore, A.; Singh, C. Predictive models for biomass and carbon stocks estimation in Grewia optiva on degraded lands in western Himalaya. *Agrofor. Syst.* **2014**, *88*, 895–905. [CrossRef]
39. Winjum, J.K.; Dixon, R.K.; Schroeder, P.E. Estimating the global potential of forest and agroforest management practices to sequester carbon. *Water Air Soil Pollut.* **1992**, *64*, 213–227. [CrossRef]
40. Yadav, R.; Gupta, B.; Bhutia, P.; Bisht, J. Socioeconomics and sources of livelihood security in Central Himalaya, India: A case study. *Int. J. Sustain. Dev. World Ecol.* **2017**, *24*, 545–553. [CrossRef]
41. Choudhary, B.; Saxena, K. An assessment of soil organic carbon, total nitrogen and tree biomass in land uses of a village landscape of central Himalaya, India. *Glob. J. Environ. Res.* **2015**, *9*, 27–42.
42. Possu, W.B.; Brandle, J.R.; Domke, G.M.; Schoeneberger, M.; Blankenship, E. Estimating carbon storage in windbreak trees on US agricultural lands. *Agrofor. Syst.* **2016**, *90*, 889–904. [CrossRef]
43. Elmqvist, T.; Setälä, H.; Handel, S.; van der Ploeg, S.; Aronson, J.; Blignaut, J.; Gómez-Baggethun, E.; Nowak, D.; Kronenberg, J.; de Groot, R. Benefits of Restoring Ecosystem Services in Urban Areas. *Curr. Opin. Environ. Sustain.* **2015**, *14*, 101–108. [CrossRef]
44. Batres González, J.J.; Ortells Chabrera, V.; Lorenzo Palomera, J. Diseño y ordenamiento de la dinámica urbana, medio ineludible en la preservación sustentable de los de los recursos hídricos naturales urbanos en México, caso lagunas urbanas del sur de Tamaulipas (Tampico-Madero-Altamira). *Quivera* **2010**, *12*, 1–13.
45. Ricárdez de la Cruz, G.; López Ocaña, G.; Bautista Margulis, R.G.; Torres Balcázar, C.A. Laguna de las Ilusiones y su entorno urbano: Aguas residuales, urbanas y sedimentos. *Kuxulkab* **2016**, *22*, 27–38. [CrossRef]
46. Oliva Martínez, M.G.; Rodríguez Rocha, A.; Lugo Vázquez, A.; Sánchez Rodríguez, M.d.R. Composición y Dinámica Del Fitoplancton En Un Lago Urbano Hipertrófico. *Hidrobiológica* **2008**, *18*, 1–13.
47. Pineda-Mendoza, R.; Martínez-Jerónimo, F.; Garduño-Solórzano, G.; Olvera-Ramírez, R. Caracterización morfológica y molecular de cianobacterias filamentosas aisladas de florecimientos de tres lagos urbanos eutróficos de la Ciudad de México. *Polibotánica* **2011**, *31*, 31–50.
48. Rodríguez Rodríguez, E.; Ruíz Ruíz, M.; Vertíz Pérez, L.A. Procesos de Eutroficación en Siete Lagunas Urbanas de Villlahermosa, Tabasco, México. In Proceedings of the Congreso Regional de AIDIS para Norteamérica y El Caribe, San Juan, Puerto Rico, 8–12 June 1997; p. 10.
49. Haeffner, M.; Jackson-Smith, D.; Buchert, M.; Risley, J. Accessing Blue Spaces: Social and Geographic Factors Structuring Familiarity with, Use of, and Appreciation of Urban Waterways. *Landsc. Urban Plan.* **2017**, *167*, 136–146. [CrossRef]
50. Barbose, G.; Darghouth, N.R.; Weaver, S.; Feldman, D.; Margolis, R.; Wiser, R. Tracking US Photovoltaic System Prices 1998–2012: A Rapidly Changing Market. *Prog. Photovolt.* **2014**, *23*, 692. [CrossRef]
51. Bergquist, A.-K.; Söderholm, K. Transition to Greener Pulp: Regulation, Industry Responses, and Path Dependency. *Bus. Hist.* **2015**, *57*, 862. [CrossRef]
52. Birch, K.; Calvert, K. Rethinking "Drop-in" Biofuels: On the Political Materialities of Bioenergy. *Sci. Technol. Stud.* **2015**, *28*, 52–72. [CrossRef]
53. Brudermann, T.; Sangkakool, T. Green Roofs in Temperate Climate Cities in Europe—An Analysis of Key Decision Factors. *Urban For. Urban Green.* **2017**, *21*, 224–234. [CrossRef]
54. Bryson, D.; Atwal, G.; Chaudhuri, A.; Dave, K. Antecedents of Intention to Use Green Banking Services in India. *Strateg. Chang.* **2016**, *25*, 551–567. [CrossRef]
55. Cavdar, S.C.; Aydin, A.D. An Empirical Analysis about Technological Development and Innovation Indicators (World Conference on Technology, Innovation and Entrepreneurship. *Procedia-Soc. Behav. Sci.* **2015**, *195*, 1486–1495. [CrossRef]
56. Chiu, C.H. Regulatory Regimes and the Environmental Implications of Sustainability-Based Governance of Extralegal Buildings: Comparing the Taichung and Kaohsiung Policies. *J. Archit. Plan.* **2017**, *18*, 113–128.
57. Cohen, S. What Is Stopping the Renewable Energy Transformation and What Can the US Government Do? *Soc. Res.* **2015**, *82*, 689–710. [CrossRef]
58. Cooper, J.R. A Multidimensional Approach to the Adoption of Innovation. *Manag. Decis.* **1998**, *36*, 493–502. [CrossRef]
59. Cowley, R.; Joss, S.; Dayot, Y. The Smart City and Its Publics: Insights from across Six UK Cities. *Urban Res. Pract.* **2017**, *11*, 53. [CrossRef]
60. Dal Borgo, M.; Goodridge, P.; Haskel, J.; Pesole, A. Productivity and Growth in UK Industries: An Intangible Investment Approach. *Oxf. Bull. Econ. Stat.* **2013**, *75*, 806–834. [CrossRef]
61. de Boer, J.; Zuidema, C.; van Hoorn, A.; de Roo, G. The Adaptation of Dutch Energy Policy to Emerging Area-Based Energy Practices. *Energy Policy* **2018**, *117*, 142–150. [CrossRef]