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*Article*

# Approaching Integrated Urban-Rural Development in China: The Changing Institutional Roles

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**Abstract:** This paper examines the impact of institutional change on the implementation of China's integrated urban-rural development strategy in the period 1981–2010. The findings indicate that governmental investment in rural areas and the development of non-agricultural industries in the countryside in fact contributed positively to the integration of urban-rural development in the period studied. The household registration system, however, was found to have acted as an obstacle to integration due to its exclusion of rural immigrants from welfare benefits. The reform of the agricultural production price system was not found to have exerted an impact, since low agricultural incomes compelled peasants to undertake non-agricultural work in towns and cities. A robustness check performed as part of the study proved the reliability of these findings.

**Keywords:** urbanization; dualistic structure; urban-rural integration; institutional roles; China

## 1. Introduction

Since 1978, China has experienced over three decades of rapid economic growth, with annual growth rates of over 9%. However, despite this "economic miracle", the country has also witnessed ever-enlarging urban-rural inequality; this inequality is evident across a range of indicators such as income, education, medical care, provision of infrastructure, and social insurance [1]. Taking income as an example, we

note that whilst per capita urban household income increased from ¥343 in 1978 to ¥26,955 in 2013, per capita rural household income only increased from ¥134 to ¥8896 in the same period [2]. Many scholars searching for the culprit behind increasing urban-rural inequality have emphasized factors such as a dualistic urban-rural structure [3]; urban-biased development strategies [4,5]; market forces [6]; and taxation [7]. Urban-biased policies and related measures like the household registration, or *hukou*, system, as well as state-set procurement prices for trade in agricultural products—both of which were initially formulated on the basis of the typical socioeconomic conditions in China after 1949—have indeed purposely diverted resources from rural to urban areas, inducing greater urban-rural inequalities in China [8].

Global experience from leading developed countries demonstrates that processes of urban densification have been accompanied by a gradual convergence in living standards between different types of areas, leading to the eventual disappearance of urban-rural income disparities. This convergence has typically occurred through the mechanism of rural-urban migration, which has reduced both the number of surplus laborers in agricultural areas, as well as competition in rural labor markets [9]. Coming back to the case of China, the most notable feature of the country's resource flows is in fact the massive spatial transfer of land development rights between urban and rural areas, a development pattern that is not evident in developed countries [10]. Through this process, a flourishing Chinese urban economy was achieved on the basis of the exploitation of agriculture, villages, and of peasants [11]. Following Lewis (1954), the migration of surplus rural laborers from agricultural to non-agricultural sectors should have brought about the subsequent elimination of the urban-rural dichotomy [12]. This was not, however, the case. Institutions dating back to China's period of central planning, over three decades ago, instead continue to detrimentally affect the countryside's ability to "catch-up" with urban areas through rural development, despite the fact that China continues to experience massive rural-urban migration and reductions in the numbers of peasants working and living on agricultural land.

Generally, the urban-rural dichotomy in China has isolated cities from the countryside by limiting direct interactions between these two parts [13]. This observation forms the basis for advocating for the formulation and implementation of a strategy of integrated urban-rural development (IURD), with the aim of promoting reasonable resource flows, agglomeration, and profit allocation between urban and rural areas. Li (2012) has pointed out that the core of any IURD strategy lies in treating industry and agriculture, cities and the countryside, and citizens and peasants as an integrated whole, instead of isolated parts [14]. In line with exactly such a strategy, the beginning of the twenty-first century witnessed a shift from a period of urban-bias within governmental strategy to one characterized by "industry nurturing agriculture and cities supporting countryside", and the "harmonious economic development" of both urban and rural areas [15]. With these aims in focus, the Chinese Government thus initiated a series of policies aiming to support agriculture, villages, and peasants, respectively. What we have subsequently seen includes increases in peasants' incomes, a flourishing rural economy, and intensified linkages between cities and the countryside in China [8].

In short, the institutional deployments characterizing different time periods have deeply impacted upon China's rural development and its ability to achieve IURD. Whilst current studies seem apt to discuss the relationship between various institutions, urban-rural inequality, or disadvantages faced by rural development in China, to the authors' knowledge, empirical analysis and confirmation of this relationship has not been provided by the existing literature. Rectifying this omission, this paper

therefore aims to investigate the process of approaching IURD in China in the post-reform period. It considers changes in the country's institutional framework, the various institutional deployments made, and the roles played by various institutions. The structure of the paper is as follows: the second section provides a background for the research, analyzing the urban-rural dichotomy and changing institutional approaches to this issue since 1978. The third section of the research of the paper sets out an assessment of IURD at the provincial level, using panel data, and details an investigation of the changing institutional roles evidenced in China's approaches to IURD. The paper closes in a discussion of the research results.

## 2. The Urban-Rural Dichotomy and Institutional Deployment in China

The term "institution" generally encompasses the human constraints that structure political, economic, and social interactions, including both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, and property rights) [16]. Throughout human history, institutions have been devised with the aim of creating order and reducing uncertainty in exchange, adjusting and transforming in accordance with changes in the social environment. In this process, highly efficient and environmentally suitable institutions replace inefficient ones, only to be replaced themselves in response to future changes. Lin (1989) has classified institutional changes as either "compulsory" or "induced" [17]. Given the high transaction costs and free-rider problems associated with institutional change (including introducing new institutional deployments), induced changes will not take place unless the net gains of the new institutional arrangement exceed the cost of institutional change Otherwise, compulsory institutional change must be undertaken by governments in order to deal with a given problem. China's urban-rural development situation is characterized by both compulsory and induced institutional changes, undertaken via a range of different institutional deployments. The former rely on law and on governmental power, which account for top-down institutional change, while the latter are initiated by the public, who are understood as maximizing their own benefit and thus spontaneously inducing bottom-up institutional change [18].

### *2.1. The Era of Compulsory Institutional Change*

In pursuit of a quick recovery after the foundation of the People's Republic of China, the Chinese government strictly controlled the resource allocation system, emphasizing the role of capital-intensive heavy industries. However, being a capital-scarce country in the 1950s, a rationing system was established, which deliberately distorted the prices of commodities and agricultural production factors in order to extract rural surplus to fuel industrialization. In 1953, a compulsory procurement policy was imposed and peasants were obliged to sell a certain amount of their production to the state at prices set by the government [19]. However, the price of agricultural products was usually low, compared with the price of purchasing agricultural materials (this discrepancy in turn constituted the so-called "price scissor"). An estimated ¥510 billion was extracted from 1950 to 1978, when China commenced with the reform and opening up of its economy [20]. Nevertheless, the government allocated scarce resources and funds from industry to agriculture during the era of central planning. By contrast, collective farming was introduced in rural China in 1956 with the aim to stimulate agricultural production through collective work, which would not compete for resources and investment with industries. This, however,

placed rural China in a position of disadvantage, situating it as the base from which materials and capital were supplied to cities and industries [21].

The household registration system (*hukou*), which is the basic institution for documenting population information and distributing public resources, was also established in 1958, creating a clear distinction between rural and urban areas [22,23]. Since its establishment, only urban citizens have been entitled to the benefits of the social welfare system, including not only basic necessities like food and clothes, but also employment, housing, education, health care, and pensions. The transfer of individual *hukou* status—allowing a citizen to move from a "rural" to "urban" registration—has been strictly controlled by the government [24]. The *hukou* system has thus generated huge welfare differences between urban *hukou* residents and peasants with rural *hukou*, acting in reality as a mechanism of social exclusion by prohibiting peasants from equal enjoyment of urban social resources [25].

Within this dualistic social structure, the provision of public services is also undertaken in a radically different manner in urban and in rural areas in China. During the centrally planned era, the provision of public services in the countryside followed the principle of "standing on its own feet, supplemented by state support". Thus, the village committees and peasants became the primary providers of their own public services, with minor support given by the government [26]. At the same time, the Chinese government invested great financial resources (mainly derived from rural surpluses) into the provision of public services for urban residents.

### *2.2. Induced Institutional Changes Since 1978*

The opening-up and reform of the Chinese economy, which began in 1978, marked the beginning of a period of significant change as the country moved from a centrally planned economy to a market-oriented economy. In that transition, the most important reform in rural China lay in the introduction of allocation practices that apportioned land to each household, instead of supporting collective farming. This shift, first initiated by 18 peasants in Xiaogang village of Anhui Province in 1978, replaced collective farming with the household responsibility system, whereby peasants were made responsible for both the profits and for the losses associated with working their own household plots. This policy enabled peasants to deal with their agricultural surplus at market prices, greatly increasing their motivation to engage in agricultural production. The grain output increased from 304.8 million tons in 1978 to 446.2 million tons in 1989, an increase of 46.4 percent [27].

After gaining the autonomy to manage their own land, more and more peasants were released from farming work and began to undertake non-agricultural work in cities for higher incomes. The government responded positively to these moves. Tight migration restrictions were relaxed for peasants if they were engaged in industrial or commercial activities in cities, though their rural *hukou* status remained unchanged, prohibiting them from accessing equal urban public services. By 2013, there were 269 million peasant workers, of whom 166 million were migrant workers in cities [28]. Unlike those who are still living in villages, these migrant workers have a strong desire to completely settle in cities. This reality has induced a number of changes in urbanization policies, which used to discriminate against peasants, including: the complete removal of restrictions regarding settling in towns and small cities, the opening up of settlement possibilities in medium-sized cities in an orderly manner, making conditions for settling in big cities reasonable, and strictly controlling population size in megacities.

Moreover, a public service system (including compulsory education, employment services, a basic old-age pension, basic health care, and housing) is also to be established to cover all urban residents, including peasant workers.

Another result of the reform of the early 1980s was the rapid growth of "Township and Village Enterprises" (TVEs), a form of enterprise conceived of as a resource allocation mechanism and a way of mechanizing agriculture, which boomed in the 1990s. As a result of the heavy-industry strategy, an emerging shortage in labor-intensive consumption commodities was felt in China during this period, resulting in a situation whereby investment in labor-intensive industries provided greater profit returns than investing in agriculture. Given this disparity, TVEs grew rapidly, employing 106 million workers in 1992 (52 million in collective enterprises and 54 million in private enterprises), compared to 145 million in state-owned and urban enterprises [29]. It was private entrepreneurship of diversified ownership types, facilitated by the governmental policies, access to capital, e.g., folk lending and microeconomic flexibility, which drove the development of TVEs in China [30]. In this process, small towns and medium cities (where most TVEs are situated) began to act as interfaces between the cities and the countryside, promoting urban-rural linkages in a manner that has actually broken the once prevalent economic division, wherein cities accommodate non-agricultural industries whilst the rural economy is made up of exclusively agriculture-based industries. The development of TVEs contributed greatly to the diversification of the rural economy, strengthening income growth for peasants, who were given the ability to sell TVE-manufactured commodities at market prices.

Since the beginning of the twenty-first century, China has entered a new stage of harmonious urban-rural development. Enlarging urban-rural inequality has undoubtedly hindered China in becoming a well-off society; taking measures against this inequality, the central government has in recent years adopted policies oriented towards coordinating what is termed a "harmonious economic development" of urban and rural areas. Under this policy direction, eleven consecutive "No. 1 Central Documents", which are the first document setting out the most important issues that needs settled every year were issued by the Central Committee of the Communist Party of China and the State Council from 2004 to 2014, all of which have been designed to favor the development of rural areas. Each of these policies has focused on issues concerning agriculture, villages, and farmers in China. In the present rural-favored environment, urban-rural linkages in China have become stronger than ever before.

Based on the above analysis, the relationship between institutions and urban-rural development in China can be described in the following sketch (Figure 1). The intentionally deployed, "compulsory" institutions, tended to bias urban areas, distorting urban-rural linkages and causing enlarged urban-rural inequalities. Ever since the reform and opening-up, peasants' initiatives, both in terms of undertaking non-agricultural work and settling in cities, have induced institutional changes, which have finally shifted this urban bias and resulted in an institutional context which now completely supports the countryside, in the first decades of the twenty-first century. Rural development is now advanced and mutual linkages between urban and rural areas is promoted, and moves to tackle enlarging urban-rural inequalities result in a tendency towards IURD in contemporary China.

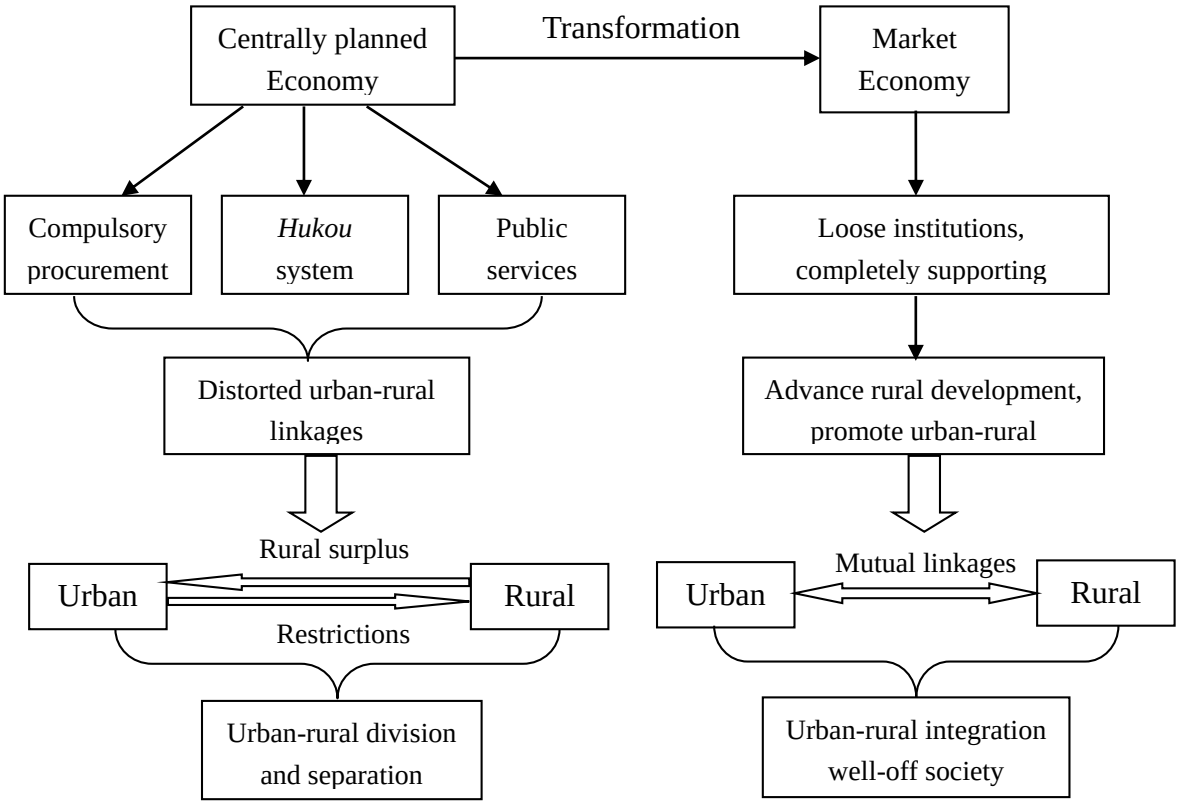


**Figure 1.** Sketching institutional change and urban-rural development in China.

## 3. Empirical Analysis

### *3.1. Assessing IURD in China*

Mainland China consists of 27 provinces and four provincial-level cities (Beijing, Tianjin, Shanghai, and Chongqing) (Figure 2). These administrative units are grouped into eastern, central, and western regions. The level of IURD of each province differs because of that province's unique socioeconomic, geographic, and institutional conditions.


**Figure 2.** China's Provinces and Its Three Regions.

In general terms, the concept of IURD covers a wide range of aspects, uniting the socioeconomic and environmental fields. However, the availability of such diverse data challenges the feasibility of assessing IURD. Ye (2009) lists three main rubrics of IURD in China: the deployment of key factors between urban and rural areas; the supply of primary public goods and services (infrastructure, compulsory education, health care, and social insurance) in urban and rural areas; and the allocation of public resources between urban and rural areas (this subsumes the previous two rubrics) [31]. In this paper, we try to investigate urban-rural differences as indicators of the level of IURD. If large or small urban-rural differences exist within a certain province, then the level of IURD for that province would either be particularly low or, alternately, particularly high. We believe that the deployment of key factors, the provision of public goods, and the implementation of various policies all lie behind marked differences in terms of people's income, living standards, and access to primary public goods in urban and in rural areas. Thus, we selected the following three variables in order to assess the level of IURD:

(1) *The ratio of average household income between urban and rural areas (INCOME)*. This variable describes the income difference between peasants and urban citizens, a discrepancy that has resulted from various dual development policies in past decades. The higher this ratio, the greater the urban-rural difference, thereby indicating a lower level of IURD.

(2) *Engel coefficient*. The Engel coefficient builds on the observation within economics that as income rises, the proportion of income spent on food falls, even if actual expenditure on food rises. This coefficient is widely used as an indication of people's living standards. A high Engel

coefficient indicates greater expenditure on food, but low living standards. We use *X* to describe the difference between people's living standard in urban areas and people's living standard in rural areas, as shown below. The greater *X* is, the larger the urban-rural difference, thereby indicating a lower level of IURD.

$$X = (1 - \text{Urban Engel coefficient})/(1 - \text{Rural Engel coefficient}) \quad (1)$$

(3) *The ratio of the supply of primary public goods between urban and rural areas (GOODS)*. Urban and rural areas in China tend to differ greatly in terms of the supply of primary public goods and services, generally as a result of decades-long policy biases. We used the ratio of per capita hospital beds in urban areas to per capita hospital beds in rural areas in order to represent the supply of primary public goods and services in China. The higher the ratio of *GOODS*, the greater the urban-rural difference—and in turn indicates the lower the level of IURD.

We assume that the ideal status of IURD is that wherein no difference exists between cities and the countryside. Then, the difference between each selected variable (*GOODS*, *INCOME*, or *X*) and 1 indicates the level of IURD. The higher or lower the difference value, the lower or higher the level of IURD. The comprehensive IURD level of a given province can be assessed by conducting a Principal Component Analysis (PCA) of the difference values between the 3 selected variables and 1.

$$\text{IURD} = PCA\ (1 - INCOME, 1 - X, 1 - GOODS) \quad (2)$$

### *3.2. Institutional Roles and the Econometric Framework*

According to our review of the institutional context surrounding China's urban-rural deployment, which is described in Section 2 of the paper, institutions can be seen to exert influence over a given country or province's ability to approach IURD in four main ways: through the deployment of economic factors (e.g., governmental investment), through population mobility, through the price system, and through the industrial structure. From these fields of institutional intervention, we can list the following four types of institutions:

(1) Governmental investment in rural areas (*Investment*)

The decentralization of power to provincial governments via their retention of a proportion of tax revenues has gradually given those governments more autonomy in directing local development. Given this increasing decentralization, it can be assumed that each provincial government, in line with their province's unique socioeconomic conditions, would exert different rural development measures to boost the rural economy so as to promote integrated urban-rural development.

The measure of governmental investment in rural areas (*Investment*) includes inputs from the provincial government of a given province and the support that province received from the central government. Normally, governmental rural investment covers a number of applications, including the development and maintenance of road infrastructure, electric facilities, and communications and irrigation systems, which can advance rural development greatly. In turn, higher levels of investment reflect more decentralized power in boosting rural development, compared with the few investment when China's economic activities were centrally governed during the urban-bias period. In this study, *Investment* was

measured via budgetary expenditure on agriculture as a share of the total budgetary expenditure in a given province.

(2) The *hukou* system (*Hukou*)

The *hukou* system attaches access to certain welfare benefits and services to one's *hukou* status, thereby prohibiting rural migrants from completely settling in cities. It is not easy to measure the influence of *hukou* system. Sun *et al.* (2011) gave years when there were *hukou* reforms the value 1, while recording 0 for years when there were no *hukou* reforms, subsequently measuring the influence of such reforms on China's urbanization development [32]. This method of quantifying *hukou* does not, however, sufficiently illustrate changes in the *hukou* system over time, since changes to the restrictions regarding *hukou* occur in different provinces at different times. This study therefore uses the difference between urbanization in terms of residents with urban *hukou* and urbanization in terms of urban permanent residents as a proxy for the restrictions imposed by the *hukou* system on population mobility. If urbanization in terms of urban permanent residents equals or nears urbanization in terms of residents with an urban *hukou* status, this means that the major proportion of new urban migrants have obtained a local *hukou* status, which in turn indicates weak restrictions on population mobility.

(3) Reform mechanism with respect to the price of agricultural production (*Price*)

In the compulsory procurement system, the "price scissor" was used to set the price of agricultural products, and to set them (normally) lower than the price of purchasing agricultural means of production. After the introduction of a price reform mechanism, the price of farming products increased, while the price of agricultural materials dropped. The resultant increases in net profits generated from selling farming products have contributed to improvements in both peasants' farming income and living conditions. This reform mechanism, which addressed agricultural production prices, is measured here through calculation of the ratio between the price index of farming products and the price index of agricultural means of production. The ratio can comprehensively assess the effect of agricultural price reforms on peasants' levels of motivation to undertake farming work.

(4) Rural industrialization (*Industry*)

During the era before reform and opening-up, rural China bore the major role in agricultural production, and non-agricultural industries were not allowed to exist in the countryside. Cities, however, were the places for these non-agricultural industries. Thus, there were linkages between villages (which supplied agricultural production to cities) and cities (which, in turn, provided agricultural means of production and other products to the countryside). Such an economic division was broken by the development of TVEs, as well as the reforms to the resource allocation mechanisms designed to mechanize agriculture in China. The development of TVEs not only induced a diversified rural economy, but also contributed to intensifying urban-rural linkages. Rural industrialization is here assessed by calculating the ratio production undertaken by TVEs to the total rural production.

We collected data for 29 provinces (excluding Tibet and Chongqing due to data availability problems) in China from 1981 to 2010. Following the literature, and having controlled for a series of explanatory variables that may have influenced the economic conditions of certain provinces, we specify our regression model as:

$$IURD_{it} = \alpha_1 Investment_{it} + \alpha_2 Hukou_{it} + \alpha_3 Price_{it} + \alpha_4 Industry_{it} + \alpha_5 X_{it} + \beta_i + \gamma_t + \varphi_{it} \quad (3)$$

where $IURD_{it}$ is the measurement of the level of integrated urban-rural development of province *i* at year *t*. $Investment_{it}$ is the budgetary expenditure on agriculture as a share of the total budgetary expenditure of province *i* at year *t*. $Hukou_{it}$ is an assessment of the *hukou* system which indicates its influence on the population mobility of province *i* at year *t*. $Price_{it}$ indicates the reform mechanism with respect to the agricultural production price of province *i* at year *t*. $Industry_{it}$ indicates the development of rural, non-agricultural industries in province *i* at year *t*.

$X_{it}$ is a vector of control variables that influence the economic conditions of a certain province, including: government expenditure (GOV), measured as the ratio of government budgetary expenditure to GDP; state ownership (SOE), measured by the output value of state-owned enterprises as a share of the total industry output value; economic openness (TRADE), measured by the ratio of export and import to GDP; and the use of foreign investment (FDI), measured by the ratio of utilized FDI to GDP.

We also controlled fixed effects, using: $\beta_i$ as the province-specific effect, $\gamma_t$ as the year effect. Finally, $\varphi_{it}$ is an unobserved error term that changes across time and among provinces. The data refer to that of the *Comprehensive Statistical Data and Material: 60 Years of New China* and provincial statistical yearbooks for 2009 and 2010.

### *3.3. Empirical Results and Robustness Check*

We first estimated the results of the benchmark model, using full-sample panel data. The benchmark model contained the results of the impact of *Investment*, *Hukou*, *Price*, and *Industry* separately (Column 1–4, Table 1). The model also contained the examination results of the four institutions in three ten-year periods (Column 5–7, Table 1). Time effects were controlled, and the estimation method used a fixed effect in the regression.

**Table 1.** The baseline model: Full sample and sub-period regression.

| **Dependent Variable** | **Full Sample Regression** | | | ***4*** | **1980s** | **1990s** | **2000s** |
|---|---|---|---|---|---|---|---|
| ***IURD*** | **1** | **2** | **3** | | ***5*** | ***6*** | ***7*** |
| *Investment* | 1.54 ** | 1.47 ** | 1.46 ** | 1.70 ** | 1.51 ** | 1.68 *** | 1.01 *** |
| | (0.78) | (0.78) | (0.77) | (0.78) | (0.15) | (0.15) | (0.03) |
| *Hukou* | | −0.77 ** | −0.77 *** | −0.8 ** | −1.17 | −0.61 * | −0.26 ** |
| | | (0.32) | (0.32) | (0.32) | (0.84) | (0.29) | (0.11) |
| *Price* | | | 0.11 | 0.14 | 0.75 | −0.41 | 0.03 |
| | | | (0.24) | (0.24) | (0.46) | (0.29) | (0.32) |
| *Industry* | | | | 0.35 ** | 0.83 | 0.24 | 0.52 *** |
| | | | | (0.17) | (0.9) | (0.27) | (0.19) |
| GOV | −0.89 | −1.0 | −1.04 | −1.19 * | −4.5 ** | −1.92 ** | 1.98 ** |
| | (0.66) | (0.66) | (0.66) | (0.67) | (1.9) | (0.26) | (0.97) |
| SOE | 0.43 * | 0.36 | 0.37 | 0.35 | 0.04 | −0.58 | −0.16 |
| | (0.24) | (0.24) | (0.25) | (0.24) | (1.3) | (0.5) | (0.29) |

**Table 1.** *Cont.*

| Dependent Variable | Full Sample Regression | | | *4* | 1980s | 1990s | 2000s |
|---|---|---|---|---|---|---|---|
| ***IURD*** | **1** | **2** | **3** | | ***5*** | ***6*** | ***7*** |
| OPENNESS | −0.16 ** | −0.12 | −0.12 | −0.095 | 0.23 | 0.09 | −0.41 ** |
| | (0.08) | (0.09) | (0.08) | (0.087) | (0.34) | (0.15) | (0.18) |
| FDI | 3.43 *** | 3.62 *** | 3.66 *** | 3.55 *** | −2.79 | 1.43 | 2.62 * |
| | (0.78) | (0.78) | (0.78) | (0.78) | (5.01) | (1.31) | (1.58) |
| Prov-Specific Effect | YES | YES | YES | YES | YES | YES | YES |
| Year-Specific Effect | YES | YES | YES | YES | YES | YES | YES |
| $R^2$ | 0.31 | 0.32 | 0.32 | 0.38 | 0.193 | 0.32 | 0.18 |

Note: Standard errors are reported in parentheses. The symbols *, **, and *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

Generally, *Investment* and *Industry* were found to be positive and significant at the five percent level. Keeping other things unchanged, a unit increase in *Investment* and *Industry* was found to thus result in 1.70 and 0.35 unit increases in IURD at the provincial level in China, respectively. *Hukou*, however, took on a negative role with respect to aims to approach IURD, during the study period. Keeping other things unchanged, a unit increase in *Hukou* was found to result in a 0.8-unit decrease in IURD. No significance was found in relation to *Price*. Results of the sub-period regression reveal the positive and significant role played by *Investment* during the three decades studied. The 1990s and 2000s in particular witnessed the negative influence exerted by the *Hukou* system on IURD in China. However, we also note that the influence of *Hukou* was found to drop from 0.61 at the one percent level in the 1990s to 0.26 at the five percent level in the 2000s. At 0.52 units, *Industry* was found to have begun to take on a positive and significant role in the 2000s. *Price* however, did not appear to present any significance in relation to the three periods studied.

These findings show that governmental investment in agriculture and the development of TVEs have both played major roles in promoting IURD in China in recent decades. These two types of institutional interventions actually advanced rural development in both agricultural and non-agricultural industries. Whilst the last decade saw a loosening of restrictions surrounding the *Hukou* system, the provision of equal welfare for those with rural *hukou* status who have immigrated to cities continues to present challenges for local authorities in terms of their financial capacity. Most probably, new and higher entry barriers will be created by local authorities in order to prevent the influx of peasant workers and deal with this challenge and the existence of *Hukou* system should still be seen as prohibitive in relation to the goal of approaching IURD in China.

Although the introduction of price reform mechanisms was found to have contributed to increases in the price of farming products, increases in the price of agricultural means of production are still normally higher, meaning that peasants' net incomes from farming their tiny plots of land does not significantly increase (or even decrease). As a result, more and more peasants turn to non-agricultural work, which garners higher payments than selling farming products. Given this ongoing tendency, the deployment of price reform mechanisms in the countryside does not appear to play a significant role in promoting IURD.

3.3.1. Medium-Term Determinants

Chinn and Prasad (2003) and Chinn and Ito (2007) have pointed out that one potential problem when analyzing developing countries is the possibility of measurement error in annual data [33,34]. To avoid this, we followed Chinn and Prasad (2003) in constructing a panel that contained non-overlapping five-year averages for the data for each province. By taking such a measure, we were able to reduce short-term variations and identify the medium-term determinants with respect to the goal of approaching IURD in China, performing the same modeling procedure as that documented above a second time, using five-year average data. Columns 1–4 in Table 2 present the results generated when we introduced each of the four types of institution into the model. According to regression results, both *Investment* and *Industry* were found to show positive significance at the five percent and one percent levels. Keeping other things unchanged, a unit increase in *Investment* and *Industry* was thus found to result in a 2.18 and 1.29-unit increase in IURD in China, respectively. The measure of *Hukou* was found to be negative and significant at the 10 percent level. Keeping other things unchanged, a unit increase in *Hukou* was thus found to result in a 1.52 unit decrease in IURD in China. *Price*, however, presented no significance in the regression results. The sub-period regression found positive significance in *Investment* in the 1990s and 2000s, while *Industry* showed positive significance in the whole research period. *Hukou and Price* were not found to be significant in the five-year average data regression.

**Table 2.** Robustness check: Five year average.

| **Dependent Variable** | **Full Sample Regression** | | | ***4*** | **1980s** | **1990s** | **2000s** |
|---|---|---|---|---|---|---|---|
| ***IURD*** | **1** | **2** | **3** | | ***5*** | ***6*** | ***7*** |
| *Investment* | 2.19 ** | 1.29 * | 2.59 ** | 2.18 ** | 2.6 | 6.46 ** | 4.2 *** |
| | (1.12) | (1.02) | (1.28) | (1.1) | (4.3) | (4.14) | (1.57) |
| *Hukou* | | −0.57 | −0.95 * | −1.52 * | −0.79 | −0.16 | −0.42 |
| | | (0.97) | (0.72) | (0.951) | (2.26) | (2.3) | (1.54) |
| *Price* | | | 0.34 | 0.34 | 1.0 | 1.01 | −1.36 |
| | | | (1.03) | (1.03) | (3.7) | (0.924) | (2.92) |
| *Industry* | | | | 1.29 *** | 2.71 ** | 2.87 ** | 2.13 *** |
| | | | | (0.15) | (0.97) | (0.87) | (0.74) |
| GOV | −0.93 | −0.95 | −0.97 | −0.98 | −0.11 | −9 | −2.81 |
| | (1.12) | (1.12) | (1.13) | (1.13) | (1.65) | (7.2) | (2.93) |
| SOE | 1.37 ** | 1.33 ** | 1.36 ** | 1.4 ** | −1.85 | 0.94 | 0.9 |
| | (0.63) | (0.63) | (0.64) | (0.64) | (1.84) | (1.7) | (0.75) |
| OPENNESS | 0.09 | 0.14 | 0.14 | 0.14 | 1.58 * | 0.22 | −0.44 |
| | (0.23) | (0.24) | (0.24) | (0.24) | (0.87) | (1.2) | (0.79) |
| FDI | 1.38 | 1.17 | 1.21 * | 1.2 | −64.1 *** | 2.47 | 18.91 *** |
| | (1.16) | (2.26) | (2.27) | (2.27) | (16.53) | (5.45) | (5.74) |
| Prov-Specific Effect | YES | YES | YES | YES | YES | YES | YES |
| Year-Specific Effect | YES | YES | YES | YES | YES | YES | YES |
| $R^2$ | 0.28 | 0.29 | 0.28 | 0.30 | 0.06 | 0.14 | 0.79 |

Note: Standard errors are reported in parentheses. The symbols *, **, and *** indicate statistical significance at 10%, 5% and 1% levels, respectively.

3.3.2. Robustness Check in Different Regions

As part of the study we further performed a robustness check of China's three super-regions (Eastern, Central, and Western China) during the research period. According to the regression results, shown in Table 3, *Investment* presented as positive at the five and one percent significance levels in the three super regions during the research period. Keeping other things unchanged, a unit increase in *Investment* was found to result in 4.91, 4.73, and 3.64 unit increase in IURD in the Eastern, Central, and Western China, respectively. By comparing the estimated coefficients, *Investment* was found to have greatest impact in promoting IURD in Eastern China, followed by the Central and then the Western regions. Results indicate that *Hukou* played a negative role at the 1 percent significance level in all three of the regions. Keeping other things unchanged, a unit increase in *Hukou* was found to result in a 0.91, 2.6, and 3.33 unit decrease in IURD in Eastern, Central, and Western China, respectively. A comparison of the estimated coefficients for *Hukou* indicates *hukou* has less impact with respect to approaching IURD in the highly developed eastern provinces than in the central and western provinces, where the economy comparatively lags behind.

*Industry* was found to play a positive and significant role in relation to the goal of approaching IURD at the provincial level in the three regions. Keeping other things unchanged, a unit increase in *Industry* was found to result in 0.72, 1.37, and 1.64 unit increases in IURD in the Eastern, Central and Western regions, respectively. *Price* appeared to hold no significance in the regions.

**Table 3.** Robustness check: Different regions.

| **Dependent Variable** | **Full Sample Regression** | | |
|---|---|---|---|
| ***IURD*** | **Eastern** | **Central** | **Western** |
| *Investment* | 4.91 ** | 4.73 *** | 3.64 ** |
| | (2.15) | (1.17) | (1.32) |
| *Hukou* | −0.91 *** | −2.6 *** | −3.33 *** |
| | (0.34) | (0.9) | (0.91) |
| *Price* | −0.19 | 0.38 | 0.59 |
| | (0.38) | (0.53) | (0.36) |
| *Industry* | 0.72 ** | 1.37 *** | 1.64 *** |
| | (0.26) | (0.28) | (0.32) |
| GOV | −6.46 *** | −4.55 | −0.49 |
| | (1.29) | (2.81) | (0.82) |
| SOE | 0.98 ** | −0.36 | 0.424 |
| | (0.42) | (0.58) | (0.39) |
| OPENNESS | 0.13 | 3.29 ** | 1.58 ** |
| | (0.09) | (1.39) | (0.77) |
| FDI | 4.66 *** | 0.42 | −4.85 * |
| | (0.96) | (3.42) | (2.75) |
| Prov-Specific Effect | YES | YES | YES |
| Year-Specific Effect | YES | YES | YES |
| $R^2$ | 0.52 | 0.39 | 0.56 |

Note: Standard errors are reported in parentheses. The symbols *, **, and *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

3.3.3. Robustness Check: Endogeneity

There is a risk that the relationship between institutions and IURD might be driven by reverse causation. For instance, a high level of urban-rural integration requires greater institutional changes, such as increased rural investment, less *hukou* restrictions, and wider welfare coverage in order to further advance rural development and promote higher levels of urban-rural integration. To deal with this potential problem, we employed a generalized-methods-of-moments (GMM) panel estimator for dynamic models, as developed by Arellano and Bond (1991) and Arellano and Bover (1995) [35,36]. Besides endogeneity considerations, the dynamic panel approach can also control for the endogeneity of other explanatory variables.

According to the regression results in Table 4, both *Investment* and *Industry* were found to be positive and significant at the five percent and one percent levels. Keeping other things unchanged, results indicate that a unit increase in *Investment* and *Industry* will result in 1.54 and 0.5 unit increases in IURD at the provincial level in China, respectively. *Hukou* presented negative significance at the five percent level. Keeping other things unchanged, a unit increase in *Hukou* was found to result in a 0.64 unit decrease in IURD in China. The regression results did not find *Price* to be significant.

**Table 4.** Robustness check: Endogeneity problem.

| **Dependent Variable** | **Full Sample Regression** | | | **4** | **1980s** | **1990s** | **2000s** |
|---|---|---|---|---|---|---|---|
| ***IURD*** | **1** | **2** | **3** | | **5** | **6** | **7** |
| $IURD_{-1}$ | 0.69 *** | 0.67 *** | 0.66 *** | 0.63 *** | 0.47 *** | 0.42 *** | 0.65 *** |
| *(lag term of IURD)* | (0.042) | (0.023) | (0.04) | (0.044) | (0.08) | (0.18) | (0.11) |
| *Investment* | 1.47 * | 1.48 * | 1.72 ** | 1.54 ** | −1.62 | 4.55 *** | 3.58 *** |
| | (0.71) | (0.73) | (0.81) | (0.61) | (3.65) | (1.46) | (0.45) |
| *Hukou* | | −0.84 ** | −0.81 ** | −0.64 ** | −0.76 | −1.55 ** | −0.76 ** |
| | | (0.35) | (0.41) | (0.27) | (0.96) | (0.64) | (0.36) |
| *Price* | | | −0.3 * | −0.28 | −0.92 * | 0.21 | −0.1 |
| | | | (0.11) | (0.18) | (0.54) | (0.39) | (0.18) |
| *Industry* | | | | 0.5 *** | −0.68 | 0.42 ** | 0.77 ** |
| | | | | (0.15) | (0.76) | (0.24) | (0.34) |
| GOV | 0.57 | 0.68 | 0.56 | 0.4 | −3.42 * | −2.15 | −0.002 |
| | (0.62) | (0.63) | (0.62) | (0.62) | (1.91) | (2.96) | (0.67) |
| SOE | −0.36 | −0.41 * | −0.37 | −0.32 | 1.54 | 0.52 | −0.17 |
| | (0.23) | (0.23) | (0.23) | (0.23) | (1.74) | (0.6) | (0.31) |
| OPENNESS | −0.19 * | −0.18 | −0.17 | −0.15 | −0.29 | −0.26 | −0.11 |
| | (0.11) | (0.11) | (0.11) | (0.11) | (0.74) | (0.21) | (0.14) |
| FDI | −1.21 | −1.07 | −1.18 | −0.66 | 2.17 | 0.88 | −1.69 |
| | (0.76) | (0.76) | (0.76) | (0.77) | (6.51) | (1.75) | (1.42) |
| Estimation Method | GMM | GMM | GMM | GMM | GMM | GMM | GMM |
| Prov-Specific Effect | YES | YES | YES | YES | YES | YES | YES |
| Year-Specific Effect | YES | YES | YES | YES | YES | YES | YES |

Note: Standard errors are reported in parentheses. The symbols *, **, and *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

The sub-period regression showed *Investment* to be positive and significant at the one percent level in the 1990s and 2000s, while *Industry* appears to have been positive and significant at the five percent level in the 1990s and 2000s. *Hukou* presented negative significance in the 1990s and 2000s, while *Price* became negative and significant only at the 10 percent level in the 1980s. The results of the robustness check are in line with the full sample regression as shown in Table 1.

## 4. Conclusions and Discussion

This paper investigates the changing institutional roles in approaching IURD at the provincial level in China in the period 1981–2010. The findings provide evidence of the positive contributions made by governmental investment in villages and the development of TVEs to the process of IURD in the study period. These two types of institutional deployments promoted rural development to a high degree by intensifying linkages between the countryside and cities. The *Hukou* system was found to affect the process of approaching urban-rural integration as a result of the attachment of urban welfares benefits to urban *hukou* status, which normally excludes rural immigrants who possess rural *hukou* status. Although we identified *hukou* to have decreased in its influence on IURD in the past decade, the *hukou* institution still prohibits free population mobility between urban and rural areas in China. The reform of the price mechanism with respect to agricultural production was not found to impact on the success of IURD strategies in China. This is because the increased price of farm products was offset by the even higher price of agricultural means of production. Thus, the low nature of the income gained from selling farm products forced peasants to undertake non-agricultural work.

In general, in moving from an urban bias to complete support for the countryside, the changing institutional deployments surveyed here have promoted China's ambition to achieve IURD. The reason for this positive contribution lies in the fact that induced institutional deployment meets the needs of rural development. In a situation wherein there still exist large urban-rural inequalities, the governmental investment and development of rural non-agricultural industries can help villages to catch-up with respect to development. However, particular attention should be paid to the emergence of hollowing villages, which are a product of rural industry recession, backward infrastructures, and rural cultural deterioration due to outflows of peasants [37]. Thus, rural revitalization must be prioritized in order to strengthen the platform offered by rural investment and the development of non-agricultural industries, with respect to promoting IURD.

The thorough removal of the *hukou* system would require huge investment from local authorities, which would need to provide welfare equal to that of urban citizens to rural immigrants. Such a move would generate great challenges in relation to cities' financial capacities, particularly at a time when many Chinese cities still rely firmly on land sales for local revenues, a reliance, which is, of course, unsustainable in the long run. Thus, a cost-sharing mechanism involving the central government, local authorities, enterprises, and individuals should be established in order to properly arrange peasants' settlement in cities.

In short, approaching IURD in China is a complex process, bringing together a great many different stakeholders. Both compulsory and induced institutions should be utilized in different regions in different time periods. Most importantly, changing institutional deployments should be made in line with a robust understanding of the changing urban and rural situation in China.

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## Author Contributions

Yuheng Li made the research design, performed the empirical study and revised the manuscript. Zhichao Hu collected and processed the data. Yuheng and Zhichao wrote the manuscript together. All authors read and approved the final manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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