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Assessing the Impact of Government Behavior on Regional High-Quality Development: A Case of Fiscal Expenditures on People's Livelihoods in China

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Abstract: Government fiscal support is an important way to improve social welfare and enhance the protection of people's livelihood. This paper uses the entropy weight TOPSIS method, fixed effect model, two-stage least squares regression, moderating effect model, and mediating effect model to comparatively analyze the level of high-quality development of the region and explore the impact and mechanism of livelihood expenditures on the high-quality development of the region. The findings show that increasing government expenditures on people's livelihoods can effectively improve regional high-quality development, but the degree of marginal improvement varies with different periods and locations. People's livelihood expenditure could promote sustainable regional development by increasing the consumption level of residents. Urbanization could strengthen the positive effect of livelihood expenditure on regional high-quality development. This study enriches the theoretical research on institutional economics and explores the effect and role of government behavior in the process of high-quality development from the perspective of livelihood expenditure.

Keywords: high-quality development; government behavior; fiscal expenditures on people's livelihoods; consumption level; urbanization; China

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1. Introduction

The three-year-long COVID-19 epidemic has brought about far-reaching economic and social impacts [1], including technological innovation, medical education, and impacts on the ecological environment. This has made the world's economies pay more attention to the high-quality development of the economy and society in the post-COVID-19 era. High-quality development is a multi-level concept that emphasizes the dynamic balance of economic, social and environmental aspects within a region [2], which is an important manifestation of the high-quality development of a region in a period of economic transition. Countries continue to improve the evaluation system of sustainable development by updating the evaluation of development goals to correct the inappropriate direction of economic development in the past, including the evaluation system of the "New Economy" in the United States [3], the evaluation system of high-quality development in the EU [4], and the German National Welfare Assessment System [5], which provides a strong guarantee for the realization of the UN 2030 high-quality development goals. The Chinese government has developed high-quality development programs through learning and policy implementation, and in 2017, it introduced the concept of "high-quality development" to emphasize its commitment to advancing sustainable practices. Obviously, in China, high-quality development is the mode, structure, and dynamics of economic development that better meet the real and growing needs of its people [6]. How to promote the quality of regional development to realize sustainable economic and social development is a key

issue of current concern that can effectively address the difficulties and challenges faced in terms of economic transformation in the post-COVID-19 era.

Research on the factors influencing the high-quality development of regional economies has become the focus of academic discussions. Existing studies have mainly explored the impact on high-quality development from the aspects of the political environment [7], quality of production factors [8], the construction of urban living environments [9], green technological innovation [10], trade activities [11], and the development of digital economy [12], which have been analyzed in depth from the perspective of market operation. The government, as the strategic planner of the high-quality development of the regional economy, the leader of the modernization development path, and the builder of the foreign trade system, plays an important role in improving the quality of regional development [11]. Some scholars have explored the impact of government policy support on high-quality economic development. Ma et al. (2023) explored and verified the mechanism through which the Chinese government promotes the high-quality development of the marine economy through policy support [13]. Han et al. (2023) also argued that the study of the economic growth rate with the aim of high-quality development goals (SDGs) has become an important issue worldwide, and scholars have analyzed the high-quality development of the economy (HED) from multiple perspectives. Other scholars have analyzed the influencing factors of high-quality economic development (HED), but there is little research on green finance (GF) and high-quality economic development (HED). Therefore, the authors of this study examine the logical link between green finance and high-quality economic development. This study points out that sounder government governance can promote green finance development and thus high-quality economic development [14]. It is clear that an effective "can-do" government can play an important role in high-quality economic development in times of economic transition. However, could government fiscal support necessarily promote high-quality regional economic development? This question is debatable. Some scholars have pointed out that when local governments are given greater financial autonomy, their fiscal spending preferences are different, and thus, there are differences in the impact on the quality of regional development, which is caused by the government's short-term pursuit of interests and speculation [15]. During the epidemic period, people's livelihood conditions, such as healthcare and education, were severely affected. Is this the reason for the stagnation of regional economic development? This is something that needs to be verified. In the post-epidemic era, should the government increase fiscal support in areas that can significantly expand tax revenues, or should it increase fiscal expenditures on livelihoods? This requires empirical findings and astute decision-making skills on the part of policymakers, as their aim is to promote high-quality economic and social development, thereby realizing high-quality development in line with the United Nations 2030 goals.

The existing studies have extensively examined the influence of government actions on regional development, including environmental institutions, technological innovations, human capital, and fiscal support, but there are fewer studies discussing whether or not governments can influence regional economic development through livelihood-based financial expenditures. Wang et al. (2022) [15] explored the nonlinear impact of fiscal decentralization on regional development from the perspective of livelihood expenditures, expanding the economic high-quality development effects of government livelihood support behaviors. However, it does not analyze how livelihood fiscal expenditure affects regional economic development, which provides a foundation for research in this area with the possibility of continuing in-depth research. In light of the challenges exposed due to insufficient livelihood infrastructure development during periods of global uncertainties such as the pandemic, this study extends the current literature by focusing on fiscal public expenditure for livelihood enhancement. On the basis of the TOPSIS-Entropy method, this paper constructs an evaluation indicator that closely conforms to the denotation and requirements of high-quality development and then carries out empirical regressions in combination with government expenditure on people's livelihood to verify the theoretical

hypothesis, transmission mechanism and moderating effect of which are further empirically tested. This study highlights that an increase in government public expenditure directed toward improving people's livelihoods contributes positively to high-quality development. A significant mechanism driving this effect operates through the regional consumption level, while urbanization serves to amplify the constructive impact of government actions.

This study's marginal contribution includes three aspects. First, we establish a comprehensive assessment framework for gauging regional high-quality development based on the new development concept and evaluate and analyze the level of regional high-quality development. This approach could give a more holistic definition of high-quality developmental status. Second, we enhance the literature on government behavior's influence on high-quality development by introducing a distinctive entry point—the allocation of funds to livelihood improvement. Through theoretical analysis and empirical tests, we verify the conclusion that the government's fiscal support for people's livelihood can improve the quality of regional development. Third, we verify that the government could promote the consumption level of regional residents by supporting local livelihood construction, thus promoting the high-quality development of the region. This paper enriches the research on the impact of government behavior on the high-quality and sustainable development of regional economies.

The other parts of the manuscript are designed as follows. Section 2 is the theoretical analysis and research hypotheses, where we provide a logical analysis of the paper's research themes and mechanisms. Section 3 is the research design, where we introduce the analytical model involved in this paper and explain the relevant variables. Section 4 is on empirical analysis and testing. Section 5 is the conclusion. Section 6 discusses the limitations and future research directions.

2. Theoretical Analysis and Research Hypothesis

Ensuring the provision of essential public services stands as a pivotal driver in fostering both economic and social advancement [16]. The government, by anchoring responsibilities in domains such as housing, education, healthcare, elderly care, and employment, lays the foundation for cultivating an ecosystem conducive to high-quality development. The government wields the capacity to elevate regional culture, education standards, and coordination mechanisms while also proactively incubating nascent demand markets—a collective endeavor that profoundly propels the trajectory of high-quality development and culminates in the establishment of a thriving well-being economy. On the supply side, public services addressing people's livelihoods manifest as potent enhancers of human capital quality and actual income levels for residents. This vitalizes a more equitable resource allocation, catalyzes a fertile milieu for innovation, amplifies developmental synchronization, and augments resource-sharing dynamics, collectively forging a robust foundation for regional high-quality development. On the demand side, the present developmental juncture exhibits pronounced inclinations toward public consumption domains, notably education, healthcare, and elderly care. Fueled by the impetus of sustainable demand, effectively fostering the genesis of a substantial public consumption sphere becomes pivotal for harnessing the full spectrum of the government's public functions. Nurturing this realm requires reinforcing foundational livelihood security, elevating the caliber of education initiatives, enacting employment incentivization strategies, intensifying research and development within medical services, bolstering investments in public transportation, and fostering a steady maturation of the social security apparatus [17–21]. These concerted actions collectively orchestrate the enhancement of economic operational efficacy, thereby begetting a virtuous cycle that steadily nurtures high-quality development within each locale. In line with this, the present study delves into education, medical care, social security, and employment, dissecting their roles as core components, to meticulously unravel the nuanced impact of livelihood expenditure on regional high-quality development. Through a combination of theoretical scrutiny and empirical analysis, this study substantiates the

pivotal position of government-led livelihood endeavors in galvanizing and sustaining regional high-quality development.

Augmenting investment in people's well-being is pivotal for enhancing service quality in the post-COVID-19 era. The allocations for people's welfare markedly influence human capital development [22], labor productivity, and regional innovation dynamism, consequently propelling regional high-quality development. According to endogenous growth theory, technological advancements serve as the driving force behind continual economic progress. In the face of resource constraints, the government adeptly provides an array of public services, encompassing education, healthcare, and employment. This strategy, by bolstering human capital standards, ensuring resident well-being and health, bolstering employment stability, and fortifying fundamental livelihood security [23], effectively elevates regional innovation, coordination, and collaborative synergies, thereby inducing sustainable regional progress.

Moreover, augmenting investment in people's well-being constitutes a potent mechanism for advancing regional wealth equalization and optimizing the allocation efficiency of public resources. Mitigating internal developmental disparities can notably amplify regional coordination, thereby elevating the degree of sustainable regional progress. From the vantage point of income redistribution, the government can astutely modulate the reharmonization of real income and wealth through the adept utilization of public policy instruments, encompassing fiscal revenue, expenditures, transfer payments, and related measures, particularly in cases of initial imbalance [24]. This approach ensures societal equity, fostering inclusive prosperity. Heightened investment in well-being services yields judicious resource allocation, efficaciously alleviating discrepancies in the primary distribution of livelihood security resources across regions and ultimately propelling high-quality development via ameliorated levels of sharing and coordinated growth in the region.

In the post-COVID-19 era, the realization of high-quality development will require continued improvement in the quality of social security and people's livelihoods. Seven of the main indicators for economic and social development in the Chinese government's Fourteenth Five-Year Plan relate to people's livelihoods and well-being, accounting for more than one-third of the total, including education, medical care, employment, pensions, childcare, and many other aspects, and the construction of a soft system centered on people's livelihood services has become an important area of concern for economic and social development. In addition, the theory of public behavior and the governmental investment regulations promulgated by China in 2019 underscore the imperative for local administrations to establish a public-value-oriented expenditure framework. This entails transitioning toward an implicit and sustainable mode of governmental coordination, effectively advancing sustained, wholesome, and enduring economic and social development. Constituting an integral facet of governmental spending endeavors, the advancement of public welfare has consistently remained a focal point. The core objective driving government agencies' performance of their public duties is the enhancement of residents' living standards. However, due to disparities in economic development stages and levels across various regions and timeframes, local governments invariably accord diverse degrees of significance to both efficiency and equity. Consequently, this engenders divergent priorities in the development of livelihood infrastructure. Distinctions emerge in the caliber and significance of infrastructure development for public welfare services across different eras and locales characterized by varying levels of progress. Hence, the impact of heightened expenditure on public well-being and on the sustenance of regional development may exhibit spatiotemporal heterogeneity. Accordingly, we propose the following hypothesis:

Hypothesis 1a. *The growth of government spending on people's livelihoods can push forward regional high-quality development.*

Hypothesis 1b. *The impact of increasing government expenditure on people's livelihood on regional high-quality development has temporal and spatial heterogeneity.*

The augmentation of expenditures on public welfare fosters a sustained foundation of social security for residents, catalyzing an amplification of their tangible income and curbing the incentive to amass savings. This dynamic enhancement in disposable income not only bolsters individual consumption capacity and willingness but also galvanizes the activation of latent demand, effectively cultivating an expansive domestic circulation paradigm. Rooted in life cycle theory, the present spending behavior of a rational individual hinges upon their holistic life income and wealth, with an inherent desire for fiscal stability across their lifetime. This theoretical framework elucidates the enigma of the "Chinese savings puzzle" [25,26], asserting a shared propensity for precautionary savings among rational consumers. When the government elevates the spectrum of essential public services, notably education, healthcare, and social security, individuals experience proportionate reductions in outlays, leading to a pronounced abatements in precautionary savings. Consequently, their effective income escalates, stimulating consumption propensities and motivations, thereby elevating both the proportion of spending directed toward elevating living standards and overall expenditures. By accentuating the demand-side impact, this progression in supply quality leads to an amelioration of regional conditions, thus propelling sustainable regional development. In summary, we further propose the second hypothesis:

Hypothesis 2. *An increase in government expenditure on people's livelihood can improve residents' consumption levels, thereby promoting regional high-quality development.*

Marx's theory of urban and rural development is a rigorous theoretical system, using the scientific methods of dialectical materialism and historical materialism to analyze the state of development and future direction of the city and the countryside under the conditions of capitalism in terms of the contradictory movements of the productive forces and the relations of production [27]. Marx astutely observed that modern history unfolds as a narrative of rural–urban transition [28]. In its narrower connotation, urbanization signifies the inexorable trajectory of persistent populace clustering within urban centers, an indispensable phase in a nation's economic evolution. According to the National Bureau of Statistics, the urbanization rates of China's resident population and household population are 63.89% and 45.4%, respectively, which are still in the stage of rapid development toward 30% to 70% according to the law of development of urbanization in the world. However, scant research has illuminated the intricate interplay between livelihood expenditure and the prospects of regional high-quality development within the context of urbanization. This study seeks to illuminate this unexplored terrain by distilling insights from pertinent scholarship.

Regarding direct repercussions, the course of urbanization exercises a direct influence on the caliber of regional development [29,30]. Some scholars posit that urbanization can act as a catalyst for regional economic advancement. Urbanization, through avenues such as employment generation [31], the concentration of physical and human resources [32], the optimization and enhancement of industrial structure [33], and the fostering of domestic demand and consumption [34], is anticipated to propel productivity advancement. These measures can also improve regional total factor productivity, thereby effectively achieving regional high-quality development. It is worth noting that the problems brought about by urbanization will impede high-quality development in each area. Urban isomorphism is accompanied by the advancement of urbanization. A blind expansion of urban scale due to the one-sided pursuit of GDP growth may lead to problems in the allocation of land resources, thus constraining regional development quality. Meanwhile, industrial development and population agglomeration induced by urbanization may affect the regional environment and inhibit regional green growth [35].

Concerning its indirect ramifications, within the ambit of factor inputs, the amalgamation of production factors precipitated by urbanization amplifies the impact of fundamental inputs on the well-being of residents by enhancing the efficiency of resource utilization

in basic infrastructure development. Urbanization serves as a catalyst for population concentration, thereby accentuating the insufficiencies in local livelihood services. This, in turn, heightens the burden on the government to provide essential livelihood services, thereby causing a lag in the development of livelihood infrastructure. Consequently, the augmentation of regional development quality is impeded, necessitating a comprehensive enhancement of both the caliber and extent of people's livelihood expenditure. In the trajectory of investing in livelihood infrastructure, owing to the population agglomeration dynamics resulting from urbanization, the economic and societal externalities engendered via the development of people's livelihood infrastructure can be more effectively harnessed. This is evidenced by the observable manifestation wherein urbanization accentuates the role of livelihood construction in steering regional high-quality development. In light of these considerations, we advance the following hypotheses:

Hypothesis 3a. *Urbanization acts as a catalyst to push forward regional high-quality development.*

Hypothesis 3b. *There is blindness in urbanization, which inhibits regional high-quality development.*

Hypothesis 4. *Accelerating the urbanization process can enhance the positive externality of livelihood expenditure on regional high-quality development.*

3. Research Design

3.1. Regression Model

Based on Hypothesis 1, to verify the specific impact of increased government expenditure on people's livelihood on sustainable regional development, we first establish the basic regression model:

$$hqd_{it} = \beta_0 + \beta_1 ms_{it} + \sum_{j=2}^{7} \beta_j control_{jit} + \varepsilon_{it} \quad (1)$$

where subscripts i and t represent region and year, respectively, hqd_{it} measures the high-quality development level of region i in time period t, the specific construction method of which will be given below, and $control_{jit}$ is a collection of control variables. Drawing upon existing studies, we select the following variables to control the impact of other components of regional high-quality development: the annual rate of change of R&D expenditure (*rd*), where the higher the R&D investment in a region is, the stronger the regional government's policy support for scientific research and innovation and technological development; the number of granted patents per ten thousand people (*patent*), where the more patents are granted, the better the innovation foundation and atmosphere in the region, and the stronger the innovation capability; the actual foreign direct investment scale per capita (*fdi*), where foreign direct investment may promote regional high-quality development through technology spillover or technology transfer; the rate of change of gross domestic product (*gdp*), where the greater the value of *gdp* is, the faster the regional economic growth; the energy consumption per unit of gross domestic product (*energy*), where the higher the value, the more energy consumption per unit of output, and the lower the development degree of green economy; and the density of the population (*upd*), which may affect high-quality development through human capital accumulation, labor supply, or a shortage of public services. ε is the random disturbance term. The coefficient β_1 is the most important in this study. Whether or not it is statistically significant directly determines the impact of fiscal spending on people's livelihood on high-quality development. If β_1 is statistically significant and positive, it shows that the increase in expenditure on people's livelihood in a region can significantly promote the high-quality development of the region.

We choose three types of empirical models to run Formula (1). The first is the Tobit model. When the high-quality development evaluation index is used as the explained variable, because its value is a relative score and the value ranges from 0 to 1, the estimation

results of the traditional linear regression model may be biased and inconsistent. It is better to use the limited dependent variable model, and the Tobit model can address the problem of a limited dependent variable [36]. The second is the random effect model. This model includes the omitted heterogeneity between different regions. The third is the fixed effect model. This model imposes a more stringent assumption than the random effect model does. In the subsequent empirical test, we use the two-way fixed effect model in all instances because the Hausman test shows that the fixed effect model is more suitable than the random effect model is. From the perspective of economic theory, we cannot control all the factors that affect the high-quality development level of a region, and these factors (such as the quality of institutions, business environment, etc.) may also be related to regional economic growth and R&D investment, so it is more appropriate to use a two-way fixed model.

Running the baseline regression model can help us test Hypothesis 1. To further verify Hypothesis 2, namely, the mediating effect of the regional consumption level, a stepwise regression method is adopted [37]. The mediation model is constructed as follows [38]. The diagram of the transmission mechanism is shown in Figure 1.

$$com_{it} = \partial_0 + \partial_1 ms_{it} + \sum_{j=2}^{7} \gamma_j control_{jit} + \varepsilon_{it} \quad (2)$$

$$hqd_{it} = \delta_0 + \delta_1 ms_{it} + \delta_2 com_{it} + \sum_{j=3}^{8} \varphi_j control_{jit} + \varepsilon_{it} \quad (3)$$

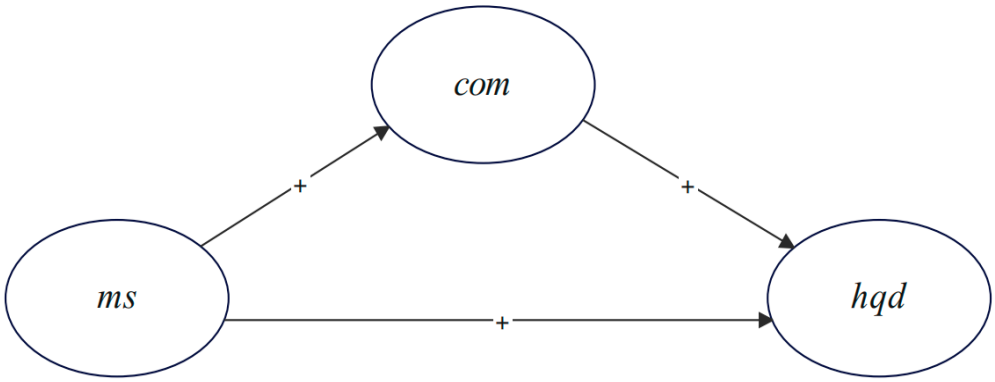


Figure 1. The mechanism of transmission.

On the basis of Formula (1), the models in Formulas (2) and (3) are tested in turn, and the variable com measures the level of regional consumption. On the basis that the coefficient β_1 in Formula (1) is significantly positive, if the coefficients ∂_1 and δ_2 are both significantly positive, it shows that a mediated effect exists; that is, the increase in expenditure on people's livelihood in an area can improve the consumption level of the region and then promote regional high-quality development. Furthermore, if the coefficient δ_1 is significant, it means that the level of regional consumption plays a partial mediating role, and the consumption level is only one of the channels through which people's livelihood expenditure affects the high-quality development of the region; if the coefficient δ_1 is not significant, it means that there is a full mediating effect, and the regional consumption level is the only channel through which people's livelihood expenditure affects regional high-quality development.

In Hypotheses 3 and 4, we propose that urbanization may be an important factor affecting regional high-quality development, and there may be a positive moderating effect on the key independent variable *ms*. To verify Hypothesis 3, the indicator *urb*, the representing urbanization level, is constructed, and Equation (4) is established. To verify

Hypothesis 4, the variables *urb* and *ms*, and the interaction term $urb \times ms$ are simultaneously introduced into Equation (5). Equations (4) and (5) are as follows:

$$hqd_{it} = \gamma_0 + \gamma_1 urb_{it} + \sum_{j=2}^{7} \gamma_j control_{jit} + \varepsilon_{it} \quad (4)$$

$$hqd_{it} = \varphi_0 + \varphi_1 ms_{it} + \varphi_2 urb_{it} + \varphi_3 urb_{it} \times ms_{it} + \sum_{j=4}^{9} \varphi_j control_{jit} + \varepsilon_{it} \quad (5)$$

In Formula (5), if the coefficient φ_3 is significantly positive, which indicates that the promotion degree of people's livelihood expenditure on regional high-quality development is indeed affected by the regional urbanization level. The higher the regional urbanization level is, the stronger the promotion effect of the former on the latter.

3.2. Variable Description

3.2.1. Indicators of the Regional High-Quality Development Level

As China's economic development shifts from a phase of high-speed growth to a stage of high-quality development, efforts must be made to fully implement the five development concepts of innovative development, coordinated development, green development, open development, and shared development. Sustainable economic development cannot be achieved without these five driving forces. Combined with the principles of feasibility and simplicity to be followed in the construction of the index system [39], we built the index evaluation system based on these five concepts. Drawing on the approaches of Ding et al., (2016) [40] and Qiu et al., (2022) [41] and applying the TOPSIS-Entropy method, various sub-indicators of high-quality development are integrated into a comprehensive indicator to evaluate the overall level of high-quality development of 30 administrative provinces in China. The index system, specific calculation method, and definitions of indicators at all levels are given in Table 1. In addition, the following two points need to be specified. First, we use the Theil index to measure the rationalization level of the industrial structure.[1] Second, the indexes except for Z_{21} and Z_{31} are positive indicators among the third-level indicators.

3.2.2. The Level of Government Expenditure on People's Livelihood

Making up for shortcomings in education, medical care, social security, and employment was highlighted at the 19th CPC National Congress. Although existing studies have not yet clarified the concept of government expenditure on people's livelihood, in accordance with official statements, combined with the indicators related to people's livelihood and well-being in the "14th Five-Year Plan" outline, the government expenditure on people's livelihood in this paper includes education, medical care, social security, and employment.

3.2.3. Indicators for Measuring Urbanization Level

The level of urbanization is the moderating variable of this paper. Along with the narrowing of the gap between urban and rural areas, human-oriented migration advancement is an important feature of urbanization. As a general practice, we select the proportion of the urban population in the total population of the region to represent the degree of urbanization.

3.2.4. Description of Control Variables

Apart from the four critical variables of the high-quality development level (*hqd)*, government expenditure on people's livelihood (*ms*), urbanization level (*urb)*, and regional consumption level (*com*), some control variables are also involved in the empirical analysis, mainly including the economic growth level (*gdp*), energy consumption level (*energy*),

research and development investment level (*rd*), innovation atmosphere (*patent*), foreign investment level (*fdi*), and population density (*upd*).

Table 1. The evaluation system of high-quality development.

First Level Indicators	Second Level Indicators	Third Level Indicators	Specific Indicators
High-quality development level (*hqd*)	Innovation (Z_1)	The vitality of technological innovation (Z_{11})	Total number of full-time R&D employees, Z_{11}
		Technology research and development capability (Z_{12})	Number of invention patents authorized, Z_{12}
		Technology transformation capability (Z_{13})	High-tech industry's development degree (Main business income/GDP), Z_{13}
	Coordination (Z_2)	The coordination of regional industrial structure (Z_{21})	Industrial structure rationalization index, Z_{21}
		The coordination between urban and rural areas (Z_{22})	The ratio of rural income to urban income, Z_{22}
	Greenness (Z_3)	Basic environmental change degree ($Z_{31–34}$)	Population-weighted concentrations of $PM_{2.5}$ Z_{31}; The average value of GDP per unit of energy consumption, Z_{32}; Comprehensive utilization rate of industrial solid waste, Z_{33}; Regional sewage recycling rate, Z_{34}
		The level of green technology development (Z_{35})	The regional granted number of green invention patents, Z_{35}
	Openness (Z_4)	External attractiveness (Z_{41})	The actual regional scale of foreign capital utilized, Z_{41}
		Degree of marketization (Z_{42})	Marketization index by region, Z_{42}
		The development of ICT(Z_{43})	Regional internet penetration rate, Z_{43}
	Sharing (Z_5)	People's quality of life (Z_{51})	Consumption level of regional residents, Z_{51}
		Social civilization level (Z_{52})	Number of college students per unit of population in the region, Z_{52}
		Life and health security ($Z_{53–54}$)	Number of hospital beds per ten thousand people in the region, Z_{53}; Number of practicing (assistant) physicians per ten thousand people in the region, Z_{54}
		Basic social security ($Z_{55–57}$)	Utilization rate of labor resources, Z_{55}; Percentage of medical insurance cover, Z_{56}; Percentage of unemployment insurance cover, Z_{57}

3.3. Data Sources

Our analysis uses panel data from 30 provincial-level administrative regions (excluding Tibet) in mainland China from 2006 to 2018. The original $PM_{2.5}$ data are obtained from the global raster data of Washington University in St. Louis, MO, USA, https://sites.wustl.edu/acag/datasets (accessed on 2 April 2023). The number of green patents granted in the region is based on the number of green invention patents granted to listed companies in the patent database of the China National Intellectual Property Administration, https://www.cnipa.gov.cn/col/col1510/index.html (accessed on 2 April 2023). The marketization level index is obtained from the China Market Index Database, https://cmi.

ssap.com.cn/dataQuery (accessed on 2 April 2023). In addition, the original data of the independent variable, control variables, and mediating variables are obtained from the China Statistical Yearbook and the database of the Chinese National Bureau of Statistics. We used the linear complementary difference method to handle a small number of missing values in the data.

Table 2 shows the relevant variables' descriptive statistics. The mean value of the high-quality development index, *hqd*, is 0.379, which indicates that China's overall high-quality development level is not very high during the sample period and needs to be further improved. From the perspective of sub-indicators, the coordination index has the highest mean value of 0.519. The mean values for greenness, openness, and sharing are in the middle of the Big Five, and there is little difference. The mean value of the innovation index is the lowest, at 0.162, indicating that promoting innovation is the most important driving force. Only by making efforts to compensate for the deficiency of innovation can China's overall high-quality development level be significantly improved.

Table 2. Summary statistics.

VarName	Obs	Mean	Median	SD	Min	Max
hqd	390	0.379	0.372	0.108	0.166	0.706
Innovation	390	0.162	0.108	0.159	0.005	0.958
Coordination	390	0.519	0.520	0.166	0.000	0.911
Greenness	390	0.449	0.448	0.092	0.249	0.815
Openness	390	0.385	0.356	0.159	0.106	0.805
Sharing	390	0.339	0.330	0.133	0.088	0.845
ms	390	6.667	6.787	0.774	4.098	8.351
com	390	1.207	1.023	0.708	0.380	4.250
urb	390	0.541	0.524	0.136	0.275	0.896
cu	390	0.365	0.365	0.062	0.218	0.542
gdp	390	0.133	0.121	0.063	−0.040	0.298
fdi	390	0.109	0.072	0.132	0.000	0.851
energy	390	1.060	0.904	0.613	0.224	4.142
rd	390	2.164	−0.192	7.604	−0.946	66.562
patent	390	1.223	0.449	2.459	0.036	21.810
upd	390	0.280	0.258	0.122	0.060	0.631

4. Regression Analysis

4.1. Evaluation of Indicator Measurements

The mean value distribution of the high-quality development composite index by province from 2006 to 2018 is shown in Figure 2. By comparing the high-quality development index in each province, we observe that Beijing, Guangdong, Shanghai, Jiangsu, and Zhejiang are in the first echelon. Obviously, their comprehensive strength is stronger than that of the remaining areas. The level of high-quality development in some provinces belongs to the second echelon and has certain regional competitiveness, including Tianjin, Chongqing, Shandong, and Fujian. Among them, Chongqing, which is located in Southwest China, has the largest high-quality development index in the area, showing regional competitive advantages. Liaoning in northeast China also shows regional competitive advantages. In addition, most provinces in central China are in the third echelon, which has great room for improvement. Nevertheless, the western provinces of Qinghai, Guizhou and Gansu are at a low level. Overall, the level of high-quality development in China varies by province, showing a weakening trend from the east to the central and western areas.

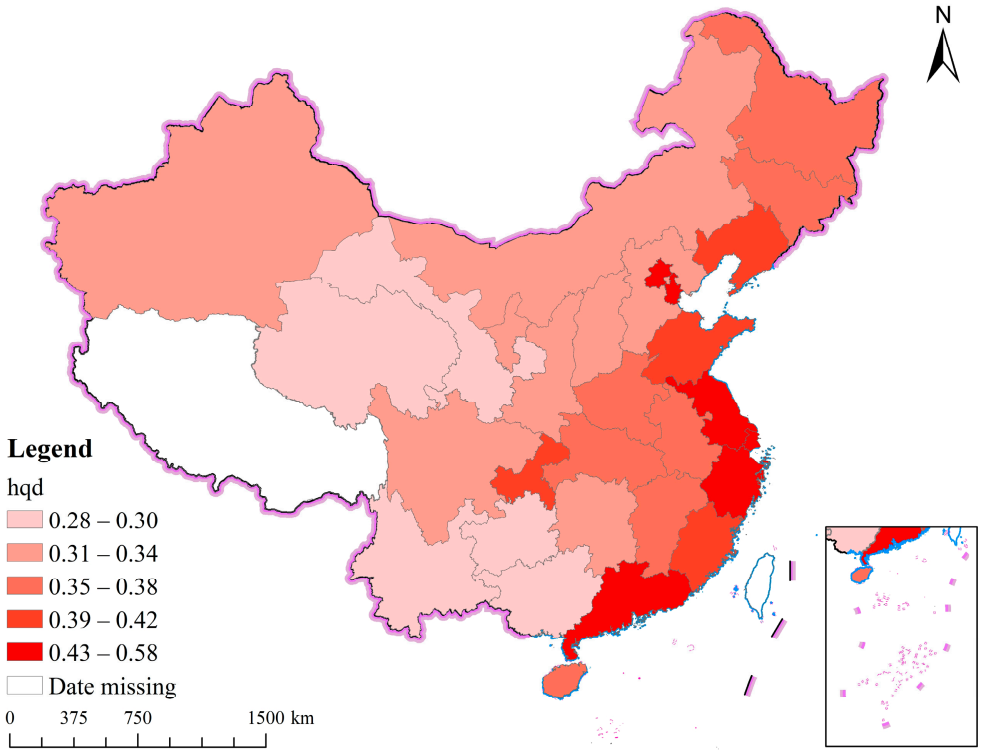


Figure 2. Distribution of high-quality development in China by province (drawing review no. GS(2019)1822) [2].

Figures 2–6 show the mean value distribution of the composite index of five secondary indicators. As shown in Figure 3, the distribution of the regional innovation development level presents obvious regional differences. The top echelon consists of only two provinces, Jiangsu, and Guangdong. Beijing, Zhejiang, Shandong, and other provinces are in the second echelon, with a medium level of innovation competitiveness. The central region and coastal Fujian and northeast Liaoning are in the third echelon, indicating that more efforts are needed. However, the level of innovation development in Qinghai, Gansu, Inner Mongolia, Guangxi, and other provinces is relatively low, so it is urgent to improve the level of regional innovation development. Generally, the overall development level of innovation in China is not very high, and it shows the weakness of uneven regional distribution.

Figure 4 displays the distribution of the regional coordination development level, which generally shows ladder-like characteristics. The coordination development degree of Beijing, Jiangsu, and Zhejiang is in the first echelon. Other coastal areas and the three provinces of Heilongjiang, Jilin, and Liaoning are in the second echelon with good coordination development, while the central regions are in the third echelon with great room for improvement. The coordinated development of Yunnan, Guizhou, Gansu, and other provinces is relatively poor.

Figure 5 shows the distribution of the regional greenness development level. Beijing and the four eastern coastal provinces of Zhejiang, Jiangsu, Guangdong and Fujian are in the first tier and far ahead in greenness development. Yunnan, Chongqing, Shandong, and Anhui are in the second tier, with relatively good greenness development levels. Most of the provinces in central China and Inner Mongolia, Heilongjiang, and Jilin in northeast China are in the third echelon, with room for improvement. The poor level of greenness development in Shanxi, Sichuan, Qinghai, Gansu, and Hebei is in urgent need of attention.

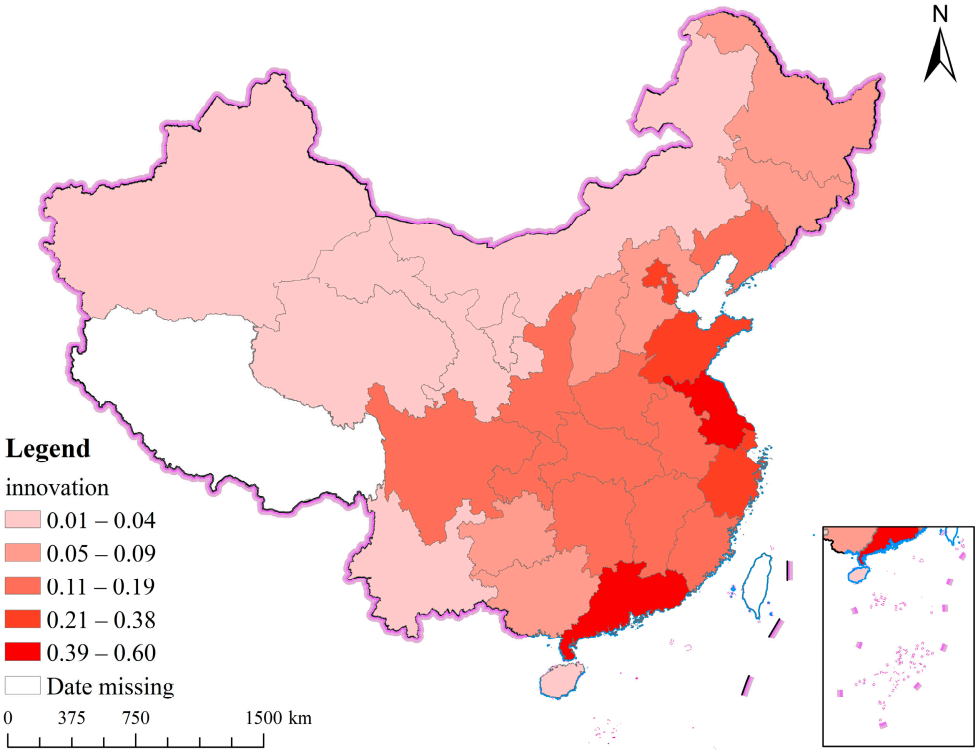


Figure 3. Distribution of innovation development in China by province.

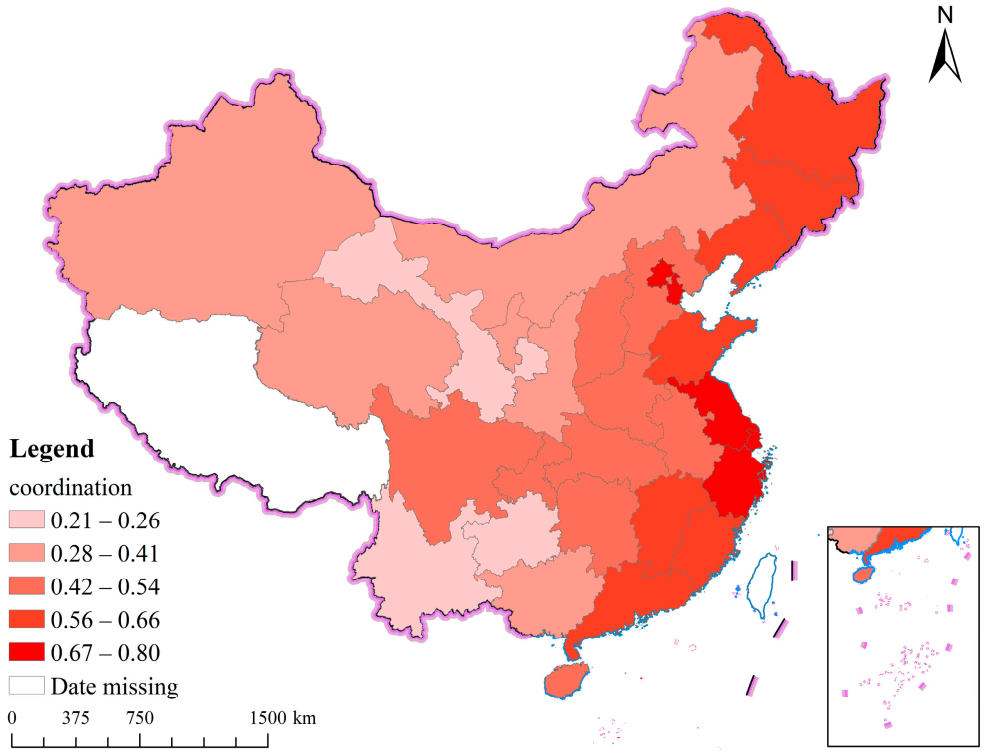


Figure 4. Distribution of coordination development in China by province.

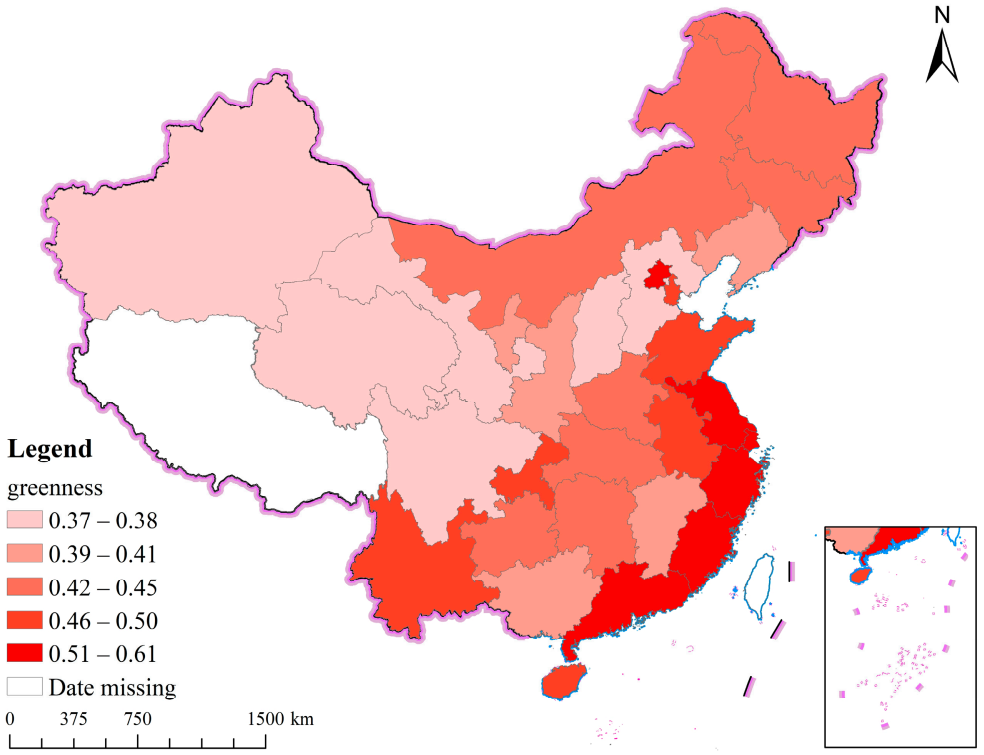


Figure 5. Distribution of greenness development in China by province.

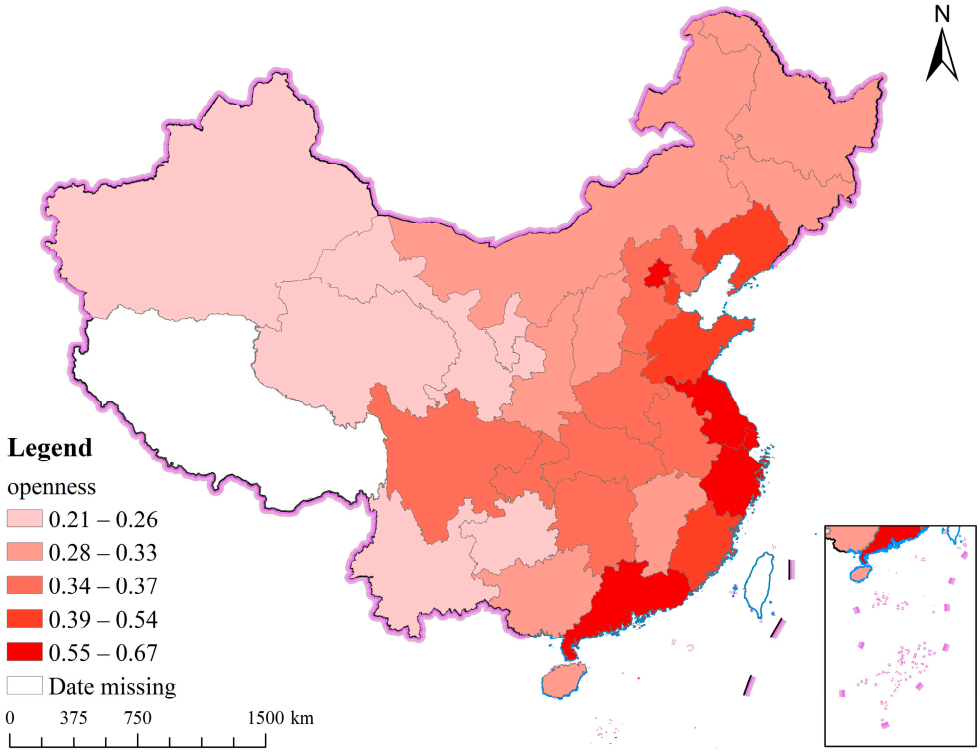


Figure 6. Distribution of openness development in China by province.

Figure 6 shows the distribution of the regional openness development level. Beijing and coastal areas are all at a relatively high level, among which Jiangsu, Guangdong, and Zhejiang are the most open. The central region is slightly less open. Yunnan, Qinghai, Gansu, Guizhou, and other regions have a very low level of openness and have extremely large room for improvement.

Figure 7 shows the distribution of the regional sharing development level. The provinces of Beijing, Guangdong, Jiangsu, Zhejiang, and Liaoning have a high level of sharing development, while other provinces have a relatively low degree.

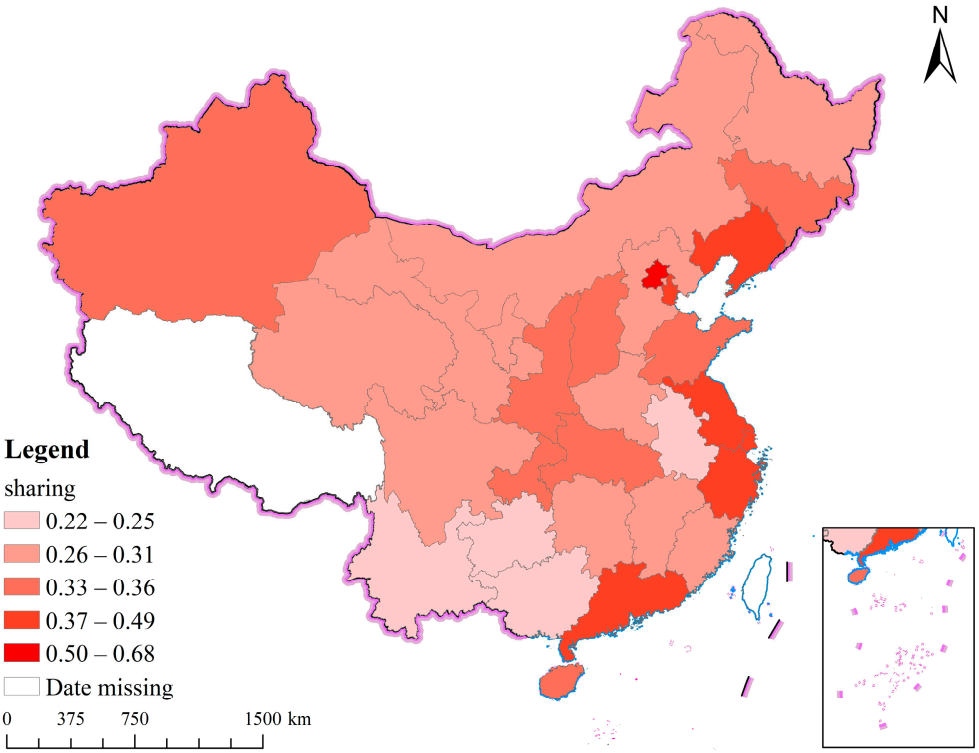


Figure 7. Distribution of sharing development in China by province.

4.2. Baseline Regression Analysis

We regress Equation (1) to test the impact of people's livelihood expenditure level on sustainable regional development. We use the random-effects model, Tobit random-effects model, and stepwise fixed-effects model for testing. The expenditure on people's livelihood has the expected positive impact on our dependent variables (see Table 3) and is statistically significant, which means that increasing expenditures on people's livelihood within the region is a feasible way to improve regional high-quality development. This result provides empirical evidence that spending on people's livelihood promotes high-quality development. On the one hand, a sustained increase in government investment in education and employment can effectively promote fuller and better-quality employment. On the other hand, financial investment in social security and medical care can reduce people's economic burden and improve regional coordination and sharing. Moreover, in the face of the enormous impact of the epidemic, increasing spending on people's livelihood has helped to keep the employment situation stable. Therefore, whether from the perspective of promoting economic development or from that of maintaining employment and social stability, expenditures on people's livelihood play an important role.

Moving to the control variables, the economic growth rate (gdp) exerts a significantly negative impact. This shows that the past mode of extensive economic development with growth as the main goal is inconsistent with the denotation and requirements of high-quality development. The strategic goal of high-quality development determines that speed catch-up should give way to efficiency and quality catch-up. Currently, it can start with the transformation of the government's goal preference function to gradually realize the transformation from a catch-up government to a service-oriented government. The energy consumption per unit of GDP (energy) significantly hurts sustainable regional development, suggesting that reducing the regional energy consumption level and promoting green development will help increase the quality of economic development. Therefore, on the

one hand, the government should actively implement various incentive policies to promote the technological innovation of traditional industries, improve the level of greenness of industrial sectors, and increase the number of green jobs. On the other hand, it is feasible to promote the development of emerging green industries and form a comprehensive green industrial system as soon as possible. We also find strong evidence of the positive role of R&D investment (rd). Innovation is the basic driving force for economic development; it is the general trend, and it is necessary to continue to pay attention to innovation investment in high-quality development. The better the atmosphere of innovation (patents) is, the higher the quality of economic development, which obviously confirms that the construction of an innovation environment is a crucial driver for promoting the quality of regional development. The scale of actual foreign investment (fdi) shows a positive effect, and Model 3 passes the significance test. This shows that the FDI effectively promotes sustainable regional development, but there may be a distinct utilization efficiency of foreign capital in different regions, which leads to the instability of the positive spillover effect. This implies that further strengthening the mechanism construction for win–win cooperation with foreign capital is imperative. The coefficients for population density (upd) are all positive, but most fail the significance test. This shows that the labor force, as an indispensable factor, is very important for high-quality development. Additionally, it is necessary to improve human capital and optimize the spatial distribution of the population to exploit the positive spillover effect of agglomeration areas and stimulate the demographic dividend.

Table 3. Baseline results.

	(1)	(2)	(3)	(4)	(5)
	hqd	***hqd***	***hqd***	***hqd***	***hqd***
ms	0.102 ***	0.095 ***	0.067 ***	0.107 ***	0.089 ***
	(0.005)	(0.005)	(0.009)	(0.005)	(0.011)
gdp	−0.073 ***	−0.089 ***	−0.017	−0.066 ***	−0.012
	(0.024)	(0.026)	(0.036)	(0.024)	(0.034)
energy	−0.016 **	−0.023 ***	−0.011 *	−0.012	−0.002
	(0.007)	(0.007)	(0.006)	(0.008)	(0.006)
rd	0.002 ***	0.002 ***	0.001 ***	0.002 ***	0.000
	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)
patent	0.010 ***	0.011 ***	0.006 ***	0.010 ***	0.004 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
fdi	−0.008	0.020	0.050 **	−0.023	0.022
	(0.023)	(0.024)	(0.019)	(0.023)	(0.019)
upd	0.034	0.021	0.003	0.040 *	0.019
	(0.023)	(0.024)	(0.019)	(0.024)	(0.019)
constant	−0.303 ***	−0.242 ***	−0.093 *	−0.337 ***	−0.234 ***
	(0.044)	(0.043)	(0.053)	(0.044)	(0.063)
Individual fixed	NO	NO	NO	YES	YES
Time fixed	NO	NO	YES	NO	YES
σ_u	0.067 ***				
	(0.009)				
σ_e	0.022 ***				
	(0.001)				
R^2			0.946	0.911	0.948
Wald Test	3684.90 ***	3141.59 ***			
Observations	390	390	390	390	390

Notes: The values in brackets are standard deviations. ***, **, and * indicate that the estimated coefficients are significant at the confidence levels of 1%, 5%, and 10%, respectively.

To guarantee the robustness of the baseline results obtained in the paper, robustness checks are conducted from the following two aspects. First, we conduct a robustness check from the perspective of high-quality development sub-dimensions. Furthermore,

considering endogeneity problems that may result from reverse causation, we take people's livelihood expenditure with a lag period as an instrumental variable and use the GMM estimation method and the 2SLS method to test the endogeneity. Moreover, we take people's livelihood expenditure with a lag period as the core independent variable in Formula (1) to partially mitigate the endogeneity problems caused by reverse causality (see Table 4). Models 1 to 5 are regression results with five second-dimension indicators of the high-quality development index as dependent variables respectively. The coefficient of people's livelihood expenditure on the sub-dimension development index is always positive and passes the 1% significance test. Only the impact on the level of regional openness is not significant. This shows that the increased emphasis on people's livelihood expenditure has an overall role in advancing regional development. The improvement of the quality of people's livelihood services has enabled the improvement of the quality of the growth of the domestic market; nevertheless, the impact on the level of opening up is not significant. These results indicate that in the process of promoting the formation of the dual-cycle pattern, the primary role of people's livelihood services has not been effectively filled, and the impact of foreign investment has not appeared. The possible reason is that at present, to promote high-quality development through greater opening-up, the priority is to continue to deepen institutional reform in foreign trade and investment and accelerate the development of new forms and patterns of opening-up, such as granting greater decision-making power to free trade pilot zones and establishing more comprehensive cross-border e-commerce pilot zones. Comparatively speaking, expenditure on people's livelihood has a greater marginal effect on promoting regional innovation and sharing development, indicating that the improvement of the quality of basic services for people's livelihood can effectively improve the regional productivity level and the regional common prosperity index based on the optimization of the soft environment for regional development. In addition, to alleviate endogeneity problems in fiscal regression analysis, this paper further uses the level of people's livelihood expenditure with a lag period as an instrumental variable and uses the GMM estimation method and the 2SLS estimation method to re-regress Equation (1). The results of Models 6 and 7 show that livelihood expenditure still exerts a positive effect. Column (8) is the regression result of taking the lag period of the variable ms as the core explanatory variable in Formula (1). The coefficient of the variable ms is still significantly positive, indicating that endogeneity problems do not affect the conclusions of this paper. In summary, Hypothesis 1a is verified.

Table 4. Robustness checks and endogenous test.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	Innovation	***Coordination***	***Greenness***	***Openness***	***Sharing***	***hqd***	***hqd***	***hqd***
ms	0.142 ***	0.091 ***	0.087 ***	0.020	0.102 ***	0.031 ***	0.036 ***	0.089 ***
	(0.025)	(0.021)	(0.017)	(0.014)	(0.016)	(0.005)	(0.005)	(0.011)
constant	−0.789 ***	−0.131	−0.127	0.090	−0.328 ***	0.258 ***	0.218 ***	−0.227 ***
	(0.147)	(0.122)	(0.100)	(0.084)	(0.094)	(0.041)	(0.042)	(0.065)
control	YES	YES	YES	YES	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES	YES	YES	YES	YES
Observations	390	390	390	390	390	360	360	360
R^2	0.561	0.809	0.845	0.938	0.939	0.807	0.806	0.945

Notes: The values in brackets are standard deviations. *** indicate that the estimated coefficients are significant at the confidence levels of 1%.

4.3. Heterogeneity Analysis

To verify Hypothesis 1b, that is, that the impact of increasing government expenditure on people's livelihood on sustainable regional development has temporal and spatial heterogeneity, we conduct sub-sample regression using the two dimensions of time and region. In 2006, the outline of the "11th Five-Year Plan" put forward development guidelines

such as "focusing on innovative development models" and "improving the quality of development"; in 2012, the report of the 18th CPC National Congress further announced high-quality development strategies such as "innovation-driven development". Therefore, we divide the sample interval into two periods, 2006–2012 and 2013–2018, when testing the temporal heterogeneity of the impact of livelihood expenditures, and use a two-way fixed effects model for verification. Table 5 shows the results. We find that the coefficients of expenditure on people's livelihood in Models 1–2 are both significantly positive, signifying that the promotion impact of the increased emphasis on livelihood infrastructure has a stable time dimension. On the other hand, in different periods, there are differences in the promotion effect of increasing people's livelihood expenditures. During the period from 2006 to 2012, the promotion effect of the increase in expenditures on people's livelihoods was weak, but during the period from 2013 to 2018, the promotion effect of the rise in spending on people's livelihoods was more prominent. The difference in effect may be due to the different historical development stages, the difference in the government's emphasis on people's livelihood infrastructure, and the difference in the proportion of people's livelihood-related industries in regional economic development. After the 18th National Congress of the Communist Party of China, China attached more importance to the improvement and construction of education, medical care, social security, and employment, focusing on improving the poor quality of people's livelihoods and building a soft environment for high-quality development. Livelihood issues are increasingly important. In other words, the regression results of temporal heterogeneity obtained in Table 5 are consistent with reality and thus with Hypothesis 1b.

Table 5. Analysis of temporal heterogeneity.

	2006–2012	**2013–2018**
	hqd	***hqd***
ms	0.019 *	0.133 ***
	(0.010)	(0.024)
constant	0.153 **	−0.477 ***
	(0.060)	(0.165)
Control	YES	YES
Individually fixed	YES	YES
Time-fixed	YES	YES
R^2	0.936	0.908
Observations	210	180

Notes: The values in brackets are standard deviations. ***, **, and * indicate that the estimated coefficients are significant at the confidence levels of 1%, 5%, and 10%, respectively.

Then, we further verify whether or not the promoting effect of expenditure on people's livelihood expenditure varies with different locations. We perform group regression on the three different regions, and the results are shown in Table 6. First, expenditure on people's livelihood has exerted a significant positive impact on the high-quality development of all provinces located in eastern, central, and western China. Second, comparing the coefficients of the main explanatory variable, ms, it can be seen that the degree of effect on eastern, central, and western China weakens in turn. This shows that relatively developed areas, based on certain advantages in economic development, attach more importance to the improvement of the contribution of people's livelihood infrastructure to regional development and that the degree of correlation between people's livelihood services and regional economic and social development is higher. This region is well in accordance with the people-oriented high-quality development strategy. However, there is room for further improvement in the correlation between people's livelihood construction and regional development in relatively underdeveloped areas. In summary, the sub-sample regression results of the time dimension and the regional dimension jointly prove that there are spatiotemporal differences in the positive promoting effect of the level of expenditure on people's livelihood, and Hypothesis 1b is verified.

Table 6. Analysis of regional heterogeneity.

	(Eastern)	(Central)	(Western)
	hqd	***hqd***	***hqd***
ms	0.093 ***	0.070 **	0.061 ***
	(0.023)	(0.027)	(0.014)
constant	−0.257 *	−0.134	−0.044
	(0.132)	(0.150)	(0.075)
control	YES	YES	YES
Individually fixed	YES	YES	YES
Time-fixed	YES	YES	YES
R^2	0.937	0.978	0.974
Observations	143	104	143

Notes: The values in brackets are standard deviations. ***, **, and * indicate that the estimated coefficients are significant at the confidence levels of 1%, 5%, and 10%, respectively.

4.4. Analysis of the Mediating Effect

As far as the baseline analysis is concerned, the increase in people's livelihood expenditure has a significant positive effect on high-quality development, and whether or not there is a mediating effect on the level of residents' consumption needs to be verified. To further test the transmission mechanism of the effect of people's livelihood expenditure and verify whether or not the increase in the degree of attention given to the infrastructure and services for people's livelihood will activate the domestic demand market by stimulating regional consumption and improving the consumption level of residents, thus promoting regional development quality, this paper adopts the intermediary effect step-by-step analysis method, returning to Formulas (2) and (3). The results are shown in Table 7. We analyze them in combination with baseline regression results. We observe a significant positive correlation between expenditure on people's livelihood and regional consumption levels, and the ratio of the intermediary effect to the total effect is 0.2427; that is, the consumption level of residents could explain 24.27% of the impact of expenditure on people's livelihood on high-quality development. When taking the development index of coordination, sharing, and openness as the dependent variables, the coefficients of residents' consumption level are all significantly positive, signifying that people's livelihood expenditure can improve regional coordination, sharing, and openness by stimulating regional consumption levels. The enhancements in coordination and sharing originate from the construction of people's livelihood infrastructure. By augmenting the intensity of people's livelihood expenditures, the government has effectively relieved fundamental living pressures (e.g., education, employment, social security, and employment), increased the actual income level of residents, and reduced the motivation to save. A good soft environment guides the inflow of external funds and factors, effectively enhancing the openness of regional development. Consumption, as one of the components, plays a key role in promoting economic growth. However, due to the impact of the pandemic, household consumption is currently deeply depressed. The above results provide useful policy enlightenment. The measures taken by governments to promote the recovery and stability of consumption by increasing expenditures on people's livelihood are practical and effective and can also generate lasting impetus for the economy. From the further mediating effect test results, the Sobel test and Bootstrap test both favor the existence of the mediation effect. These results confirm Hypothesis 2.

4.5. Analysis of the Moderating Effect

The advancement of sustainable regional economic development is closely accompanied by the urbanization process, which obviously changes with different periods and different regions. Therefore, to further test how urbanization levels affect the role of people's livelihood levels in regional high-quality development, we select the moderating effect model to regress Equations (1), (4), and (5) (see Table 8). Models 2–3 test the relationship

between urbanization levels and regional high-quality development, as well as its moderating effect on the promotion effect of fiscal spending on people's livelihood. The results indicate that urbanization can significantly promote regional high-quality development, revealing that compared with that of the possible adverse effects of a blind expansion of urbanization, its positive role as a catalyst to promote regional economic development is more prominent. This proves the necessity of promoting urbanization while promoting sustainable regional development. Hypothesis 3a is verified. The coefficients of the interaction term in Model 3 and Model 4 (after decentralized processing) are the most noteworthy elements. The coefficients are significantly positive in both models. After controlling the multiplication term, the positive promotion effect of people's livelihood expenditure is enhanced. This shows that urbanization plays an effective regulating role and can strengthen the marginally promoting effect of people's livelihood expenditure, which verifies Hypothesis 4. Therefore, the government should continue to promote urbanization, take the reform of the system and mechanism as the driving force, and fully realize the enormous potential of domestic demand in urbanization around the goals of ensuring people's livelihood and promoting high-quality development to provide a lasting and strong driving force for sustained development.

Table 7. Analysis of the mediating effect.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
	com	***hqd***	***Innovation***	***Coordination***	***Greenness***	***Openness***	***Sharing***
ms	0.472 ***	0.081 ***	0.088 ***	0.075 ***	0.094 ***	0.066 ***	0.098 ***
	(0.034)	(0.006)	(0.013)	(0.013)	(0.009)	(0.010)	(0.010)
com		0.055 ***	0.007	0.067 ***	−0.010	0.107 ***	0.101 ***
		(0.008)	(0.017)	(0.016)	(0.011)	(0.012)	(0.013)
constant	−2.163 ***	−0.219 ***	−0.524 ***	−0.056	−0.177 ***	−0.206 ***	−0.375 ***
	(0.275)	(0.044)	(0.093)	(0.088)	(0.060)	(0.067)	(0.070)
control	YES	YES	YES	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES	YES	YES	YES
R^2	0.897	0.922	0.529	0.713	0.841	0.886	0.901
Observations	390	390	390	390	390	390	390
Sobel test		0.026 ***	0.003	0.031 ***	−0.005	0.050 ***	0.048 ***
		(0.004)	(0.009)	(0.008)	(0.005)	(0.007)	(0.007)
Bootstrap test		0.026 ***	0.003	0.031 ***	−0.005	0.050 ***	0.048 ***
		(0.004)	(0.011)	(0.007)	(0.006)	(0.009)	(0.005)

Notes: The values in brackets are standard deviations. *** indicate that the estimated coefficients are significant at the confidence levels of 1%.

Table 8. Moderating effect of urbanization.

	(1)	**(2)**	**(3)**	**(4)**
	hqd	***hqd***	***hqd***	***hqd***
ms	0.089 ***	0.046 ***	0.016	0.056 ***
	(0.011)	(0.011)	(0.013)	(0.011)
urb		0.540 ***	0.102	0.102
		(0.063)	(0.118)	(0.118)
urb×*ms*			0.074 ***	
			(0.017)	
c_urb×*ms*				0.074 ***
				(0.017)
constant	−0.234 ***	−0.268 ***	−0.069	−0.069
	(0.063)	(0.057)	(0.072)	(0.072)
control	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES

Table 8. *Cont.*

	(1)	(2)	(3)	(4)
	hqd	***hqd***	***hqd***	***hqd***
Time fixed	YES	YES	YES	YES
R^2	0.948	0.957	0.960	0.960
Observations	390	390	390	390

Notes: The values in brackets are standard deviations. *** indicate that the estimated coefficients are significant at the confidence levels of 1%.

5. Conclusions and Implications

Upholding the principles of people-centered development and ensuring the well-being of individuals represent the fundamental intent and ultimate aspiration of sustainable regional development. On the basis of constructing a high-quality development evaluation system, this paper utilizes the TOPSIS-Entropy method to gauge the quality of development across 30 administrative provinces in China between 2006 and 2018 and empirically examines the impact of government expenditure on people's livelihood on regional high-quality development based on the quality of livelihood-based infrastructure and services. Based on this, it effectively explores the mediating effect of the regional consumption level and analyzes the change in the marginal effect of enhancing the government's livelihood-type expenditures on regional high-quality development in light of the development process of China's urbanization. Based on the analysis of the manuscript, the main conclusions of this paper are as follows. First, the level of high-quality development in various regions shows a more obvious ladder-type characteristic, and there is the problem that the overall quality of development is not high and regional development is not balanced. Second, the increase in government expenditure on people's livelihoods can promote the high-quality development of the region, and there is a spatial-temporal difference in the impact of the increase in government expenditure on people's livelihoods on the high-quality development of the region. Third, the increase in government expenditure on people's livelihood can stimulate the improvement of the regional consumption level, promote the formation of the regional internal circulation market, and then promote regional high-quality development. Fourth, the promotion of urbanization can effectively promote regional high-quality development and can effectively enhance the positive effect of the improvement of the level of expenditure on people's livelihood on regional high-quality development.

These findings hold significant implications for policies aimed at fostering enduring and high-quality development. First, governmental strategies should be centered on prioritizing fundamental livelihood infrastructure, meticulously tailored to the evolving economic stages and underlying laws. This necessitates augmented financial allocations toward education, healthcare, social security, and employment services, thereby amplifying their caliber and fostering an environment conducive to sustainable regional progress. Notably, local administrations must underscore the affirmative impact of livelihood expenditure across disparate developmental contexts, necessitating the formulation and execution of targeted policies to fortify and elevate living standards within the eastern, central, and western regions of the nation. Second, for the enhancement of regional economic structures and developmental quality, governmental focus should pivot toward elevating residents' consumption tendencies and nurturing novel consumption paradigms. Local authorities must endeavor to bolster actual income levels while concurrently curbing precautionary savings. This can be achieved through dynamic initiatives that bolster employment opportunities, refine social security provisions, and strategically align the contours of fundamental old-age insurance with national aspirations. Concurrently, guiding residents to elevate consumption quality, recalibrate consumption patterns, and foster innovative consumption modalities will culminate in the establishment of a robust internal market, thus galvanizing regional development in a sustainable manner. Third, the expedited adoption of new-generation urbanization is pivotal for optimizing resource utilization efficiency through judicious population agglomeration. An acute awareness of the fortifying impact

of population concentration during urbanization on the advancement of regional sustainability via government-backed livelihood expenditures is imperative for local governments. Furthermore, crafting an enabling milieu for livelihood enhancement should serve as a pivotal lever to elevate the efficiency and caliber of governmental services. This confluence will not only engender an augmented sense of well-being during population agglomeration but also accentuate the overall quality of government services, thereby orchestrating a harmonized and sustainable trajectory for regional development.

6. Limitations and Future Research Directions

While this study provides valuable insights into the impact of livelihood expenditure on high-quality development, it is essential to acknowledge our inherent limitation in controlling for unobservable heterogeneity across regional and sectoral dimensions. Furthermore, the country-level focus of our analysis, while informative, constrains a more comprehensive and nuanced examination achievable through cross-country data. Such data would enable a profound exploration encompassing distinct economic development stages and diverse social characteristics. An avenue for further investigation revolves around the exploration of cross-regional spatial spillovers engendered through livelihood expenditure, encompassing phenomena such as migration and capital mobility. Indeed, the infrastructure of livelihoods significantly influences residents' well-being and life satisfaction, thereby intricately shaping migration decisions. This demographic flux further cascades into alterations in the local market scale. Considering the pivotal role of market dimensions and demand potential in steering enterprise production layouts, such dynamics can potentially induce cross-regional capital reallocations, thereby warranting diligent inquiry.

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Notes

[1] The specific method is given by the following formula:

$$z_{i,t} = \sum_{c=1}^{3} \frac{y_{i,c,t}}{y_{i,t}} ln\left(\frac{y_{i,c,t}}{l_{i,c,t}} / \frac{y_{i,t}}{l_{i,t}}\right), c = 1, 2, 3$$

where subscripts i and t represent region and period year. c represents the number of industrial sectors. When c is equal to 1, 2 and 3, it represents the primary industry, the secondary industry, and the tertiary industry, respectively. $y_{i,t}$ represents the GDP of region i in period t, $y_{i,c,t}$ represents the output value of industry c of region i in period t, $l_{i,t}$ represents the total employment of region i in period t, and $l_{i,c,t}$ represents the total employment of industry c of region i in period t. The index can well reflect the degree of coordination between industries and measure the coupling degree between factor input structure and output structure. The smaller the value of z is, the smaller the deviation of industrial structure from the economic equilibrium state and the more reasonable the industrial structure is.

[2] http://bzdt.ch.mnr.gov.cn/download.html?searchText=GS(2019)1822 (accessed on 1 September 2023).

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