International Journal for Housing Science and Its Applications
Publish August 10, 2025. Volume 46, Issue 4 Pages 7175-7185

https://doi.org/10.70517/ijhsa464622

A study of accounting treatment of capital flows in housing development projects and its impact on cost control

Hongyan Zhu[1,*]
[1] School of Accounting, Shaanxi Technical College of Finance & Economics, Xianyang, Shaanxi, 712000, China
Corresponding authors: (e-mail: zhy501318@163.com).

Abstract The cost composition of housing development projects is complex, involving material costs, labor costs and other aspects, and the traditional accounting treatment method has limitations in cost control. How to realize effective cost control through scientific accounting treatment methods has become a key issue for housing development enterprises to enhance their competitiveness and profitability. Taking a housing development project in a city as an example, this study explores the relationship between the impact of capital flow accounting treatment methods on cost control through multiple linear regression model. The study selects five accounting treatment methods, namely cost accounting procedures, financial management mechanism, breakdown of each cost, financial accounting and contract price, as explanatory variables, and cost control as explanatory variables, and uses the least squares method for parameter estimation. The empirical results show that the established multiple linear regression equation is: cost control=0.108+0.107×cost accounting procedure+0.219×financial management mechanism+0.216×costs+0.211×financial accounting+0.092×contract price, and the model fitting goodness of R^2 reaches 0.841, which indicates that the accounting processing methods have a significant positive effect on cost control. Spatial effect analysis shows that financial accounting has the highest spatial effect coefficient of 0.618, followed by financial management mechanism of 0.429. The conclusion of the study shows that optimization of accounting processing methods can effectively improve the level of cost control of housing development projects, and provide a scientific basis for enterprise management decision-making.

Index Terms Housing development project, capital flow, accounting treatment method, cost control, multiple linear regression, spatial effect

I. Introduction

According to statistical data, in 2024, the total capital investment in China's real estate industry reached more than 10 trillion yuan, accounting for about 20% of the investment in fixed assets, and the position of real estate enterprises as the pillar of China's economy is still obvious [1]. But after nearly two decades or so of development, with the changes in the way the state land use right transfer and the impact of real estate control policies, real estate development enterprises have undergone great changes in the business environment, real estate development speculative opportunities are becoming less and less, the industry's average profit margins declining year by year, as long as you get the land to make money in the era has gone [2]-[4].

The real estate industry is different from general investment projects, it has a large investment, long cycle, poor liquidity characteristics, which determines the development process both business risks, financial and fiscal risks and other market risks, but also national macroeconomic policy and real estate regulation and control policy changes caused by the policy risk, these risks have highlighted the importance of the investment measurement in the decision-making period of the development project [5]-[8]. In order to avoid the risk of unprofitability or even loss, development enterprises must analyze the feasibility of housing development projects under various risk conditions through capital flow measurement [9]. In addition, the measurement of capital flow of housing development projects, as an important part of the project feasibility study report, not only affects the correctness of the investment decision, but also affects the preparation of the next stage of the development program and the development plan, and affects the implementation stage of the project development strategy to use and achieve the decision-making stage of the comprehensive and accurate flow of funds, but also for the cost control of the project to lay a good foundation [10]-[13].

Housing development, as an important pillar industry of the national economy, its healthy development is of great significance for promoting economic growth and improving people's livelihood. In the context of the new era, the real estate market regulation and control policies have become increasingly stringent, and the development enterprises are facing the severe challenges of rising financing costs and compressed profit margins. At the same time, factors such as fluctuating prices of construction materials, increasing labor costs, and high land acquisition costs have further exacerbated the difficulty of cost control in housing development projects. In this market environment, how to achieve effective cost control through refined financial management has become the core proposition for the survival and development of housing development enterprises. Accounting processing as the basic link of enterprise financial management, its method and quality directly affect the accuracy of cost information and the scientific nature of decision-making. The traditional accounting processing often exists cost accounting is not precise enough, the cost collection is not reasonable enough, the flow of funds monitoring is not timely enough and so on, these problems constrain the improvement of the effect of cost control. The arrival of the digital era has provided a new opportunity for the innovation of accounting processing methods, and the application of cloud computing, big data, artificial intelligence and other technologies has made the processing of accounting information more efficient and accurate, laying a technical foundation for refined cost management. However, technological progress does not automatically translate into the improvement of management effect, and the key lies in how to combine advanced technological means with scientific management concepts to build an accounting processing system that adapts to the characteristics of housing development projects.

Based on the above background, this study adopts the method of combining theoretical analysis and empirical research to explore in depth the accounting treatment of capital flow in housing development projects and its influence mechanism on cost control. Firstly, through literature combing and theoretical analysis, key accounting treatment elements affecting cost control are identified, including the clarity of cost accounting procedures, the perfection of financial management mechanism, the degree of refinement of each expense, the financial accounting method of actual receipts and disbursements, and the treatment of contract price. Then a multiple linear regression model is constructed to quantify the degree of influence of each accounting treatment on cost control by using panel data for empirical analysis with a specific housing development project in a city as a case study. Meanwhile, spatial effect analysis is introduced to examine the spatial correlation characteristics of the accounting treatment methods on cost control, with a view to providing scientific basis and practical guidance for housing development enterprises to optimize the accounting treatment methods and improve the level of cost control.

II. Exploring the relationship between accounting treatments and the role of cost control

II. A. Financial flows in housing development projects

Financial flows have assumed an important role in housing development projects, as evidenced by their continued expansion, largely benefiting from the strong growth in investment in the construction sector. Corporate transactions, the activities of financial institutions and individual remittances are all contributing to this trend. At the same time, the channels and forms of flows are becoming increasingly diverse, with emerging digital currencies and blockchain technologies bringing more efficient and transparent solutions to housing development projects. In addition, financial flows have taken on a geographic character, with developed countries dominating, but emerging markets and developing countries are also actively participating. Looking ahead, financial flows are expected to continue to grow, with the structure of financial flows changing along with the further rise of the housing development projects market, with a greater share of housing development projects market economies. Developments in financial technology, in particular digital currencies, will reshape cross-border financial flows.

II. B. Accounting treatment

II. B. 1) Clear cost-accounting procedures

Clear cost accounting procedure is an important part of cost accounting for housing development projects, which helps to improve the cost accounting processing effect, ensure that cost accounting can be fully implemented in accordance with the predetermined procedures to achieve the expected results, and improve the level of accounting work. Clear cost accounting procedures can also promote the accounting staff to recognize the focus of cost accounting, and combined with previous work experience to seriously analyze the cost accounting problems that may arise, implement the principles of scientific work, through specialized accounting methods, to solve the cost accounting problems, to ensure the accuracy of the final results. In this process, once any problem occurs, we should speed up the speed of information transfer, to facilitate the departmental managers in accordance with the accounting problems, put forward effective decision-making programs and optimization measures to promote the effective optimization of the costing process.

II. B. 2) Financial management mechanisms

Enterprises in cost accounting should pay attention to the effective penetration of information technology awareness of the workforce, strengthen the comprehensive quality of accounting staff effective training, and promote accounting staff to flexibly respond to the problems that exist in the accounting work. In the housing development project cost accounting implementation process, enterprises need to do a good job in the whole process of supervision, the use of information technology to quickly organize the corresponding information, timely detection of the contradictions, to ensure that the cost accounting work is carried out in an orderly manner. At the same time, it is also necessary to use the characteristics of information technology, sound financial management mechanism within the enterprise, highlighting the modernization of the work of thinking, and then can also be integrated into the Internet thinking, so that the entire accounting work has a strong openness, the formation of a good accounting atmosphere within the enterprise, in order to further safeguard the effect of cost accounting. In addition, enterprises also need to focus on cost accounting and information technology integration, information technology throughout the different cost accounting, to help enterprises to complete the modernization of cost accounting objectives, standardize the different accounting behavior, and improve the development level of construction enterprises.

II. B. 3) Breakdown of costs

Construction enterprises to optimize the cost accounting management mode, mainly in the understanding of the housing development project cost expenditure, and then according to the actual housing development project needs for cost control and allocation, in order to improve the cost management level. In this process, we should first carry out the calculation of cost data and statistics to understand the expenditure of housing development projects, and then do a good job in the scientific allocation of resources to maximize the economic benefits. As the housing development project cost accounting contains more complex content, in order to reduce the impact on cost management, in practice, managers need to scientifically plan the corresponding housing development project type, in order to optimize the current accounting program, timely discovery of various problems in the use of resources in housing development projects, so that the overall accounting effect meets the expected requirements. For example, the material cost is mainly in the direct cost accounts and indirect cost accounts, in the accounting process need to first carry out the unified classification of information, and then according to the housing development project cost management requirements, do a good job in the scientific allocation of material costs, and then refine the corresponding accounting standards. This not only ensures the smooth progress of the accounting work, but also helps to reduce the probability of contradictory problems, so that the overall effect of the work meets the expected requirements.

II. B. 4) Financial accounting for the implementation of receipts and disbursements

The financial accounting method of the enterprise's actual income and expenditure is to carry forward the profit and loss of the enterprise to the "current year's profit" account through the year-end accounts, and reflect the profit and loss of the enterprise in the year-end accounts. All construction products constructed in housing development projects, regardless of the extent to which the project is completed and no matter how much money the construction party allocates, a certain percentage of the tax shall be withdrawn according to the actual project payment. According to the actual income and expenditure, it is transferred to the account of "project settlement cost". The balance of the contractor at the end of the year can be directly accounted for through the "project settlement cost" account, and then transferred to the "current year's profit" account to settle the company's profit and loss.

II. B. 5) Contract price

When the construction of the housing open project is completed, the construction party can not fully pay the project money and the part of the project money is owed, at this time, borrow: account collection, credit: project settlement income, accounting in the account. Through the accounting of the "project settlement income" account, depending on the availability of funds, taxes should be withdrawn and entered into the account for accounting and payment. This method is called "tax first, then collect". The establishment of the "contract price" account solves the problem of "tax first and collection later". The accounting entries are: debit: accounts receivable, credit: contract price, which are reflected in the secondary accounts. When the funds are in place and the "accounts receivable" and "contract price" are reduced, the contract price will be borrowed, and the accounts receivable will be credited; At the same time, borrow: cash or deposit, credit: project settlement income. The tax will then be withdrawn according to the actual project payment. This method is called "collect first and tax later".

II. C.Variable settings and data sources

II. C. 1) Variable settings

As this paper explores the relationship between the impact of accounting treatment of capital flows on cost control in housing development projects, the five accounting treatments described above are set as the explanatory variables of this research, while the corresponding explanatory variables are cost control in housing development projects. In order to facilitate the subsequent research and analysis, the symbols X1, X2, X3, X4, X5, and Y are used to denote the costing procedures, financial management mechanism, various expenses, financial accounting, contract price, and cost control, respectively.

II. C. 2) Data sources

Combined with related studies and References, the open financial data of a housing project is used as the data source of this study, which largely ensures the validity and reliability of the research results, and also provides solid data support for the empirical analysis of explanatory and interpreted variables below.

II. D. Multiple linear regression models

Multiple linear regression modeling (MLR) is a method of statistical analysis that is widely used in various fields. Its purpose is to explore the intrinsic connection between an indicator and multiple other indicators and to explain this connection by solving for the coefficients of the multiple indicators. In the medical field, multiple linear regression is an important analytical method in building financial statistics. In clinical diseases, it is often necessary to analyze the relationship between a disease and several causative factors, and to predict the disease by the values of these factors, and other problems. Multiple linear regression is an effective means of dealing with such problems. Therefore, in this study, a multiple linear regression model was initially chosen to investigate the accounting treatment of capital flows in housing development projects and its impact on cost control.

II. D. 1) Regression equations

Multiple linear regression model, as the name suggests, is to study the relationship between a dependent variable and multiple independent variables, which is similar in principle compared with univariate linear regression, except that it is more complicated in computation [14], [15]. If we assume that the dependent variable is y, and we need to explore the linear relationship between the dependent variable y and n independent variables $x_1, x_2, \cdots, x_n$, then its general multiple linear regression formula is shown in equation (1):

$$y = \sum_{i=1}^{n} b_i x_i + b_0 + \varepsilon \tag{1}$$

where: b_i denotes the partial regression coefficient of its corresponding independent variable in the sample, which means the amount of change in the dependent variable y averaged over a unit change in the independent variable. b_0 is a constant that represents the intercept. ε is the random error after removing the effect of n independent variables on the dependent variable y, also known as the residual, which is an unobservable random variable. If there are m sets of observations, the formula shown in equation (2) can be obtained by substituting them into the general formula:

$$\begin{cases} y_1 = b_0 + b_1 x_{11} + b_2 x_{12} + \cdots + b_n x_{1n} + \varepsilon_1 \\ y_2 = b_0 + b_1 x_{21} + b_2 x_{22} + \cdots + b_n x_{2n} + \varepsilon_2 \\ \vdots \\ y_m = b_0 + b_1 x_{m1} + b_2 x_{m2} + \cdots + b_n x_{mn} + \varepsilon_m \end{cases} \tag{2}$$

Write it in vector form as shown in equation (3):

$$\begin{cases} y = \begin{bmatrix} y_1 & y_2 & \cdots & y_m \end{bmatrix}^T \\ X = \begin{bmatrix} 1 & x_{11} & x_{12} & \cdots & x_{1n} \\ 1 & x_{21} & x_{22} & \cdots & x_{2n} \\ & & \vdots & & \\ 1 & x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \\ b = \begin{bmatrix} b_0 & b_1 & \cdots & b_n \end{bmatrix}^T \\ \varepsilon = \begin{bmatrix} \varepsilon_1 & \varepsilon_2 & \cdots & \varepsilon_m \end{bmatrix}^T \end{cases} \tag{3}$$

Then equation (3) can be written as equation (4):

$$\begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_m \end{bmatrix} = \begin{bmatrix} 1 & x_{11} & x_{12} & \cdots & x_{1n} \\ 1 & x_{21} & x_{22} & \cdots & x_{2n} \\ & & \vdots & & \\ 1 & x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \begin{bmatrix} b_0 \\ b_1 \\ \vdots \\ b_n \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \varepsilon_m \end{bmatrix} \tag{4}$$

Eq. (4) can then be expressed as Eq. (5):

$$y = Xb + \varepsilon \tag{5}$$

where the vector of partial regression coefficients b is the unknown parameter and ε is the residual. In general X is referred to as the information matrix of order $m \times (n+1)$, assuming that X is column-full rank, i.e:

$$rank(X) = 1 + n \tag{6}$$

Eq. (6) represents the rank of the matrix X and Eq. (5) is a classical linear algebra formula. Our aim is to solve for the vector of partial regression coefficients b in the model. The following subsection describes the methods used in this paper in solving for the coefficients in the multiple linear regression model.

II. D. 2) Least Squares

The purpose of multiple linear regression is to solve an optimal equation that can be used to predict the value of the dependent variable y with known information about the independent variable X of the data. In this optimal equation, the "superiority" is reflected in the regression coefficients, which can generally be solved by using the sum of squares of the minimization errors. If the sum of differences is used as a method of solving the regression coefficients, in the process of solving, due to the existence of positive and negative values of the difference, there will be positive and negative cancel each other out, which will have a negative impact on the regression results, so the sum of squares of the errors is generally used. The sum of squared errors is shown in equation (7) below:

$$Q(b) = \sum_{i=1}^{m} \left((b_0 + b_1 x_{i1} + b_2 x_{i2} + \cdots + b_n x_{in}) - y_i \right)^2 \tag{7}$$

where $Q(b)$ is the sum of squares of the errors between the predicted and actual values. Then multiple linear regression is to solve for the value of the parameter vector b such that the value of $Q(b)$ in equation (7) above is minimized. The process by which we minimize the $Q(b)$ function as a constraint to solve for the optimal solution of the parameter vector is the least squares algorithm.

Defining y_i' as the predicted value of the model corresponding to the actual outcome y_i with the following expression (8), Eq. (7) can be written as Eq. (9) below:

$$\begin{cases} y_{i'} = b_0 + b_1 x_{i1} + b_2 x_{i2} + \cdots + b_n x_{in} \\ y' = \begin{bmatrix} y_1' & y_2' & \cdots & y_m' \end{bmatrix}^T = Xb \end{cases} \tag{8}$$

$$h(b) = \sum_{i=1}^{m} (y_i' - y_i)^2 \tag{9}$$

where $h(b)$ is defined as being a function so that solving for the minimum value of $Q(b)$ can be transformed into solving for the minimum value of $h(b)$. Combining Eq. (3), Eq. (8) and Eq. (9) leads to Eq. (10):

$$h(b) = \sum_{i=1}^{m} (y_i' - y_i)^2 = (y - y')^T (y - y') = (y - Xb)^T (y - Xb) \tag{10}$$

When y' and y infinitely close, at this time $h(b)$ is equal to a very small value of δ, get the following formula (11), at this time, its two sides of the parameter b respectively, the derivation of the formula (12), the expansion of which can be obtained to obtain the final formal equation as shown in equation (13):

$$h(b) = (y - Xb)^T (y - Xb) = \delta \tag{11}$$

$$2X^T (y - Xb) = 0 \tag{12}$$

$$b = (X^T X)^{-1} X^T y \tag{13}$$

where X^T is the transpose matrix of matrix X and $(X^T X)^{-1}$ is the inverse matrix of $X^T X$, it can also be seen that this method must be applied in the case of the existence of the inverse matrix of $X^T X$. After obtaining the formal equation shown in Eq. (13), the optimal parameters can be solved by bringing in the known parameters, and finally the model of the multiple linear regression equation can be determined and the prediction can be made by this model.

II. D. 3) Coefficient of determination (r^2)

A series of tests such as the performance of the model need to be performed after the model is established. The tests of regression model include: goodness-of-fit test, significance test of regression equation and significance test of regression coefficient [16]. Among them, the goodness-of-fit test, also known as the coefficient of determination, is a frequently used test of regression model performance in research. The goodness of fit, i.e., the closeness of the predicted value of the model to the true value of the sample, is expressed by the coefficient of determination r^2, which is solved by the formula in equation (14):

$$\begin{cases} SSR = \sum_{i=1}^{n}\left(y_i - \overline{y}\right)^2 \\ SSE = \sum_{i=1}^{n}\left(y_i - \hat{y}_i\right)^2 \\ SST = \sum_{i=1}^{n}\left(y_i - \overline{y}\right)^2 \\ r^2 = \dfrac{SSR}{SST} = \dfrac{\sum_{i=1}^{n}\left(y_i - \overline{y}\right)^2}{\sum_{i=1}^{n}\left(y_i - \overline{y}\right)^2} \end{cases} \tag{14}$$

where y_i is the true value of the i th sample, $\hat{y}_i$ is the predicted value of the i th sample, and $\overline{y}$ is the mean of the true values of the n th sample. SSR is called the sum of squares of regression, which expresses the deviation of the fitted predicted values from the mean, SSE is called the sum of squares of residuals, and $SST = SSR + SSE$ is called the sum of squares of total deviations. From equation (14), r^2 takes values in the range $[0,1]$ and depends on the value of SSR. The closer the value of r^2 is to 1, i.e., the larger the value of SSR is, the better the fit of the multiple linear regression equation is, and vice versa.

Usually the function of the significance test is to prove whether the observations are valid or not, while the actual experiments are often due to time, manpower, material resources, funds and other reasons, resulting in only a small sample of results. For this situation, a test applicable to small samples with unknown overall distribution is proposed, i.e., the replacement test. The principle is to utilize the randomly arranged samples for statistical inference, by replacing the samples in order, recalculating the amount of statistical test, constructing the empirical distribution, and on the basis of which the P-value is derived for inference. In this paper, after the model is realized, the replacement test is used to test the stability and reliability of the MLR model in order to test the non-accidental nature of the model.

II. D. 4) Multicollinearity diagnosis

In recent years, how to diagnose multicollinearity and calculate the severity of the covariance has become a popular issue discussed by statisticians. This section systematically summarizes common methods for diagnosing multicollinearity for doing further research.

The sufficient condition to be satisfied to build a multiple linear regression model is the rank $rank\left(X\right) = k+1$ of the design matrix X, which means that the column vectors of the sample matrix X are linearly independent of each other. But in economic analysis, such as studying economic problems, several factors need to be considered. However, due to the complexity of things, there is some correlation between most of the factors. Generally, the weak correlation between independent variables is seen as meeting the modeling requirements of the regression model; however, when there is a strong correlation between the independent variables, the regression model is considered to be non-compliant with the basic assumptions and is said to suffer from the problem of multicollinearity.

In the actual analysis process, it is more common that the linear relationship approximately holds, that is, there exists a set of constants $c_0, c_1, c_2, \cdots c_k$ are not all zero, making:

$$c_0 + c_1 x_{i1} + c_2 x_{i2} + \cdots + c_k x_{ik} \approx 0, i = 1, 2, \cdots, n \tag{15}$$

Multicollinearity is said to exist between the independent variables $x_1, x_2, \cdots, x_k$ when the relationship shown in equation (15) exists between the independent variables $x_1, x_2, \cdots, x_k$.

The simple correlation coefficient can usually be used to initially determine the existence of three kinds of relationships between the independent variables of the imputation model:

(1) $r_{x_i x_j} = 0$, i.e., x_i has no linear relationship with x_j.

(2) $r_{x_i x_j} = 1$, i.e., x_i and x_j are perfectly covariant.

(3) $0 < \left| r_{x_i x_j} \right| < 1$, there is some degree of linearity between the independent variables.

The independent variables are made dimensionless, so that $\left(X^*\right)^T X^* = \left(r_{ij}\right)$ is the correlation array of the independent variables. Notation:

$$C = \left(c_{ij}\right) = \left(X^{*T} X^*\right)^{-1} \tag{16}$$

Call the main diagonal element $VIF = c_{jj}$ the variance expansion factor of the independent variable x_j.

This is obtained by the equation $D\left(\hat{\beta}\right) = \sigma^2 \left(X^T X\right)^{-1}$:

$$Var\left(\hat{\beta}_j\right) = C_{jj} \sigma^2 / L_{jj}, j = 1, 2, \cdots, k \tag{17}$$

where L_{jj} is the sum of squared deviations of x_j. Let R_j^2 be the complex coefficient of determination of the independent variable x_j with respect to the other variables, and remember that $c_{ij} = \dfrac{1}{1 - R_j^2}$ is the definition of VIF_j.

We usually use R_j^2 to measure the degree of linear correlation between independent variables, and the larger VIF_j is when $R_j^2 \to 1$. From this point of view, we can use the value of VIF_j to reflect the degree of multicollinearity between the independent variables. Typically, $VIF_j \geq 10$ indicates that there is a strong covariance problem between the respective variables in the least squares estimation, and it can have a large impact on the LS estimate.

III. Analysis of empirical studies

III. A. Brief description of the case

As an example, a housing development project in a city that does not facilitate the disclosure of information due to confidentiality agreements. The project covers an area of approximately 39,960m², totaling approximately 59.54 acres. The plot ratio is 3.03, and the gross floor area is about 119,300 square meters. The property type is commercial and residential with a greening rate of about 35%. The building type includes multi-storey, high-rise and small high-rise, the parking space is divided into above ground parking space and underground parking space, and the decoration status is rough house. The financing method is self-financing and bank loan, and the payment method is one-time payment and mortgage loan. At the same time, the building appearance of the project needs to meet the regulations of Chongqing city planning. The construction period of the project is 16.57 months, the total investment is about 1.2 billion (including land cost), and the contracted work volume is about 119,300 square meters. After the completion of the housing development project, the overall sales condition is good, and no large-scale quality accidents and group rights defense incidents have occurred up to now.

III. B. Statistical analysis

III. B. 1) Descriptive statistical analysis of variables

In this paper, by organizing and analyzing all the raw data, the descriptive statistical results of all variables were initially obtained, and the results of the descriptive statistical analysis of the variables are shown in Table 1. As can be seen from Table 1 below, the following are the overall descriptive statistical results for each variable of the research project case in this paper. The data of both explanatory and interpreted variables are kept above 3.5, and the corresponding standard deviation is 0.3~0.5, in addition, the P value is greater than 0.5, which indicates that the data sources of the variables set up meet the requirements of this research.

Table 1: Descriptive statistical analysis results of variables

Variable	N	Min	Max	Mean	SD	P	T
X1	500	1	5	3.939	0.348	0.239	1.891
X2	500	1	5	3.509	0.382	0.244	9.363
X3	500	1	5	4.518	0.425	0.271	3.648
X4	500	1	5	4.123	0.435	0.235	8.193
X5	500	1	5	4.656	0.468	0.209	9.122
Y	500	1	5	3.939	0.348	0.239	1.872

III. B. 2) Unit root test

The data used in this paper is panel data, when to meet the requirements of traditional econometric analysis of data smoothness, the results of the econometric model analysis is valid. In order to meet the requirements of data smoothness, usually in the data before the next empirical regression, in order to prevent the emergence of “pseudo-regression” phenomenon, to avoid the occurrence of the situation affecting the results of the empirical regression, the econometric model will be the smoothness of each variable test. If the smoothness test cannot be passed, then the cointegration test will be carried out. If the original series can be shown to be a zero-order single-integrated series, there is no need to perform the cointegration test. If the variables can pass the test, the next empirical analysis can be further completed. The econometric software used in this paper is stata15.0, which relies on methods such as LLC and IPS tests to test the smoothness of the variables in the empirical model, where the LLC test is one of the most commonly used methods in panel unit root tests, which ensures that the error term is white noise by introducing differential lag terms of sufficiently high order when autocorrelation may be present in the error term. The LLC test is a left unilateral test, i.e., the rejection domain is only on the leftmost side of the distribution, and the results of the unit root test for each variable are given in Table 2. According to the test results, it can be learned that at the 10% significance level, all the set research variables show significant correlation, i.e., the above results show that there is no unit root in the level values of costing procedures, financial management mechanisms, various expenses, financial accounting, contract price, and cost control, i.e., the original panel data are smooth and can be analyzed in the next step of multiple linear regression analysis.

Table 2: Test results of the stationarity of each variable

Variable Variable	Level value	
	LLC statistics	IPS statistics
X1	-5.1649	-1.1542
	(0.0001)	(0.0527)
X2	-4.3822	-4.0134
	(0.0003)	(0.0007)
X3	-3.3192	-0.9147
	(0.0006)	(0.1732)
X4	-6.2752	-1.5006
	(0.0009)	(0.0634)
X5	-6.0713	-2.4154
	(0.0004)	(0.0046)
Y	-10.3445	-1.4132
	(0.0001)	(0.0684)

III. B. 3) Regression analysis

After passing the unit root test above, this subsection will formalize the multiple linear regression analysis of the explanatory and interpreted variables, and the results of the multiple linear regression analysis are shown in Table 3. Based on the data performance in the table, it can be seen that cost control = 0.108+0.107*cost accounting procedures (X1) + 0.219*financial management mechanisms (X2) + 0.216*all costs (X3) + 0.211*financial accounting (X4) + 0.092*contract price (X5) and has a significant positive correlation at the 0.05 level, and also the funds in housing development projects flow accounting treatment on cost control has an explanatory power of 84.1%, which well quantifies the influential relationship between the two.

Table 3: Results of multiple linear regression analysis

Model	Non-standardized coefficient		Standard coefficient	T-Value	P-Value	VIF
	B	Standard error				
C	0.108	0.041		8.018	0.034	1.319
X1	0.107	0.044	0.116	7.767	0.048	1.273
X2	0.219	0.069	0.215	5.249	0.029	1.084
X3	0.126	0.036	0.136	9.479	0.025	1.384
X4	0.211	0.063	0.232	2.194	0.043	1.168
X5	0.092	0.054	0.083	6.482	0.009	1.217
R^2	0.842					
Adjust R^2	0.841					

III. C. Analysis of spatial effects

In order to further refine the impact of the accounting treatment of capital flows on cost control in housing development projects, it is also necessary to consider the spatial effects that exist between the two. For this reason this subsection will look at both the spatial correlation test and the spatial dependence test to add to the findings of this paper.

III. C. 1) Spatial correlation analysis

In this part, the spatial autocorrelation test is first conducted by calculating the Moran index of the study variables to determine whether there is spatial correlation between the two, and then the spatial effect test is carried out on the basis of which the form of spatial econometric model is further selected. The spatial autocorrelation test in this part examines the spatial correlation and local spatial correlation forms of the variables by calculating the global Moran index and local Moran index risk respectively.

Moran index (Moran, s I) is the most widely used, and the global Moran index (global Moran, s I) is calculated as follows:

$$I = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\left(x_i - \bar{x}\right)\left(x_j - \bar{x}\right)}{S^2 \sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}} \tag{18}$$

Simple (0-1) spatial weight matrices, which can be qualitatively labeled using 0 and 1 elements based on the adjacency between regions, can also be used to define adjacency based on the size of the distance between regions. If the distance between region i and region j is d_{ij}, the spatial weight is defined as:

$$w_{ij} = \begin{cases} 1, d_{ij} < d \\ 0, d_{ij} \geq d \end{cases} \tag{19}$$

where d is a pre-given distance threshold. In addition, spatial weights can be defined as whether they belong to the same administrative region, whether they have the same customs, etc. The value of Moran's index I ranges between -1 and 1, greater than 0 is positive autocorrelation, less than 0 is negative autocorrelation, and 0 indicates that there is no spatial autocorrelation.

Using Stata15.0 software, the global Moran index was calculated and analyzed for the accounting treatment of capital flows and with cost control in housing development projects from 2003 to 2022, and the results of the global Moran index are shown in Table 4. According to the Moran's I and P-value in the table, it can be seen that it shows that there is indeed a spatial effect between the two.

Table 4: Global Moran index result

Year	Moran's I	P-value	Year	Moran's I	P-value
2003	0.429	0.031	2013	0.277	0.026
2004	0.482	0.038	2014	0.494	0.048
2005	0.354	0.018	2015	0.152	0.035
2006	0.368	0.025	2016	0.441	0.029
2007	0.318	0.029	2017	0.276	0.043
2008	0.445	0.034	2018	0.252	0.048
2009	0.323	0.031	2019	0.336	0.025
2010	0.375	0.013	2020	0.442	0.042
2011	0.452	0.018	2021	0.262	0.02
2012	0.225	0.041	2022	0.266	0.042

III. C. 2) Spatial tests

Since Moran's I can only test for the existence of spatial correlation, it cannot determine the form of the spatial relationship. Therefore, it is necessary to further determine whether there is a spatial role relationship by testing it, and the results of the spatial test are shown in Table 5. The data show that the explanatory variables cost accounting procedures (X1), financial management mechanisms (X2), various costs (X3), financial accounting (X4), and contract price (X5) are all significantly positively correlated in terms of spatial effects, and the corresponding spatial effect coefficients are 0.321, 0.429, 0.211, 0.618, and 0.222, which well explains the financial flows in housing development projects spatial effects of the impact of accounting treatments on cost control. For example, every 1% increase in the quantitative value of cost accounting procedures will raise the quantitative value of cost control by 0.321, and the same is true for the other explanatory variables, based on the data in the table.

Table 5: Spatial inspection result

Variable	Coefficient	P-Value
X1	0.321	0.003
X2	0.429	0.001
X3	0.211	0.008
X4	0.618	0.002
X5	0.222	0.005
R^2	0.722	

IV. Conclusion

Through the in-depth analysis of the relationship between the accounting treatment methods of capital flow and cost control in housing development projects, it is found that the accounting treatment methods have a significant role in promoting cost control. The results of multiple linear regression analysis show that all five accounting treatment methods show significant positive correlation with cost control, among which the influence coefficient of financial management mechanism is the highest at 0.219, the influence coefficient of each cost refinement is 0.216, and the influence coefficient of financial accounting method is 0.211, indicating that these three methods have the most prominent contribution to cost control. The overall explanatory ability of the model reaches 84.1%, which fully proves the importance of accounting treatment methods in cost control. The spatial effect analysis further reveals the regional characteristics of the impact of accounting treatment methods, and the spatial effect coefficient of financial accounting is as high as 0.618, indicating that the implementation effect of the method has a significant spatial spillover effect. The results of the global Moran index test show that the significant spatial correlation between the accounting treatment method and cost control is always maintained during the period from 2003 to 2022, verifying the stability of the relationship between the two. Based on the results of empirical analysis, housing development enterprises should focus on strengthening the construction of financial management mechanism, improving the detailed accounting of various costs, optimizing the financial accounting process of actual receipts and disbursements, and realizing the cost control goal through systematic improvement of accounting treatment methods. At the same time, the enterprise should also fully consider the impact of spatial effects, learn from the advanced experience of neighboring regions, to achieve synergistic optimization of accounting methods, and thus enhance the overall cost control level and enterprise competitiveness.

References

[1] Gao, R., Wang, H., Qi, Y., Li, Y., & Zhang, S. (2024). Crucial factors for decision-making in international real estate development projects: Evidence from chinese developers. Ain Shams Engineering Journal, 103120.

[2] Liu, G., Zhou, K., & Sun, X. (2024). The influence mechanism of real estate enterprises' status on debt default risk. Journal of Property Investment & Finance, 42(1), 28-49.

[3] Ma, X., & Xie, H. (2025). Real estate policy regulation and corporate financial risk: China's Three Red Lines policy. Pacific Economic Review, 30(1), 46-87.

[4] Sheng, D., Cheng, H., & Yin, M. (2024). Housing Developers’ Heterogeneous Decision-Making under Negative Shock after the High-Growth Era: Evidence from the Chinese Real Estate Economy. Mathematics, 12(12), 1798.

[5] Deep, S., Bhoola, V., Verma, S., & Ranasinghe, U. (2022). Identifying the risk factors in real estate construction projects: An analytical study to propose a control structure for decision-making. Journal of financial management of property and construction, 27(2), 220-238.

[6] Loizou, P., & French, N. (2012). Risk and uncertainty in development: A critical evaluation of using the Monte Carlo simulation method as a decision tool in real estate development projects. Journal of Property Investment & Finance, 30(2), 198-210.

[7] Pereira, L., Ferreira, S., & Santos, J. (2020). The main causes of risk in residential real estate projects. Journal of General Management, 45(3), 152-162.

[8] Comu, S., Elibol, A. Y., & Yucel, B. (2021). A risk assessment model of commercial real estate development projects in developing countries. J. Constr. Eng, 4, 52-67.

[9] Khumpaisal, S. (2015, July). A perspective towards risks and investment in real estate development. In Proceedings of the 20th national convention on civil engineering, Pattaya, Thailand (pp. 8-10).

[10] Bednarek, P., Kaat, D. M. T., Ma, C., & Rebucci, A. (2021). Capital flows, real estate, and local cycles: Evidence from German cities, banks, and firms. The Review of Financial Studies, 34(10), 5077-5134.

[11] Bergmann, P., Kamarás, E., Gleißner, W., & Guenther, E. (2020). Enhanced cash flow valuation in real estate management by integrating innovative materials and risk assessment. Sustainability, 12(6), 2201.

[12] Ghosh, C., & Petrova, M. T. (2017). The impact of capital expenditures on property performance in commercial real estate. The Journal of Real Estate Finance and Economics, 55, 106-133.

[13] Feng, Z., & Hardin III, W. G. (2025). Investment and capital improvements in commercial real estate: The case of REITs. The Journal of Real Estate Finance and Economics, 70(2), 240-271.

[14] Dragan Katić,Hrvoje Krstić,Irena Ištoka Otković & Hana Begić Juričić. (2024). Comparing multiple linear regression and neural network models for predicting heating energy consumption in school buildings in the Federation of Bosnia and Herzegovina. Journal of Building Engineering,97,110728-110728.

[15] Chittella Ravichandran & Padmanaban Gopalakrishnan. (2024). Estimating cooling loads of Indian residences using building geometry data and multiple linear regression. Energy and Built Environment,5(5),741-771.

[16] Khunanod Kritsada,Limsawasd Charinee & Athigakunagorn Nathee. (2023). Predicting Cost and Schedule Performance of Green Building Projects Based on Preproject Planning Efforts Using Multiple Linear Regression Analysis. Journal of Architectural Engineering,29(3).