

## Article

# Economic Policy Uncertainty, Social Financing Scale and Local Fiscal Sustainability: Evidence from Local Governments in China

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**Abstract:** The motivation for this paper is to investigate a previously unexplored exogenous shock to fiscal sustainability from economic policy uncertainty. To control for the impact of local government institutional and cultural factors on fiscal sustainability, we select data from 30 Chinese provinces for the 2012–2020 period for empirical analysis. We find that economic policy uncertainty shocks have a robust negative effect on fiscal sustainability after controlling for endogeneity. Economic policy uncertainty has an impact on fiscal sustainability mainly through the mediating variable of the social financing scale. To cope with the impact of uncertain economic policies, corporations reduce the scale of investment and financing, and residents have defensive savings motivations, reducing consumption and increasing savings. Therefore, economic policy uncertainty can lead to a reduction in the social financing scale. A reduction in the social financing scale can reduce government revenue and increase the debt scale. Ultimately, this leads to a decrease in the fiscal sustainability of local governments. This paper can provide a theoretical reference for reducing the negative impact of government policy adjustments and improving fiscal sustainability.

**Keywords:** economic policy uncertainty; social financing scale; fiscal sustainability



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## 1. Introduction

Accompanying the COVID-19 outbreak and Russia-Ukraine conflict is a growing global concern about uncertainty, especially economic policy uncertainty (EPU) [1–3]. There is a concern about the impact of the EPU shock on economic development [4,5], and further concern about whether governments' fiscal positions will also be affected by EPU. Studies have found that EPU shocks are negatively related to investment, the industrial production index, employment, economic sentiment, financial stability, the stock market and household deposit behavior and positively related to bond yields [6–10]. A further study by Hardouvelis et al. [10] argues that EPU together with bond yields may also explain not only the depth but the length of the Greek economic crisis. However, these papers do not investigate whether EPU leads to fiscal deterioration and debt crisis in normal countries; nor do they investigate whether the impact of EPU on the economic activity may lead to an imbalance between fiscal revenue and debt scale. Obviously, this is an interesting topic. Therefore, we examine the impact of economic policy uncertainty on the relationship between fiscal revenue and debt size from the perspective of fiscal sustainability. The findings of this paper can explain the mechanism by which government economic policy adjustments affect its fiscal position. It can also help the government to formulate economic policies more effectively in the face of growing global uncertainty.

We try to clearly investigate whether shocks to economic activity from EPU ultimately lead to changes in fiscal sustainability. The existing literature only links EPU to macroeconomics [4–6], but the relationship between macroeconomics and government revenue and expenditure is very close [11–13]; therefore, we study these relationships together. Fiscal

sustainability is a variable that evaluates the appropriateness of the relationship between government revenues and debt [14]. According to the definition of the Organization for Economic Co-operation and Development (OECD), fiscal sustainability is the ability of a government to maintain public finances at a credible and serviceable position in the long run. Specifically, fiscal sustainability means whether a government can maintain a long-term and prudent debt level or bear the current expenditure and tax plan [15]. When a local government's finances are unsustainable, it will not be able to raise the funds needed for government spending by issuing bonds. At this point, a government debt crisis is likely to occur. Therefore, our findings will be able to provide some theoretical reference for achieving economic stability and fiscal sustainability.

We use Chinese local government data for the empirical analysis. This is because national-level data allow for a more homogeneous dataset than cross-country studies. Relying on regions involves controlling for many institutional and cultural aspects that are difficult to address when using cross-country data [16]. COVID-19 has caused stronger shocks to the fiscal sustainability of emerging economies and relatively more debt default risks [17]. Therefore, China, as the largest emerging economy, is very representative as an empirical sample. Based on the research of Bohn [18], Ghosh et al. [19] and Li and Du [20], we calculate the fiscal sustainability of local governments in China. We use the fiscal space and fiscal expenditure efficiency to measure fiscal sustainability. We analyze the impact of EPU on fiscal sustainability using policy adjustment costs and a fiscal stimulus package [21,22]. The mediating effect of the social financing scale on the path of EPU affecting fiscal sustainability is illustrated using risk compensation theory [23], information asymmetry theory, defensive savings theory and real options theory. The social financing scale reflects the total amount of funds received by economic agents from a financial system [24]. This indicator mainly reflects the level of activity in the real economy. We use data on 30 provinces in China from 2012 to 2020 for our empirical analysis. Finally, we perform robustness and endogeneity tests.

The main contributions of this paper are the following: (1) We investigate a previously uninvestigated exogenous shock of EPU on local fiscal sustainability. In contrast to Hardouvelis et al. [10] and Bhagat et al. [25], we consider not only the relationship between EPU and regional economic activity, but also the relationship between EPU, government debt and fiscal expenditure. The results show that when EPU is higher, the cost of policy adjustment and implementation is higher, and the government fiscal expenditure is greater. However, most of the government fiscal expenditure programs cannot be drastically curtailed. Therefore, when fiscal expenditure increases, the government can only supplement the fiscal expenditure gap by increasing the fiscal deficit. In contrast, when EPU is higher, the degree of uncertainty about the future is higher. Risk compensation and information asymmetry leads to a slowdown in economic growth, which results in lower fiscal revenues. The rise in the deficit rate and the decline in fiscal revenue indicate a reduction in fiscal sustainability; (2) The impact path of EPU on fiscal sustainability is clarified, and the social financing scale has a mediating role on the path. In contrast to Yook and Julio [26] and Kaviani et al. [27], this paper is not limited to studying the relationship between EPU and corporate investment and financing behavior. But rather, by analyzing corporate investment and financing activities, this paper studies the mediating role of the social financing scale in the impact of EPU on fiscal sustainability. Our paper further expands the research on the relationship between EPU and corporate investment and financing activities. It deepens the understanding of the relationship between EPU and fiscal sustainability; (3) The latest methods were used to measure fiscal sustainability. Based on the nonlinear fiscal response function, this study introduces fiscal expenditure efficiency to measure fiscal sustainability. Because China's regional development level is unbalanced, there are obvious differences in the efficiency of fiscal expenditure between provinces. In the same fiscal space, the higher the efficiency of fiscal expenditure is, the stronger the fiscal sustainability. Therefore, this method compensates for the lack of a measurement of financial sustainability effectiveness by Ghosh et al. [19]; (4) The data for our empirical analysis come from local governments

in China. The empirical sample can control for factors such as institutional, cultural and economic conditions to thus provide more robust empirical results.

This paper is organized as follows. Section 2 is the Literature Review. Section 3 is the Research Methods, which includes the Research Hypothesis, Research Variables, Research Methods and Models and the Experiments. Section 4 is the Findings, which includes the Descriptive Statistics, Test Results of the Main Hypothesis, Test Results of the Mediation Effect and the Endogenous Test Results. Section 5 is the Discussion and Conclusion, which includes the Discussion, Managerial Implications, Limitations and Future Work.

## 2. Literature Review

EPU means that economic agents cannot accurately predict whether, when or how a government will change its current economic policy [28]. Therefore, EPU covers all uncertainties included in the process of relevant policy changes. Bloom [7] was the first to propose the use of an index of stock volatility to measure economic uncertainty. The VAR model analyzes the impact of economic uncertainty on the macro-economy. However, some scholars argue that stock volatility is likely caused by corporate heterogeneity and has little to do with uncertainty [29]. Thus, Jurado and Ludvigson [30] proposed a method to analyze macroeconomic indicators in search engines using big data. Economic policy uncertainty is synthesized based on the uncertainty of these indicators. One mainstream measure is the China EPU Index compiled by Baker et al. [4]. They use textual analysis to construct an index of EPU in different countries by analyzing words related to uncertainty in the news reports of mainstream media. Some scholars have argued that natural disasters, terrorist attacks and changes in government officials can also be used as proxy variables for EPU [26].

In addition to addressing the question of how to measure EPU, scholars have studied the impact of EPU on macro- and microeconomic fluctuations. In macro studies, uncertainty shocks are found to raise bank lending rates and lead to sharp fluctuations in the stock market [31,32]. Such shocks may also depress GDP growth, leading to a macroeconomic downturn [33], which, in turn, affects economic recovery [34]. In micro studies, an increase in EPU is found to affect the investment and financing decisions of micro-corporations, inhibit the overall value of corporations and decrease the growth rate of firm output [26]. Due to the decline in output and income, the investment motivation of corporations also declines. These can affect their innovation and development, reducing the likelihood of mergers and acquisitions [35–38]. Most existing studies focus on the micro level, and studies at the macro level focus on the role of EPU on economic growth. Few scholars pay attention to the relationship between EPU and government fiscal capacity, that is, whether EPU affects fiscal sustainability.

According to the World Bank's definition, fiscal sustainability is the historical, present and future Pareto state of development of a country or province. That is, any significant change in a government's fiscal balance ensures that the government can withstand any significant internal or external shocks and maintain stable economic growth. Most existing studies focus on the impact of EPU on government revenue and debt size, which are two key determinants of government fiscal sustainability. Most of the recent studies on EPU and government revenues have focused on the impact of EPU on economic growth under the shock of the COVID-19 outbreak. According to Iuga and Mihalciuc [39], due to the implementation of measures to prevent the spread of COVID-19, the level of economic growth in the first and second quarters of 2020 was much lower than that in 2019 in all 12 countries analyzed. EPU reduces the marginal propensity of market participants to consume [40]. Scholars argue that high EPU reduces the commercial loans provided by banks, which can reduce the availability of corporate borrowing [41]. This good internal control mechanism can effectively alleviate the negative impact of debt default and reduce the growth rate of the debt scale. However, to alleviate the impact of uncertainty on the real economy, governments promote the economic development of corporations by improving the operating conditions of corporations. For example, bonus incentives, tax incentives or

government subsidies in terms of industrial support are provided. When a government's fiscal revenue decreases, increasing fiscal expenditure expand the scale of government debt [42].

Accordingly, there is sufficient literature to suggest that EPU affects government revenue. However, few papers have given attention to the impact of EPU on government debt. Furthermore, few papers examine the impact of EPU shocks on the relationship between government revenue and debt size. Therefore, based on Baker's measure of EPU, this paper selects the social financing scale as a mediating variable to explore the mechanism of EPU's impact on fiscal sustainability.

### 3. Research Methods

#### 3.1. Research Hypothesis

- The direct impact of EPU on local fiscal sustainability

EPU means that economic agents are uncertain about whether the current economic policy will change. Thus, from the source of generation, EPU rises rapidly in the process of dramatic adjustments and frequent changes in economic policy [4]. When EPU is high, the government needs many financial resources to support the implementation of various economic policies. Most economic policies involve economic stimulus programs, economic restructuring and industrial restructuring. These policies are led by governments, so they consume many financial resources. Usually, local governments have stable revenues, and if expenditures for policy implementation increase, then the government has to raise debt to meet funding needs [20,21]. Therefore, EPU leads to a decrease in the fiscal sustainability of local governments.

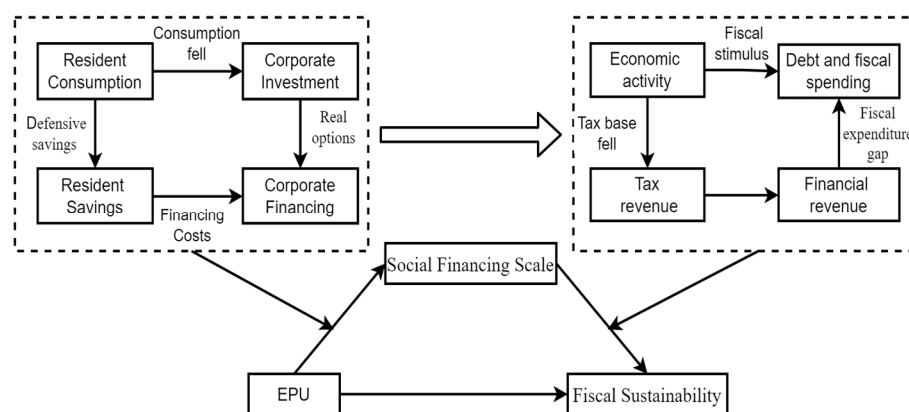
EPU shocks can have a negative impact on economic activity [7–10]. A slowdown in economic trends lead to a decline in tax revenues [33]. Falling revenues can lead to lower fiscal sustainability. At the same time, due to the declining trend of the economy, the government may stimulate the economy by expanding the size of the deficit, for example, by increasing fiscal spending, reducing taxes and increasing debt [22,43]. An increase in the size of the deficit can also reduce the fiscal sustainability of local governments. Therefore, based on the above theoretical analysis, the first hypothesis is proposed.

**Hypothesis 1 (H1).** *EPU has a negative impact on local fiscal sustainability.*

Social science studies do not attempt to investigate (1) factual proof established by a natural science study, or (2) NON-RELATED variables. Because of this nature, the alternative hypothesis is always referred to as the Working or Functional Hypothesis, which has the direction of an investigation in establishing a social science phenomenon (Senthilnathan) [44].

- The mediating effect of the social financing scale in the relationship between EPU and fiscal sustainability

The social financing scale refers to the total amount of funds obtained from the financial system by the agents of the real economy [24]. The social financing scale can comprehensively reflect not only a financial system's financial support to the real economy but also the scale of financing in the real economy. The scale of financing in the real economy indicates the level of activity in the real economy [45]. The agents of the real economy mainly refer to corporations and residents. Therefore, this paper analyzes the mediating effect of the social financing scale in EPU affecting fiscal sustainability from two aspects. These two perspectives are the investment and financing behavior of firms and the saving and consumption behavior of residents, respectively. As shown in Figure 1.



**Figure 1.** The mediating effect of the social financing scale in the relationship between economic policy uncertainty and fiscal sustainability.

From the perspective of residents' saving and consumption, economic uncertainty can inhibit residents' consumption and increase the incentive to save. This is because residents need more cash flow to cope with the risks associated with economic uncertainty. Therefore, residents' precautionary motive to save become stronger [46–48]. This can lead to more cash flow to the financial sector than to the real economy sector, thus reducing the social financing scale. EPU can lead to an increased level of information asymmetry. Residents are often unaware of changes in the prices of consumer goods, especially durable goods such as housing and transportation. This can inhibit their consumption behavior and financing needs [49]. This leads to a reduction in the size of financing from the financial system for residents, that is, a reduction in the social financing scale. In addition, the decline in residents' consumption leads to a decline in social consumption. This will inevitably lead to a decline in the production willingness of the supply side of departments. This can restrain the motivation of the real sector to expand production, leading to a decline in the scale of enterprise investment and financing. A decline in the enterprise financing scale refers to a decline in the capital scale obtained by enterprises from the financial system, that is, a decline in the social financing scale.

From the perspective of corporate financing behavior, EPU increases corporate financing costs and inhibits corporate financing behavior, thus negatively impacting the social financing scale. According to the risk compensation theory, rising EPU increases the likelihood of enterprise default and bankruptcy. Therefore, investors inevitably increase the cost of financing to compensate for the risk they take to obtain a risk premium [50]. The increase in financing costs decreases the amount of corporate financing. In China, the main source of financing for microeconomic agents is banks. To cope with shocks from uncertainty and to prevent an increase in their own risk, banks become more cautious in granting loans, reduce the size of loans and improve their operations by implementing tight credit policies [51,52], which can reduce the social financing scale.

In terms of corporate investment behavior, an increase in EPU can lead to a reduction in the corporate investment scale. An increase in EPU leads to an increase in corporate financing costs, which inhibits the investment activities of corporate entities [26,27]. A reduction in investment activity reduces the demand for funds by corporations, thus reducing the social financing scale. According to the real options theory, an enterprise's investment behavior can be treated as a series of options [53]. When a corporation is hit by major economic uncertainty, it chooses to avoid risk by reducing its investment due to the uncertainty of future returns. The purpose of reducing current investment is to obtain more relevant information during the waiting period to reduce the potential for larger losses. The reduction in investment opportunities leads directly to a decrease in the amount of capital demanded by corporations. In addition, corporations choose to reduce their debt financing to avoid the risk of not being able to repay their loans on time [54]. Therefore,

the scale of corporate financing from the financial system has decreased, that is, the social financing scale has decreased. Accordingly, the following hypothesis is formulated.

**Hypothesis 2 (H2).** *EPU has a negative impact on the social financing scale.*

This paper analyzes the mediating role of the social financing scale in the relationship between EPU and fiscal sustainability from two perspectives. There is the decrease in fiscal revenue and the increase in fiscal expenditure and debt, respectively, because a reduction in the social financing scale leads to a reduction in fiscal revenue and an increase in fiscal expenditure and debt. Based on the assumption of a balanced government budget [55], a decrease in fiscal revenue and increase in fiscal expenditure and debt will reduce fiscal sustainability [56].

The fiscal revenues of local governments in China are mainly derived from tax revenues, government funding revenues, and state-owned capital management revenues [20]. Therefore, a decrease in these three types of revenue inevitably leads to a decrease in overall revenue, which reduces fiscal sustainability. From the perspective of tax revenue, EPU not only reduces the investment and financing scale of corporations but also reduces residents' savings and consumption [57], therefore reducing the tax base by making tax revenue smaller and lowering fiscal revenue [58]. In terms of governmental fund revenues, the increase in EPU reduces corporate investment and financing activities and residents' consumption of durable goods such as housing [49]. This can lead to a decline in the demand for commercial and residential land. A decrease in demand for land use reduces government revenue from land concessions [59]. Land concessions are the main source of governmental fund revenues.

From the perspective of state-owned capital operating revenues, EPU can reduce the social financing scale and decrease the operating performance of banks. Since most banks in China are state-controlled banks, a decline in bank income can lead to the decline of local government revenue. In addition, EPU decreases consumption by residents and reduces the operating performance of nonfinancial state-owned corporations, ultimately reducing the fiscal revenue of local governments. Therefore, EPU can have an impact on fiscal revenues through the social financing scale, which in turn affects fiscal sustainability.

The increase in EPU reduces the social financing scale and slows economic growth. To maintain economic growth, a government implements active fiscal policies and economic stimulus programs, which require significant fiscal spending [60]. Since the budget for fiscal spending is rigid, local governments cannot support active fiscal policy or economic stimulus programs by reducing spending. Therefore, governments must stimulate the economy by raising massive debt. Gopalakrishnan confirms that the extent of government financial support is associated with lower loan financing for corporations during periods of uncertainty [61]. The higher the fiscal expenditure and the larger the debt of local governments, the lower fiscal sustainability.

In summary, the increase in EPU leads to a decrease in the social financing scale. The social financing scale can lead to a decrease in fiscal revenues and an expansion of fiscal spending and debt. Ultimately, it reduces fiscal sustainability. Accordingly, the following hypothesis is formulated.

**Hypothesis 3 (H3).** *The social financing scale has a mediating effect on EPU and local fiscal sustainability.*

### 3.2. Research Variables

- Dependent variable

Referring to Li and Du [20], we use effective fiscal space to measure the fiscal sustainability (*SUSTAIN*) of local governments. The formula is as follows:

$$SUSTAIN_{i,t} = \frac{d_{i,t}^m - d_{i,t}}{1/fe_{i,t}} \quad (1)$$

where indices  $i$  and  $t$  indicate provinces and years, respectively,  $d^m$  indicates the debt ratio ceiling,  $d$  indicates the actual debt ratio, and  $fe$  indicates fiscal expenditure efficiency. We use DEA to calculate  $fe$  because the efficiency of fiscal expenditure is a multi-input and multi-output efficiency model. Fiscal expenditure includes not only general public expenditure but also government human capital and the expenditure of China's state-owned enterprises. Output is mainly expressed in per capita GDP.

Drawing on Ghosh [19], we consider the realistic existence of fiscal adjustment costs in the analysis of government debt sustainability and incorporate the effects of macroeconomic uncertainty [62]. In the context of economic prosperity, a nonlinear fiscal response function is set up as follows.

$$pd_t = f(d_{t-1}) + \gamma D_t + \delta X_t + \mu_t \quad (2)$$

where  $pd_t$  indicates the deficit ratio,  $d_{t-1}$  indicates the debt ratio of  $t - 1$ ,  $f(d_{t-1})$  indicates a function of  $d_{t-1}$ ,  $D_t$  indicates economic changes, and  $X_t$  indicates possible factors other than the debt ratio that affect the deficit ratio.

Drawing on Bohn's [18] approach to analyze fiscal sustainability, Ghosh et al. [19] estimate the nonlinear relationship between basic fiscal surplus and the government debt ratio by introducing the cubic function of the government debt ratio. The cubic function can better fit the phenomenon of financial drain. The function  $f(d_{t-1})$  is assumed to be continuously differentiable.

$$f(d_{t-1}) = \beta_1 d_{t-1} + \beta_2 d_{t-1}^2 + \beta_3 d_{t-1}^3 \quad (3)$$

According to Bohn [18], when the current government debt balance is equal to the debt balance of the previous period and its accumulated interest minus the current basic fiscal surplus, the government's intertemporal financing budget constraints are met.

$$D_t = (1 + r_t) \times D_{t-1} - S_t \quad (4)$$

where  $D_t$  indicates the government debt balance at the end of period  $t$ ,  $S_t$  indicates the government basic fiscal surplus at the end of period  $t$ , and  $r_t$  indicates the debt interest rate. In accordance with Bohn [18], we focus on the ratio of government debt to GDP rather than the absolute value of government debt, so both sides of Equation (4) are divided by GDP at the same time.

$$\frac{D_t}{GDP_t} = \frac{(1 + r_t) \times D_{t-1}}{(1 + g_t) \times GDP_{t-1}} - \frac{S_t}{GDP_t} \quad (5)$$

where  $g_t$  indicates the GDP rate of increase; let  $\frac{D_t}{GDP_t} = d_t$ ,  $\frac{D_{t-1}}{GDP_{t-1}} = d_{t-1}$ ,  $\frac{S_t}{GDP_t} = pd_t$ . Since  $\frac{1+r_t}{1+g_t} \approx (1 + r_t - g_t)$ , Formula (5) is changed to:

$$d_t - d_{t-1} = (r_t - g_t) d_{t-1} - pd_t \quad (6)$$

Formula (6) is a dynamic equation of the government debt ratio. The dynamic change in the government debt ratio is mainly determined by the debt interest rate, economic growth rate and basic fiscal surplus rate. If  $(r_t - g_t) d_{t-1} - pd_t > 0$ , the government debt ratio in the next period will rise; otherwise, it will fall.

It is assumed that the government debt ratio in phase  $m-1$  reaches the maximum. To conform to the government's intertemporal financing constraints, the government debt ratio in period  $m$  should not increase.

$$d_m - d_{m-1} \leq 0 \quad (7)$$

Therefore, when the debt ratio in phase  $m - 1$  reaches the maximum, the maximum value of  $d_m - d_{m-1}$  is 0.

$$d_m - d_{m-1} = (r_m - g_m) d_{m-1} - p d_m = 0 \quad (8)$$

Substitute Formulas (3) and (8) into Formula (2) to obtain Formula (9).

$$p d_m = \beta_1 d_{m-1} + \beta_2 d_{m-1}^2 + \beta_3 d_{m-1}^3 + \gamma D_m + \delta X_m + \mu_m = (r_m - g_m) d_{m-1} \quad (9)$$

where the coefficients of  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ ,  $\gamma$  and  $\delta$  are calculated by fitting the nonlinear financial response function according to the historical data of each province.  $D_m$ ,  $X_m$ ,  $\mu_m$ ,  $r_m$  and  $g_m$  are obtained by calculating the mean value according to historical data. Then, Formula (9) is transformed into a cubic equation. We can obtain the equilibrium point of government debt  $d^*$  and the upper limit of government debt  $d^m$ .

- Independent variables

Scholars from Stanford University and the University of Chicago jointly published the EPU index [4]. The index is based on the content of news reports, and it covers major economies around the world. Baker [4] selected the South China Morning Post (SCMP) in Hong Kong as a news story retrieval platform and constructed an index of Chinese EPU based on text retrieval and filtering methods. It has been empirically demonstrated that the index has good continuity and time variability and can accurately reflect the degree of EPU [28]. In this paper, we adopt the approach of extracting the annual arithmetic mean to transform monthly EPU into annual EPU.

- Mediating variables

The social financing scale (SR) is an indicator that comprehensively reflects the financial support to the real economy. It refers to the total amount of funds obtained by the real economy from the financial system in a certain period of time [24]. The social financing scale can comprehensively reflect not only the financial system's financial support to the real economy but also the scale of financing in the real economy. This indicator consists of the following 11 indicators, including RMB loans, foreign currency loans (converted to RMB), entrusted loans, trust loans, undiscounted bank acceptance bills, corporate bonds, domestic stock financing for nonfinancial corporations, insurance company compensation, investment properties, local microfinance companies and loans from local lending companies. The data for this indicator are compiled by the People's Bank of China (the central bank of China); thus, the data come from the People's Bank of China website.

- Control variables

This paper selects the influencing factors of local fiscal sustainability based on the following principles. First, these variables have been used by domestic and foreign scholars in related studies. Second, the influencing factors are determined not only by the Chinese system and national conditions but also by actual economic conditions. Third, related data are available. On this basis, the following control variables are selected, drawing on previous studies. As shown in Table 1: (1) GDP growth rate (GGDP); (2) The fiscal deficit (FG) is the annual fiscal expenditure of local government minus annual fiscal revenue. The following variables refer to Li [20]: (3) Transfer payments (TRANSFER) represent central subsidy revenue; (4) Fiscal decentralization (FD) is the ratio of public budget revenue per capita in each province to the sum of public budget revenue per capita of each province and public budget revenue per capita of the central government; (5) The debt burden ratio

(DEBT) is the ratio of the accumulated debt balance to GDP; (6) The urbanization rate (URBAN) is the ratio of urban population to total population; (7) The fixed asset investment growth rate (FIG) is the growth rate of fixed asset investment in each province; (8) The land concession revenue share (LTF) identifies the ratio of land concession revenue to public budget revenue.

**Table 1.** Variable descriptions.

| Variable Type         | Variable Name                         | Variable Abbreviation | Variable Description                                                                                                                                                |
|-----------------------|---------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Explanatory variables | Fiscal sustainability                 | SUSTAIN               | Balanced relationship between fiscal revenue and debt                                                                                                               |
| Interpreted variables | Economic policy uncertainty           | EPU                   | Economic Policy Uncertainty Index                                                                                                                                   |
| Mediating variables   | Regional social financing scale       | SR                    | Refers to the total amount of funds received by the real economy from the financial system in a certain province in a certain period of time (Current year regional |
|                       | GDP growth rate                       | GGDP                  | GDP—previous year regional GDP)/previous year regional GDP                                                                                                          |
|                       | Fiscal deficit                        | FG                    | Local government annual fiscal expenditure—annual fiscal revenue                                                                                                    |
|                       | Transfer payments                     | TRANSFER              | Central subsidy income                                                                                                                                              |
| Control variables     | Fiscal decentralization               | FD                    | Public budget revenue per capita in each province/(public budget revenue per capita in each province + public budget revenue per capita in the central government)  |
|                       | Debt burden ratio                     | DEBT                  | Accumulated outstanding debt balance of the year/GDP                                                                                                                |
|                       | Urbanization rate                     | URBAN                 | Urban population/total population                                                                                                                                   |
|                       | Growth rate of fixed asset investment | FIG                   | Growth rate of fixed asset investment by provinces                                                                                                                  |
|                       | Percentage of land premium revenue    | LTF                   | Land grant revenue/public budget revenue                                                                                                                            |

### 3.3. Research Methods & Models

Our research sample is a standard panel data structure that contains two dimensions: province and year. Therefore, the empirical analysis is based on a classical Two-way Fixed Effects Regression Estimator, which is suitable for panel data analysis. Suppose that we have a panel data set of  $N$  units and  $T$  time periods, then our panel data is the balanced panel data set. Let  $X_{i,t}$  and  $Y_{i,t}$  represent the binary treatment indicator and observed outcome variables for unit  $i$  at time  $t$ , respectively. We consider the following two-way linear fixed effects regression model [63].

$$Y_{i,t} = \alpha_i + \gamma_t + \beta_2 X_{i,t} + \varepsilon_{i,t} \quad (10)$$

For  $I = 1, 2, \dots, N$  and  $t = 1, 2, \dots, T$  where  $\alpha_i$  and  $\gamma_t$  are unit and time fixed effects, respectively.

To test the direct impact of EPU on local fiscal sustainability, the following model is constructed by referring to Li for the selection of control variables [20]:

$$SUSTAIN_{i,t} = \alpha_0 + \alpha_1 EPU_{i,t} + \alpha_2 GGDP_{i,t} + \alpha_3 FG_{i,t} + \alpha_4 DEBT_{i,t} + \alpha_5 FD_{i,t} + \alpha_6 FIG_{i,t} + \alpha_7 URBAN_{i,t} + \alpha_8 LTF_{i,t} + \alpha_9 TRANSFER_{i,t} + Year_t + Province_i + \varepsilon_{i,t} \quad (11)$$

where indices  $i$  and  $t$  indicate provinces and years, respectively.  $Year_t$  is a dummy variable for year that controls for possible time effects in EPU and SUSTAIN.  $Province_i$  is a dummy variable for province to control for possible regional heterogeneity in EPU and SUSTAIN.

Standard errors are always clustered at the province level to correct for potential cross-sectional and serial correlation in error term  $\varepsilon_{i,t}$  [64].

To test Hypothesis 2, we set Formula (12) based on Formula (11) when the control variables are unchanged:

$$SR_{i,t} = \beta_0 + \beta_1 EPU_{i,t} + \beta_2 GGDP_{i,t} + \beta_3 FG_{i,t} + \beta_4 DEBT_{i,t} + \beta_5 FD_{i,t} + \beta_6 FIG_{i,t} + \beta_7 URBAN_{i,t} + \beta_8 LTF_{i,t} + \beta_9 TRANSFER_{i,t} + Year_t + Province_i + \varepsilon_{i,t} \quad (12)$$

To test Hypothesis 3, we select the social financing scale as a mediation variable to test the mediating effect. Formula (12) is set as follows:

$$SUSTAIN_{i,t} = \mu_0 + \mu_1 EPU_{i,t} + \mu_2 SR_{i,t} + \mu_3 GGDP_{i,t} + \mu_4 FG_{i,t} + \mu_5 DEBT_{i,t} + \mu_6 FD_{i,t} + \mu_7 FIG_{i,t} + \mu_8 URBAN_{i,t} + \mu_9 LTF_{i,t} + \mu_{10} TRANSFER_{i,t} + Year_t + Province_i + \varepsilon_{i,t} \quad (13)$$

### 3.4. Experiments

#### 3.4.1. Sample and Data

This paper uses Chinese local government data for the empirical analysis. Regional data can be obtained in better homogeneous data sets than national data, because the political system, economic development and cultural factors of different regions of a country can be better controlled [16]. COVID-19 has caused stronger shocks to the fiscal sustainability of emerging economies and relatively more debt default risks [17]. Therefore, China, as the largest emerging economy, is very representative as an empirical sample. Moreover, China's socialist political system leads to a closer relationship between the economy and policies. Economic activities are more influenced by policy risks. To sum up, using Chinese local governments as a research sample can provide unique results for empirical analysis.

EPU is measured using the Baker [4] construct and the China EPU Index, jointly developed by Stanford University and the University of Chicago (<http://www.policyuncertainty.com>) (accessed on 10 July 2021). Given the consideration of data availability and statistical caliber changes, this paper uses the panel data of 30 provinces (excluding Tibet, Hong Kong, Macao and Taiwan) and autonomous provinces from 2012 to 2020 for empirical analyses. There are few available data on Tibet, so Tibet is excluded. Further, on the one hand, many data on Hong Kong, Macao and Taiwan are missing; on the other hand, there are great differences in their debt systems, especially in the statistical caliber of debt. Thus, to ensure unified empirical research, these four provinces are excluded. The relevant data are obtained from the Wind database. Wind is the largest economic and financial database in China, a database that could be considered similar to the Bloomberg database. In addition, data on variables such as land concessions are collated from the China Statistical Yearbook. The China Statistical Yearbook is a statistical report compiled by the National Bureau of Statistics of China.

#### 3.4.2. Experiments Protocol

Our objectives are to examine the pathways of EPU impact on fiscal sustainability. In the first step, the direct effect of EPU on local fiscal sustainability is tested using model (11). If  $\alpha_1$  is significantly negative, then EPU negatively affects local fiscal sustainability, and Hypothesis H1 holds. In the second step, the direct effect of EPU on the social financing scale is tested using model (12). If  $\beta_1$  is significantly negative, then EPU negatively affects the social financing scale, and Hypothesis H2 holds.

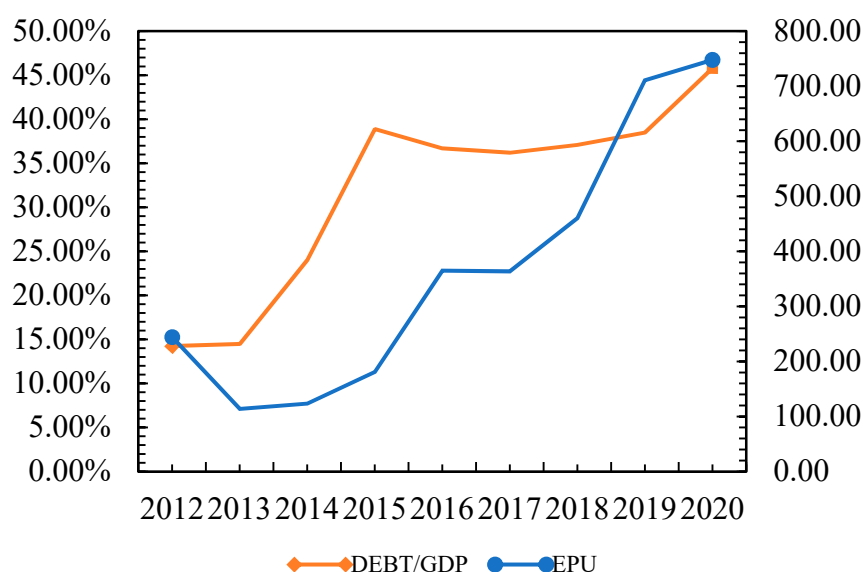
The third step is the mediation effect test. Hypothesis H3 was tested with reference to the study by Zhang [65]. If Hypotheses H1 and H2 are tested successfully then the mediating effect is tested using model (13). If either H1 or H2 fails the test, then the mediating effect is not valid and Hypothesis H3 is rejected. Model (13) is used to test the mediating effect of EPU on SUSTAIN through SR. If  $\mu_2$  is significant, a mediating effect exists. If  $\mu_1$  and  $\mu_2$  are significant, a partial mediation effect exists. If  $\mu_1$  is insignificant, there is a full mediation effect of the social financing scale, and Hypothesis H3 holds. In the

fourth step, to alleviate the possible endogeneity problem, we use the panel instrumental variable method to perform a two-stage least squares estimation (2SLS) for the two-way fixed effects model mentioned above.

## 4. Findings

### 4.1. Descriptive Statistics

Due to the US-China trade friction and the COVID-19 outbreak, the economic policy uncertainty index for China was 711.08 and 747.86 in 2019 and 2020, respectively. As shown in Figure 2, the Chinese government's debt ratio was 38.5% in 2019 and 45.8% in 2020. The economic policy uncertainty and the government debt ratio have reached a historical peak.



**Figure 2.** China's debt ratio and economic policy uncertainty.

According to Table 2, the mean value of fiscal sustainability (SUSTAIN) is 0.602 and the standard deviation is 0.235, which is a small fluctuation. This indicates that there is no major difference in fiscal sustainability among provinces and municipalities. Taking the logarithmic value of EPU (LnEPU), the mean value is 5.499 and the standard deviation is 0.59, which is similar to fiscal sustainability, both of which fluctuate slightly. It indicates that the Chinese government's economic policy has a certain degree of continuity and stability. The data of other variables are consistent with the basic characteristics of real data, and there are no outliers, indicating that the statistics are real and usable.

**Table 2.** Descriptive statistics of the variables.

| Variable   | Obs | Mean   | Std. Dev. | Min    | Max    |
|------------|-----|--------|-----------|--------|--------|
| SUSTAIN    | 270 | 0.602  | 0.235     | 0.010  | 1.310  |
| LnEPU      | 270 | 5.499  | 0.590     | 4.735  | 6.674  |
| LnSR       | 270 | 8.225  | 0.967     | 4.836  | 9.960  |
| LnGGDP     | 270 | 2.172  | 0.347     | 0.693  | 2.797  |
| LnFG       | 270 | 16.596 | 0.674     | 14.687 | 17.875 |
| LnTRANSFER | 270 | 7.353  | 0.579     | 6.029  | 8.480  |
| LnFIG      | 270 | 9.375  | 0.813     | 6.925  | 10.919 |
| LnLTF      | 270 | 15.712 | 1.320     | 7.666  | 18.688 |
| URBAN      | 270 | 56.905 | 12.752    | 33.810 | 89.600 |
| DEBT       | 270 | 0.235  | 0.144     | 0.015  | 0.965  |
| FD         | 270 | 0.737  | 0.093     | 0.533  | 0.950  |

#### 4.2. Test Results of the Main Hypothesis

To select the appropriate empirical model, we conduct a panel data regression analysis based on the empirical model (11). The F-test ( $F = 4.76, p < 0.05$ ) reveals a significant difference between individuals. This is mainly because there are differences in the independent variables in different provinces in China, which are determined by the characteristics of each province, and the changes in these variables do not completely depend on changes over time. A fixed effects model can control the differences between different provinces and avoid the pseudo-regression problem caused by missing variables; thus, a fixed effects model is suitable for the data characteristics of this paper. At the same time, to control the time effect of independent variables, we control the year. The analysis is performed using the Hausman test, and the chi-square value is found to be 2850.74, with a  $p$ -value less than 0.05. This indicates a correlation between the individual heterogeneity intercept and independent variables. Since the results indicate that the fixed effects model is better than the random-effects model, the fixed effects model is chosen to complete the empirical test in this paper. To avoid the problem of multicollinearity, VIF values are used to test for multicollinearity, and the results are all in the acceptable range.

According to (1) in Table 3, without including the control variables, the regression coefficient of LnEPU is  $-0.247$  and the  $p$ -value is less than 0.05. This indicates that EPU has a significant negative impact on fiscal sustainability. From (2), the regression coefficients of the control variables LnFG, LnFIG and DEBT are all less than 0, while the  $p$ -value is less than 0.05. It shows that LnFG, LnFIG and DEBT have a significant negative impact on fiscal sustainability. Fiscal sustainability is lower when the fiscal deficit, fixed asset investment and debt burden ratio are higher. The regression coefficient of LnTRANSFER is greater than 0 and the  $p$ -value is less than 0.05. It shows that the higher the transfer payments are, the higher the degree of fiscal sustainability. Transfer payments can effectively enhance fiscal sustainability. From (3), the regression coefficient of LnEPU is  $-0.126$  and the  $p$ -value is less than 0.05, that is,  $\alpha_1$  is significantly negative. Therefore, Hypothesis H1 cannot be rejected. This indicates that EPU has a significant negative impact on fiscal sustainability, and the higher EPU is, the lower the fiscal sustainability.

According to (1) in Table 4, without the inclusion of control variables, the regression coefficient of LnEPU is  $-0.229$  with a  $p$ -value less than 0.05. This indicates that EPU has a significant negative impact on the social financing size. From (2), among the control variables, the regression coefficients of LnFG, URBAN and DEBT are all positive with  $p$ -values less than 0.05. This indicates that LnFG, URBAN and DEBT have a significant positive impact on the social financing scale. The higher the fiscal deficit, urbanization and the debt burden ratio are, the larger the social financing scale, which is consistent with previous research results. The other control variables are not significant. As seen from (3), the regression coefficient of LnEPU is  $-0.435$  and the  $p$ -value is less than 0.05, that is,  $\beta_1$  is significantly negative. Therefore, Hypothesis H2 cannot be rejected. This indicates that EPU has a significant negative impact on the social financing scale, and the higher EPU is, the lower the social financing scale.

**Table 3.** Two-way fixed effects regression model of EPU and SUSTAIN.

|                            | (1)                            | (2)                            | (3)                            |
|----------------------------|--------------------------------|--------------------------------|--------------------------------|
|                            | <i>SUSTAIN</i>                 | <i>SUSTAIN</i>                 | <i>SUSTAIN</i>                 |
| <i>LnEPU</i>               | −0.247 ***<br>(−6.06)          |                                | −0.126 **<br>(−3.14)           |
| <i>LnGGDP</i>              |                                | 0.0676<br>(1.26)               | 0.0483<br>(0.91)               |
| <i>LnFG</i>                |                                | −0.162 ***<br>(−5.07)          | −0.136 ***<br>(−4.20)          |
| <i>LnTRANSFER</i>          |                                | 0.197 ***<br>(6.20)            | 0.184 ***<br>(5.84)            |
| <i>LnFIG</i>               |                                | −0.0722 *<br>(−2.43)           | −0.0606 *<br>(−2.06)           |
| <i>LnLTF</i>               |                                | −0.00196<br>(−0.13)            | −0.00519<br>(−0.35)            |
| <i>URBAN</i>               |                                | 0.0000255<br>(0.01)            | 0.000162<br>(0.08)             |
| <i>DEBT</i>                |                                | −0.226 *<br>(−2.23)            | −0.206 *<br>(−2.07)            |
| <i>FD</i>                  |                                | −0.00977<br>(−0.04)            | 0.0331<br>(0.12)               |
| <i>Fixed Effects</i>       | <i>Province</i><br><i>Year</i> | <i>Province</i><br><i>Year</i> | <i>Province</i><br><i>Year</i> |
| cons                       | 1.962 ***<br>(8.73)            | 2.462 ***<br>(4.48)            | 2.763 ***<br>(5.04)            |
| <i>N</i>                   | 270                            | 270                            | 270                            |
| <i>R</i> <sup>2</sup>      | 0.133                          | 0.305                          | 0.333                          |
| adj. <i>R</i> <sup>2</sup> | 0.024                          | 0.194                          | 0.223                          |
| <i>F</i>                   | 36.734                         | 12.668                         | 12.783                         |

Note: *t* statistics in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table 4.** Two-way fixed effects regression model of EPU and the social financing scale.

|                            | (1)                            | (2)                            | (3)                            |
|----------------------------|--------------------------------|--------------------------------|--------------------------------|
|                            | <i>LnSR</i>                    | <i>LnSR</i>                    | <i>LnSR</i>                    |
| <i>LnEPU</i>               | −0.229 *<br>(−1.99)            |                                | −0.435 ***<br>(−3.72)          |
| <i>LnGGDP</i>              |                                | −0.0735<br>(−0.36)             | 0.213<br>(1.08)                |
| <i>LnFG</i>                |                                | 0.221<br>(1.82)                | 0.125<br>(0.99)                |
| <i>LnTRANSFER</i>          |                                | −0.117<br>(−0.97)              | −0.237<br>(−1.87)              |
| <i>LnFIG</i>               |                                | 0.568 ***<br>(5.02)            | 0.507 ***<br>(4.45)            |
| <i>LnLTF</i>               |                                | −0.0115<br>(−0.20)             | 0.0929<br>(1.68)               |
| <i>URBAN</i>               |                                | 0.0254 **<br>(3.07)            | 0.0150<br>(1.83)               |
| <i>DEBT</i>                |                                | 0.788 *<br>(2.04)              | 0.668<br>(1.69)                |
| <i>FD</i>                  |                                | −0.483<br>(−0.46)              | −0.253<br>(−0.24)              |
| <i>Fixed Effects</i>       | <i>Province</i><br><i>Year</i> | <i>Province</i><br><i>Year</i> | <i>Province</i><br><i>Year</i> |
| cons                       | 9.210 ***<br>(15.09)           | −0.846<br>(−0.40)              | 2.782<br>(1.32)                |
| <i>N</i>                   | 270                            | 270                            | 270                            |
| <i>R</i> <sup>2</sup>      | 0.029                          | 0.310                          | 0.330                          |
| adj. <i>R</i> <sup>2</sup> | −0.093                         | 0.199                          | 0.206                          |
| <i>F</i>                   | 7.054                          | 12.941                         | 14.458                         |

Note: *t* statistics in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

#### 4.3. Test Results of the Mediation Effect

According to the experimental protocol, If Hypotheses H1 and H2 are tested successfully, then the mediating effect is tested using model (13). EPU and the social financing scale are added to the regression model as explanatory variables for the mediating effect test.

From (3) in Table 5, there is a significant impact of social financing size on fiscal sustainability ( $\mu_2 = 0.034$ ,  $p < 0.05$ ). This indicates that the mediating effect exists and Hypothesis H3 holds. Further analysis reveals that a significant impact of EPU on fiscal sustainability ( $\mu_1 = 0.127$ ,  $p < 0.05$ ). This indicates that there is a significant partial mediating effect of the social financing scale on the relationship between EPU and fiscal sustainability.

**Table 5.** Test of the mediating effect of the SR between EPU and SUSTAIN.

|                            | (1)                            | (2)                            | (3)                            |
|----------------------------|--------------------------------|--------------------------------|--------------------------------|
|                            | <i>SUSTAIN</i>                 | <i>SUSTAIN</i>                 | <i>SUSTAIN</i>                 |
| <i>LnEPU</i>               | −0.221 ***<br>(−5.49)          |                                | −0.127 **<br>(−3.18)           |
| <i>LnSR</i>                | 0.0608 ***<br>(3.92)           | 0.0337 *<br>(1.98)             | 0.0344 *<br>(2.05)             |
| <i>LnGGDP</i>              |                                | 0.0651<br>(1.22)               | 0.0456<br>(0.87)               |
| <i>LnFG</i>                |                                | −0.155 ***<br>(−4.83)          | −0.128 ***<br>(−3.95)          |
| <i>LnTRANSFER</i>          |                                | 0.193 ***<br>(6.10)            | 0.180 ***<br>(5.74)            |
| <i>LnFIG</i>               |                                | −0.0531<br>(−1.71)             | −0.0409<br>(−1.33)             |
| <i>LnLTF</i>               |                                | −0.00234<br>(−0.15)            | −0.00562<br>(−0.38)            |
| <i>URBAN</i>               |                                | 0.000880<br>(0.40)             | 0.00104<br>(0.48)              |
| <i>DEBT</i>                |                                | −0.199<br>(−1.96)              | −0.179<br>(−1.79)              |
| <i>FD</i>                  |                                | −0.0260<br>(−0.09)             | 0.0169<br>(0.06)               |
| <i>Fixed Effects</i>       | <i>Province</i><br><i>Year</i> | <i>Province</i><br><i>Year</i> | <i>Province</i><br><i>Year</i> |
| cons                       | 2.316 ***<br>(9.80)            | 2.434 ***<br>(4.45)            | 2.737 ***<br>(5.02)            |
| <i>N</i>                   | 270                            | 270                            | 270                            |
| <i>R</i> <sup>2</sup>      | 0.186                          | 0.316                          | 0.345                          |
| adj. <i>R</i> <sup>2</sup> | 0.080                          | 0.203                          | 0.234                          |
| <i>F</i>                   | 27.142                         | 11.832                         | 12.08                          |

Note: *t* statistics in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

#### 4.4. Endogenous Test Results

The possible two-way causal relationship between EPU and fiscal sustainability in this model leads to bias and inconsistency in the estimation results of the model. To alleviate the possible endogeneity problem, we use the panel instrumental variable method to perform two-stage least squares estimation (2SLS) for the two-way fixed effects model mentioned above. Gulen and Ion [28] selected the economic policy uncertainty index of the U.S as the instrumental variable in their research. They believe that the macroeconomic policies of China and the U.S. are linked, and an increase in U.S. EPU leads to an increase in China's EPU unidirectionally. Referring to Gulen [28], we further select the economic and political uncertainty index of 24 countries other than China in the same year. We use the average of the indices of economic and political uncertainty for these countries as the instrumental variable (IV).

According to Staiger [66], the F value of stage 1 is greater than 10, indicating that the instrumental variable has passed the weak instrumental variable test and is effective. From (2) in Table 6 shows the results of the second-stage regression. The predicted value of LnEPU in the first stage is incorporated into the empirical model as an explanatory variable. The results show that LnEPU still has a significant negative impact on SUSTAIN ( $\beta = -0.139, p < 0.05$ ), indicating that LnEPU still has a slowing effect on SUSTAIN after we consider the possible endogeneity problems caused by mutual causality.

**Table 6.** Endogenous test results.

|                       | (1)                           | (2)                                |
|-----------------------|-------------------------------|------------------------------------|
|                       | <i>LnEPU</i>                  | <i>SUSTAIN</i>                     |
| <i>LnEPU</i>          |                               | −0.139 **<br>(−2.153)              |
| <i>IV</i>             | 0.283 ***<br>(4.372)          |                                    |
| <i>LnGGDP</i>         | −0.054 ***<br>(−4.231)        | 0.007<br>(0.369)                   |
| <i>LnFG</i>           | 0.288 ***<br>(4.322)          | −0.356 ***<br>(−3.109)             |
| <i>LnTRANSFER</i>     | −0.095<br>(−1.345)            | 0.452 ***<br>(5.208)               |
| <i>LnFIG</i>          | 0.122 *<br>(1.960)            | −0.032<br>(−0.437)                 |
| <i>LnLTF</i>          | −0.072 **<br>(−2.422)         | −0.043<br>(−1.159)                 |
| <i>URBAN</i>          | 0.011 **<br>(2.538)           | −0.004<br>(−0.703)                 |
| <i>DEBT</i>           | 0.608 ***<br>0.456<br>(0.401) | −0.887 ***<br>3.563 ***<br>(2.743) |
| <i>FD</i>             | (−1.536)                      | (−0.036)                           |
| <i>Fixed Effects</i>  | <i>Province</i>               | <i>Province</i>                    |
|                       | <i>Year</i>                   | <i>Year</i>                        |
| <i>cons</i>           | 2.316 ***<br>(9.80)           | 2.434 ***<br>(4.45)                |
| <i>N</i>              | 270                           | 270                                |
| <i>R</i> <sup>2</sup> | 0.421                         | 0.279                              |
| Wald Chi-square/F     | 39.89 ***                     | 20.972 ***                         |
| Stage 1 F             |                               | 16.15 ***                          |

Note: *t* statistics in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

## 5. Discussion and Conclusions

### 5.1. Discussion

The background of the paper is the frequent economic policy adjustments by the government in response to economic fluctuations after the global outbreak of the COVID-19 epidemic. The mechanism of the impact of economic policy uncertainty on fiscal sustainability is studied. The social financing scale is also introduced as a mediating variable to explore the impact path of economic policy uncertainty on local fiscal sustainability. In this paper, 270 panel data from 30 Chinese provinces from 2012 to 2020 are selected as the empirical sample. The main conclusions of this paper are presented below.

First, our research finds that economic policy uncertainty is considered an emerging factor affecting fiscal sustainability. As economic policy uncertainty rises, it intensifies the gap between fiscal revenues and expenditures, causing local fiscal sustainability to gradually decline. The higher economic policy uncertainty is, the higher the cost of policy adjustment and implementation, and the government supplements the fiscal expenditure gap by expanding the deficit ratio. In addition, according to the risk compensation theory

and information asymmetry theory, an increase in economic policy uncertainty will lead to a slowdown in economic growth and a decline in fiscal revenue. The increase in the deficit ratio and the decline in fiscal revenue indicate that fiscal sustainability is declining.

Second, our research confirms the impact of economic policy uncertainty on regional economies. That is, an increase in economic policy uncertainty will lead to a reduction in the social financing scale. When faced with economic policy uncertainty shocks, residents' precautionary saving motivations become stronger [46,47]. This motivation causes the scale of consumption and financing of the population to fall and the scale of savings to rise. Thus, the scale of social financing decreases. Based on the risk compensation theory, economic policy uncertainty increases corporate financing costs and inhibits corporate financing and investment behavior [26,27,50]. Based on the real option theory, when a corporation is hit by major economic uncertainty, it chooses to avoid risk by reducing its investment due to the uncertainty of future returns [53]. The social financing scale includes the scale of corporate financing and investment, so the shock of economic policy uncertainty leads to a lower social financing scale. We not only analyze the impact of economic policy uncertainty on the investment and financing scale of enterprises from a macro perspective, but also analyze the impact of economic policy uncertainty on residents' investment, financing and consumption behavior. In contrast to Yook and Julio [26,27], our research allows for a deeper and more comprehensive understanding of the mechanisms of economic policy uncertainty impact on regional economies.

Third, our research investigates the economic policy uncertainty impact on fiscal sustainability through the social financing scale. The economic policy uncertainty shock leads to a decrease in the social financing scale. A decline in the social financing scale leads to a decrease in fiscal revenue and an increase in fiscal spending and debt. Based on the assumption of a balanced government budget, the decrease in fiscal revenue and the increase in fiscal expenditure and debt will reduce fiscal sustainability [55,56]. Our research finds not only a negative impact of economic policy uncertainty on fiscal sustainability, but also an impact path of economic policy uncertainty on fiscal sustainability. The findings provide a possible reference for governments to manage the negative impact of economic policy uncertainty on fiscal capacity. Governments can avoid the adverse impact of economic policy uncertainty on fiscal revenue by stimulating the expansion of the social financing scale. In contrast to Bhagat et al. [25] and Hardouvelis et al. [10], our research can provide a reference for the fiscal and debt governance of countries with normal debt repayment abilities.

Fourth, the latest methods are used to measure fiscal sustainability. We use the non-linear fiscal response function of Ghosh [19] and introduce fiscal expenditure efficiency to measure fiscal sustainability. The calculated fiscal sustainability results are more consistent with the fiscal situation of local governments in China. The differences in fiscal sustainability among different provinces are better represented.

## 5.2. Managerial Implications

Based on the findings of this paper, the following government management comments are proposed. (i) The robustness of economic policy should be maintained to reduce policy uncertainty. Economic policy is an important tool for national macroeconomic control, and frequent policy shifts inevitably cause large shocks and fluctuations to macroeconomic operations. Policy implementation departments should comprehensively assess the economic effects of policy uncertainty and be targeted in controlling the risks of policy uncertainty. Governments and regulators should maintain consistency before and after policy implementation. Information communication with market players should be strengthened to eliminate the impact of information asymmetry as much as possible. The transparency of economic policies should be continuously improved, and policy signals should be released in a timely and effective manner; (ii) Moderate economic stimulus programs, such as expanding the social financing scale, should be implemented. The scale of government investment should be moderately expanded, and social capital should be included in the

construction of public service projects by financing platforms, PPP projects and equity. The social financing scale should be expanded while avoiding excessive growth of the fiscal deficit and improving fiscal sustainability. The willingness of economic agents to invest and consume should be increased. The income of economic agents should be increased by lowering their tax rates while strengthening forward guidance and market expectation management to expand the social financing scale; (iii) The efficiency of fiscal expenditure should be improved. In the process of government spending and investment, not only the principle of equity but also the principle of efficiency should be considered to avoid the waste of financial resources. Governments must especially avoid the contradiction that investment efficiency is lower than the financing rate.

### 5.3. Limitations and Future Work

Nevertheless, our research has limitations. First, the economic policy uncertainty is a comprehensive indicator in the paper. It does not break down uncertainty into indices such as fiscal policy, monetary policy and trade policy. Economic policy uncertainty can be decomposed in future studies, and more interesting results are expected to be found. Second, this paper considers only the mediating role of the social financing scale. Whether economic policy uncertainty has an impact on fiscal sustainability through other paths needs to be further explored. Finally, whether the empirical analysis using Chinese data is generalizable needs further verification. Chinese data are chosen because China is the first economy to recover after the COVID-19 outbreak. As the global recovery from the pandemic continues, future studies can use data from representative countries around the world for empirical analysis.

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