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# The impact of China's VAT reform policy on financial performance of listed companies in China's cultural industry

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## ABSTRACT

The cultural industry with innovation, low pollution and low energy consumption may become the next strategic pillar industry in China. The tax reform of 'Replacing business tax with value-added tax (VAT)' not only lays a solid foundation for the establishment of green tax system, but also contributes to the enterprise development and performance improvement. This paper aims to study the impact of VAT reform policy on the financial performance of listed companies in the cultural industry. To this end, the PSM-DID method was applied, and natural experiments were made by taking A shares listed companies from 2009 to 2014 as the reform pilot. The research finds that: (1) the VAT reform policy 'replacing business tax with VAT' is conducive to improving the financial performance of cultural industry enterprises; (2) the policy has more positive impact on the financial performance of manufacturing cultural enterprises than on non-manufacturing ones; (3) compared with state-owned enterprises, the policy contributes more to the financial performance of private enterprises. This study provides empirical evidence for evaluating the impact of VAT reform policy on the operation of cultural industry enterprises. It has practical significance for improving the VAT system and the financial operation of cultural enterprises.

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## 1. Introduction

China has a dual-subject tax system of value-added tax and corporate income tax, with the VAT as the largest tax. 'Replacing business tax with VAT' is an important tax reform measure in China in recent years, producing a profound impact on all aspects of the society. As the most representative product combining cultural creativity, economic development and scientific and technological progress, cultural and creative industry has always been regarded as the key field of national soft power competition in the 21st

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century and the most promising sunrise industry. During China's 13th Five-Year Plan period, it is emphasized that we should build a sustainable development-based green tax system reform to ensure sound economic development in China. The reform policy 'Replacing business tax with VAT' fully implemented in May 2016 has adjusted the fixed tax burden; the cancellation of the business tax and the changes in the additional taxes such as education surcharge and urban maintenance and construction tax levied on it deeply affect local economy and taxation systems. According to data from China's Ministry of Finance and the State Administration of Taxation, as of the first quarter of 2017, nearly 98.7% of taxpayers nationwide had seen their tax burden reduced or remained flat, and the tax reduction had reached 700 billion yuan (China's Ministry of Finance & the State Administration of Taxation, 2017). This policy has achieved a large-scale tax reduction, which can not only drive enterprises to optimize the efficiency of factor allocation and reduce damage to the natural environment, but also maximize taxpayers' acceptance of the future environmental protection tax. Therefore, the VAT reform policy is the basis for the establishment of a green tax system. It's an inevitable choice for sustainable economic development.

Regarding the VAT reform policy of replacing business tax with VAT, lots of studies have been conducted about its impact on the society and economy. Shi et al. (2022) stated that the reform policy helps enterprises to improve capital-labor ratio, labor input and labor productivity, and significantly promotes industrial upgrading in market-sensitive economies. The reform reduces the indirect tax burden of residents, increase the real income of residents, and narrow the relative income gap between urban and rural residents (Chen et al., 2022). Also, the tax compliance of value-added tax is higher than that of business tax, and the VAT system has the characteristics of self-enforcement in B2B transactions (Li & Wang, 2020).

From a micro level, the changes in tax burden caused by the policy have a greater impact on enterprise development and financial performance. According to the study, this reform policy has broken through the chain of tax cuts among industries, and improved the productivity of companies, especially in private, large and capital-intensive enterprises, or enterprises with tight financing. Research (Benzarti et al., 2020) finds that the price response to VAT increases and decreases is asymmetric, with prices responding more strongly to VAT increases than to VAT decreases, and that these asymmetric price effects will last for several years even after the VAT reform, so it will have different effects on corporate performance. Cai and Harrison (2021) explored the impact of China's tax reform in 2004 on the VAT of investment goods, and found no significant increase in fixed investment, new product launches, or productivity after the tax reform. Yu (2022) empirically studied the impact of tax structure on corporate tax compliance, to find that more reliance on indirect taxes tends to reduce corporate tax compliance, while increasing the ratio of direct taxes to total tax revenue can significantly improve corporate tax compliance.

At present, green innovation and sustainable development are the driving forces for the future growth of enterprises. The studies (Ding et al., 2021; Yu & Xu, 2022) have shown that China's VAT reform has a positive impact on corporate innovation by expanding corporate fixed asset investment and reducing corporate debt ratios. Li (2020) discussed the impact of the 'business tax to VAT' tax reform on green development. Tax

policy affects economic activities through substitution effect and income effect, and then promotes changes in ecological environment. Based on the Resource View (RBV) theory, Yu and Jin (2022) clarified that the green strategies are beneficial to a company's long-term performance, but hinders its short-term development. A green strategy could negatively impact a company's financial performance by raising its debt ratio. Junaid et al. (2022) proposed a framework for sustainable supply chain integration, green innovation, and corporate performance. The results also showed that green management innovation has a significant positive impact on the company's financial performance; in contrast, the impact of green process innovation on corporate performance is significantly negative, indicating that rapid changes in manufacturing processes and operating procedures produce multiple costs and reduce its profits. These new findings have implications for managers and researchers in sustainable supply chains and green innovation management. Irimiás and Mitev (2020) proposed that corporate change management has a direct positive impact on digital maturity and business performance, with less impact on green development commitment, which contributes to the debate with nonprofits on the relationship between digitization and green development.

As presented by Chouaibi (2021), financial performance depends on the realization of innovative activities and their disclosure. Hao et al. (2022) pointed out the dual effect of internal management and external economic policy uncertainty on the corporate innovation and development), and explored the methods of sustainable innovation and development under economic policy uncertainty. The study (Xie et al., 2022) find the impact of green process innovation on corporate financial performance in an inverted U-shape, and the non-linear relationship between green process innovation and corporate financial performance; financial benefit is achieved by the positive combination of green social capital and green demand).

As above, the impact of the VAT reform policy on enterprise behavior and performance has been widely discussed in various aspects by scholars, mainly focusing on the effect of tax relief, income distribution and social division of labor, corporate investment behavior and factor productivity, corporate operation and financial performance etc. As an important part of society in the all-round development, the cultural industry needs to maintain the vitality of sustainable development. The cultural enterprises is affected by many factors, e.g., tax policy. However, there has been limited literature on cultural industry enterprises will be affected by the policy of replacing business tax with VAT'.

Therefore, this paper studies the impact of the VAT reform policy on the financial performance of listed companies in the cultural industry, and analyzes the differences in the financial performance of different types of cultural companies. It consists of five sections. The introduction is given in the first section. The second section mainly combs the background of China's tax system and the existing literature, and puts forward the research assumptions. In the third section, the model selection and variable definition are carried out. In the fourth section, the empirical analysis was conducted for the impact of the policy on the financial performance of cultural industries using the DID model. This paper finds that, while other factors remain unchanged, 'replacing business tax with VAT' has a significant positive impact on the financial performance of cultural enterprises, that is, H1 is supported. The OLS regression results show that the reform

policy has a more significant impact on the financial performance of manufacturing cultural enterprises, but not on the non-manufacturing ones, which supports H1a and H1b; it has a more positive effect on the financial performance of private enterprises, that is, H2 is supported. Finally, the fifth section summarizes the research results and puts forward the prospect for the future development of tax policy.

## 2. Research hypotheses

### 2.1. Institutional backgrounds

After the founding of the People's Republic of China, Article 3 of the general provisions in Provisional Regulations on Industrial and Commercial Tax promulgated on January 31, 1950, stipulates that 'industrial and commercial tax paid by fixed commercial business and industrial enterprises is divided into 2 parts: a part based on business turnover (hereinafter referred to as business tax) and the other part based on income (hereinafter referred to as income tax). Article 5 stipulates 'industrial and commercial tax paid by public enterprises as follows: business tax shall be paid in local; income tax is charged in another method, and there is no need to be paid if profits are extracted'. In 1984 Business tax was regarded as an independent tax. On December 13, 1993, the State Council issued Provisional Regulations of the People's Republic of China on Business Tax, and elaborated on the relevant collection methods of business tax. In 1994, the reforms of the tax-sharing system was established to levy value-added tax on goods in processing and repairing services and the turnover tax on other services, intangible assets, and real estate. As the levying scope of the VAT was expanded to all goods, there has formed a coexistence pattern between VAT and business tax. The tax reduction achieved by the reform is not only large in scale and wide in scope, but also a kind of 'structural tax reduction'. However, the tax reform is not a simple universal benefit, so the tax burden of a few enterprises will rise inevitably in a period of time. With the end of corresponding adjustment cycle, the quantitative value of the entire tax reduction can be reflected. Meanwhile, the reform is to eliminate the factor of double taxation by optimizing the tax system structure and extend the credit chain in the unified market level playing field. For the enterprises that cannot enjoy the benefit of the reform for a while, they also need to actively adjust their business development mode and enterprise strategic planning.

During the period of the tax reform system, the VAT and business tax accounted for two-thirds of the whole tax revenue. Following the rapid economic development and a clearer division of social labor, the problems such as the damage to the integrity of VAT deduction and duplicate taxation become more and more obvious, which promotes our tax policy reform. On November 16, 2011, the Ministry of Finance and State Taxation Bureau of the People's Republic of China issued Pilot Scheme of Replacing Business Tax with Value-Added Tax and officially implemented the VAT reform. From January 1, 2012, VAT reform, as a crucial part of supply-side structural reform, was piloted in Shanghai city for the first time and took the lead in the transportation industry and some modern service industries (six specific modern service industries such as R & D and technology, information technology, cultural creativity, logistics support, tangible movable property leasing, authentication and consulting services). Then, the

**Table 1.** ‘VAT reform’ pilot projects.

Pilot start time	Pilot industry	Pilot areas
January 1, 2012	1 + 6 (Transportation and part of Modern service industries)	Shanghai
September 1, 2012	1 + 6 (Transportation and part of Modern service industries)	The Beijing municipal
October 1, 2012	1 + 6 (Transportation and part of Modern service industries)	Jiangsu, Anhui
November 1, 2012	1 + 6 (Transportation and part of Modern service industries)	Fujian, Guangdong
December 1, 2012	1 + 6 (Transportation and part of Modern service industries)	Tianjin, Hubei province, Zhejiang Province
August 1, 2013	1 + 6 (Transportation and part of Modern service industries)	The national
August 1, 2013	Radio, Film, and Television Services	The national
January 1, 2014	Railway transportation, postal service	The national
June 1, 2014	The telecoms industry	The national
May 2016	Construction, real estate, finance, and consumer services	The national

Source: the author.

reform expanded from Shanghai to 8 provinces and cities and finally to the rest of China, from the transportation industry, and modern service industries to postal, telecommunication industries and finally to all industries. Table 1 introduces the pilot industries and regions of the VAT reform.

## 2.2. Literature review and research hypothesis

### 2.2.1. Tax reform

Since the reform of the tax-sharing system in 1994, China’s tax structure has been continuously optimized, which helps to reconstruct the relationship between the government and the market and enhance the competitiveness of enterprises (Yu, 2022). The empirical research done by scholars on the ‘tax reform’ is mainly carried out from the macro and micro levels. At the macro level, tax systems are more conducive to business growth in developing countries, especially low-income countries, than in developed countries (Chauvet & Ferry, 2021). The policy ‘Replacing business tax with VAT’ is a milestone in the history of China’s tax reform, and the tax compliance of VAT has been proved to be higher than that of business tax (Li & Wang, 2020). Some studies have shown the positive impact of this reform policy, e.g., that influence economic activities through substitution effect and income effect, increase GDP, and enhance the influence of the overall regional economy (Li, 2020); promote industrial upgrading in market-sensitive economies (Shi et al., 2022); affect the income distribution of residents, increase the real income of residents, and improve family welfare (Chen et al., 2022). Whereas, the negative impact of tax reform was also demonstrated: scholars such as Youssef Benzarti et al. (2020) found that prices respond more strongly to an increase in VAT than to a decrease in VAT, and this asymmetry will lead to higher equilibrium profits and price increase. The reduction of VAT on investment goods in 2004, aimed at encouraging technological upgrading, has actually promoted the growth of labor-saving manufacturing and reduced employment (Cai & Harrison, 2021).

At the micro-level, tax reform has significantly accelerated the process of enterprise upgrading. Ding et al. (2021) found that the mechanism is mainly operated in the tax reduction and additional cash flow brought by the VAT reform. Such tax incentives are conducive to expanding fixed asset investment, R&D expenditures, and reducing corporate debt ratios, thereby promoting corporate innovation and specialization, and improving productivity and sustainable development. In terms of enterprise type, the

above-mentioned mechanisms operate more significantly in the non-state-owned enterprises (Peng et al., 2022); in terms of industries, the impact of tax incentives in manufacturing and technology industries is greater than other industries (Yu & Xu, 2022), and the real estate industry has greater tax risks (Li et al., 2022); from the perspective of company size, small and medium-sized enterprises can achieve better tax administration than larger enterprises, so as to narrow the productivity gap with them (Dabla-Norris et al., 2020).

### **2.2.2. Green innovation and sustainable development**

Climate change is one of the greatest challenges in recent times, not only threatening human health and well-being, but also severely disrupting human prosperity, security and natural life (Shao et al., 2022). The research on green innovation and sustainable development was carried out from two levels of business and government policy. Taking the manufacturing industry as an example, the environmental pollution caused by the enterprises needs to be solved urgently. Considering the constraints and requirements of internal and external factors such as environmental protection regulations, green innovation is required for enterprises (Meng et al., 2020). Innovation is a source of a company's competitive advantage, but measuring innovation is not easy, e.g., most of the innovation results in service companies are not patentable, so it is vital to design a set of indicators for companies to measure innovation and discuss the related results (Taques et al., 2021). As presented by scholars such as Khan et al. (2021), the disclosure reports of green innovation can be incorporated into sustainability reports. The study found that green product innovation is positively correlated with Return on Equity (ROE) and Return on Investment (ROI); green process innovation has a positive impact on corporate sustainability; green service innovation and green organizational innovation are not significantly correlated with the sustainable development goals (SDGs). Besides, Hao et al. (2022) proposed that the uncertainty of national political economy has a negative impact on innovation, and enterprises should take countermeasures to properly deal with the fluctuations caused by government policies.

In terms of the policy level, innovation and sustainable development are mainly achieved through subsidies and tax incentives (Lee & Park, 2021). It's found by scholars such as Ye et al. (2022) that, as one of technological innovations, fintech can effectively reduce poverty in various regions, and low-income provinces play a greater role in encouraging decision makers to build more digital financial technology systems. To mitigate climate deterioration, governments should implement more environmental taxes to discourage pollution-promoting activities through research support, subsidies, and government incentives (Dogan et al., 2022). Zhu et al. (2020) concluded that the power industry is the main source of carbon emissions. The construction of China's green tax system is conducive to the green development of financial behavior, which is an inevitable strategic choice for Chinese power companies.

### **2.2.3. Financial performance**

Facing the increasingly fierce market competition, the sustainable development of enterprises is directly influenced by the quality of financial performance (Chen et al., 2022). Scholars are also paying more and more attention to the evaluation of enterprise

financial performance, and also the construction of the index system in various ways (Wang, 2022). In those studied the performance scores and rankings of the sample companies were obtained by constructing an index system, and factor analysis was performed to prove their conformity to the characteristics of the selected samples.

Different evaluation methods have been applied by scholars to explore various influencing factors of financial performance. It's found that financial performance is closely related to the green behavior of companies (Zhang et al., 2021), and the implementation of green strategies is beneficial to their long-term performance (Yu & Jin, 2022), including green process innovation, green management innovation, intellectual input, corporate social responsibility and environmental supervision, etc.

Xie et al. (2022) found that the impact of green process innovation on corporate financial performance shows an inverted U shape; green social capital can weaken the negative impact of process innovation on performance, while green demand silence enhances the negative impact. When green reputation is used as an indicator to measure the green credit of listed banks, their financial performance must be significantly improved. Green management innovation has a significant positive effect on financial performance and green development (Irimiás & Mitev, 2020), especially in affiliated enterprises (Xu et al., 2021). Enterprise strategy group (ESG) as a business model generally has a greater positive impact on financial performance (Lee & Suh, 2022). Chouaibi (2021) presented that encouraging firms to invest in intangible assets can stimulate innovation, which is a competitive advantage of sustainable development. There was a significant positive relationship between intellectual input and financial performance of companies (Gupta et al., 2022), and between innovation capital and green patented inventions (Liu et al., 2021), but during the commercialization period, the company's innovation output and financial performance showed an inverted U-shape due to the differentiation of responsibility for new things (Hai et al., 2022). The healthy operation of enterprises depends on social resources (Lin et al., 2021). Financial performance is higher in companies whose CSR initiatives are aligned with the cultural environment (Shi & Veenstra, 2021) the operation mechanism of enterprises are related to corporate governance characteristics, board size and gender diversity (Pekovic & Vogt, 2021). Besides, the interactions of corporate social responsibility with ownership concentration negatively impact financial performance. Liu et al. (2022) found that environmental regulation positively impacts the financial performance of polluting enterprises in the long run, while carbon performance is a transmission channel that can improve the financial performance and value of companies in the long run (Ganda, 2022).

In general, the research on the policy effects of the tax reform mainly focuses on the preferential tax burden, the overall economic influence, and the innovation and upgrading of enterprises, but rarely on the cultural industry. At present, ecological and environmental problems are becoming more and more serious. The green tax system and sustainable development are also key areas of research by scholars. Since manufacturing enterprises in cultural industries will cause certain damage to the environment, the government can use green subsidies and tax incentives to promote enterprises' green innovation R&D investment, and taxation of pollutants, etc., to reduce pollutant emissions and improve business efficiency. The research on financial performance mainly focuses



on the construction of evaluation system and the analysis of influencing factors, but few studies have been conducted on the impact of tax system reform on financial performance. In view of this, we aimed to study the impact of a landmark event ‘replacing business tax to VAT’ in China’s tax reform on the financial performance of listed companies in the cultural industry. First of all, although this reform policy has increased the business tax rate of the modern service industry from 5% or 3% to 6%, the basis for the VAT calculation is the ‘value-added’ part, which is far lower than that of business tax. Therefore, based on the relationship ‘tax burden = tax basis  $\times$  tax rate’, it can be inferred that the tax burden of cultural industry after replacement of business tax with value-added tax is likely to have little change or a slight decrease. According to current tax system in China, the actual payment of VAT and consumption tax is the basis for urban construction tax and education surcharge. Therefore, the reduction of VAT burden will affect corporate profits through ‘business tax and additional items’. Secondly, from the perspective of cost, before the VAT reform the business tax paid by the enterprise needs to be deducted in full when calculating the profit; after the reform starts, the value-added tax as input tax can be deducted, plus the depreciation of fixed assets. Also, due to the tax effects, the cost of the cultural industry will decrease, which may lead to an increase in profits. Finally, some studies have shown that the replacement of business tax with VAT has promoted the R&D investment of enterprises at the micro level, while the improvement of the investment level will generally optimize the production equipment of the enterprise and then improve the production capacity. In addition, optimizing the division of labor will lead to the transformation of the non-main business, and outsourcing the business will improve the level of the main business, thus increasing the profitability of the enterprise.

Based on the above three points, the following hypothesis were proposed:

H1: The VAT reform policy of ‘replacing business tax with VAT’ contributes to improving the operational performance of cultural enterprises.

Compared with non-manufacturing cultural enterprises, manufacturing ones have a higher proportion of fixed assets and physical assets. Wan (2012) finds that the ‘VAT reform’ created an investment subsidy effect on manufacturing enterprises; that is, increasing investment in fixed assets so as to deduct more input tax. To a certain extent, this has pushed pilot enterprises to expand the scale of investment in fixed assets, which is conducive to optimizing the production and operation efficiency of the enterprises, and improving their operating performance.

H1a: The reform policy contributes to improving the operational performance of manufacturing cultural enterprises.

H1b: The reform policy does not significantly affect the operational performance of non-manufacturing cultural enterprises.

Under the pressures of government goals and management assessment, state-owned enterprises are subjected to be the interference of the government in the business operation and decision making. Aimed at the ‘VAT’ reform policy, the government will encourage state-owned enterprises to increase equipment investment in fixed assets and boost input tax deductions by etc. with the use of VAT deduction and administrative intervention and etc. But private enterprises run businesses in the market just to

maximize shareholder wealth so that they will be more likely to make decisions according to their own interest. Consequently, compared with private enterprises, this reform policy has less impact on state-owned enterprises. Based on this, the following hypothesis was proposed:

H2: Compared with state-owned cultural enterprises, the reform policy improves their operational performance more significantly than private cultural enterprises.

### 3. Research design

#### 3.1. Model selection and design

This paper uses the difference-in-difference model (DID) to assess the impact of the ‘VAT reform’ policy on the financial performance of cultural industry enterprises. The policy was piloted in different regions and industries. It was first piloted in Shanghai in 2012, then in other eight cities such as Beijing from August to the end of the same year, and finally, reforms were carried out nationwide in 2013. In terms of industry, the reform starts from the transportation industry and some modern service industry, and then the broadcasting and film service industry, postal industry, construction industry, and other industries. This pilot reform per regions and industries can be considered as a ‘natural experiment’, meeting the basic setting of the DID model. The DOD model can effectively avoid endogenous problems. Specifically, the ‘VAT reform’ policy has an exogenous impact on the financial performance of listed companies in the cultural industry, so there is no adverse causality problem. Compared with traditional models such as OLS, the DID models can evaluate the effects of the ‘VAT reform’ policy more accurately. Drawing on existing research methods, this paper constructs the following model to test the impact of the ‘VAT reform’ on the financial performance of cultural industry enterprises.

$$\begin{aligned} ROE_{i,t} = & \beta_0 + \beta_1 Time_{i,t} + \beta_2 Treat_{i,t} + \beta_3 Time_{i,t} \times Treat_{i,t} \\ & + CONTROLS_{i,t} + \sum YEAR + \sum IND + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where, ROE is the explained variable, representing the financial performance of listed companies in the cultural industry; Time represents whether it is in the ‘VAT reform’ year, and if yes then Time = 1, otherwise Time = 0; Treat represents whether it belongs to the experimental group, and Treat = 1 means the experimental group, while Treat = 0 the control group; Time  $\times$  Treat means the effect of the ‘VAT reform’ policy; CONTROLS represents the control variables, including enterprise size, price-to-book ratio, net profit growth rate etc.;  $\Sigma YEAR$  and  $\Sigma IND$  are respectively control time effect and industry effect. If the regression coefficient  $\beta_3$  is significantly positive, it indicates that the ‘VAT reform’ has a positive impact on the financial performance of cultural industry enterprises, and the Hypothesis 1 is true.

In the model application, since the cultural industry enterprises are mainly involved in the pilot reform industries from January 2012 to August 2013, the pilot industries in Shanghai in January 2012 were taken as the first experimental group; the pilot

industries in the eight major provinces and cities in September-December 2012 were the second experimental group; the pilot industries nationwide in August 2013 served as the third group. The DID regression tests were conducted based on these three ‘natural experiments’. But considering there was relatively little data on pilot companies that implemented the ‘VAT reform’ policy in Shanghai and other eight major provinces and cities in 2012, this paper selects the nationwide pilot reform in August 2013 as a ‘natural experiment’ to test the impact of the ‘VAT reform’ policy on the financial performance of cultural industry listed companies. Due to the time lag of the policy, 2014 was selected as the event year. In addition, to ensure the data verifiability, this paper took all pilot companies per industry and region in 2012-2014 as the experimental group in the robust test, and the other ones without pilot reforms as the control group.

### **3.2. Variable definitions**

This paper selects ROE data as the indicator to measure the current financial performance of cultural industry enterprises. Explanatory variables include Time, Treat, and Time  $\times$  Treat, where Time  $\times$  Treat is the main explanatory variable; time represents whether it is in the ‘VAT reform’ year, and if it is the event year or later, Time = 1, otherwise Time = 0; Treat represents whether it belongs to the experimental group; Treat = 1 means the experimental group, and Treat = 0 means the control group; Time  $\times$  Treat means the effect of the ‘VAT reform’ policy; the coefficient  $\beta_3$  indicates the exogenous impact of the ‘VAT reform’ policy on the explained variable (the financial performance).

Referring to existing research, the following control variables were given: net cash flow from operating income (CASH), Price-to-book ratio (PB), top ten shareholders’ shareholding ratio (TOP10), net profit growth rate (GROWTH), enterprise nature (SOE), and Enterprise scale (SIZE), as well as the year and industry.

Table 2 shows the main variables and their definitions involved in this paper.

### **3.3. Sample selection and data sources**

This paper selects 2009-2014 Chinese A-share stock listed cultural industry enterprises as the original sample. According to the Guidelines for the Industry Classification of Listed Companies proclaimed by the China Securities Regulatory Commission in 2012, we identified listed companies in the cultural industry based on the ‘business scope’ field in the CSMAR database and the ‘main business income’ disclosed in the annual report, and then performed the following screening: ① remove companies that were in ST during the research period; ② remove those with missing data in 2014; ③ remove samples with incomplete data. In the end, we obtained a total of 79 listed cultural industry companies and a total of 393 valid sample observations.

In this study the data for empirical analysis come from the Wind information database and CSMAR database. These industries were classified in accordance with 2012 Industry Classification Guidelines for Listed Companies in the China Securities Regulatory Commission’s, and continuous variables were winsorised by around 1%.

**Table 2.** Variable definition and description.

Variable meaning	Variable symbol	Variable declaration
Return on equity	ROE	Net profit / owner's equity
The policy of replacing business tax with VAT	Time*Treat	If time = 1 and treat = 1, the value is 1; otherwise, the value is 0
Net cash flow from operating income	CASH	Net cash flow from operating activities / total operating income
Price-to-book	PB	Price per share / net assets per share
Equity structure	TOP10	Sum of shareholding ratio of top 10 shareholders of listed companies
Growth	GROWTH	Net profit growth rate
The enterprise scale	SIZE	The scale of an enterprise is equal to the logarithm of its total assets at the end of the previous year
Enterprise nature	SOE	For the nature of enterprise, the value of state-owned enterprise is 1 and that of non-state-owned enterprise is 0
Industry dummy variable	IND	Control industry
Annual dummy variable	YEAR	Control year

Source: the author.

**Table 3.** Descriptive statistics of main variables.

Variable	Observations	Mean value	Standard deviation	Minimum	Maximum
ROE	393	0.0583	0.298	-5.289	0.43
Time	393	0.201	0.401	0	1
Treat	393	0.545	0.499	0	1
CASH	393	0.101	0.184	-1.256	0.77
PB	393	3.541	3.125	0.431	35.41
TOP10	393	57.99	15.16	15.1	94.35
GROWTH	393	-1.073	11.93	-141.1	53.75
SIZE	393	21.76	1.231	16.52	25.1
SOE	393	0.471	0.5	0	1

Source: the author.

## 4. Empirical results and analysis

### 4.1. Descriptive statistics

Table 3 lists the descriptive statistics of the main variables. The average value of ROE is 0.0583, and the standard deviation is 0.298, indicating the significant difference in the financial performance of cultural enterprises in China. The average value of TOP10 is 57.99, indicating that the sample companies have a relatively high degree of concentration of equity. The average SOE is 47.12, which means that about 47% of the sample are state-owned enterprises. The descriptive statistical results of other variables are shown in Table 3:

### 4.2. Propensity score matching (PSM) method

This paper uses the PSM method to match the experimental group and the control group. To perform logit regression, it selects Net cash flow from operating income (CASH), price-to-book ratio (PB), shareholding ratio of the top ten shareholders (TOP10), net profit growth rate (GROWTH), enterprise nature (SOE), enterprise scale (SIZE) etc. as characteristic variables, as shown in formula (2). And finally the radius matching method was adopted to match predictive score.

$$ROE\_PSM_{i,t} = \delta_0 + \delta_1 SIZE\_PSM_{i,t} + \delta_2 PB\_PSM_{i,t} + \delta_3 GROWTH\_PSM_{i,t} + \delta_4 CASH\_PSM_{i,t} + \delta_5 TOP10\_PSM_{i,t} + \delta_6 SOE\_PSM_{i,t} + \varepsilon_{i,t} \quad (2)$$

**Table 4.** Balance test.

Concomitant variable	Unmatched(U)/ Matched(M)	Treatment group	Control group	Deviation%	T-value	P-value
CASH	U	0.0876	0.1173	-16.6	-1.6	0.11
	M	0.095	0.1011	-3.4	-0.4	0.693
PB	U	4.1209	2.8468	41.8	4.11	0
	M	3.8282	4.1381	-10.2	-0.78	0.434
TOP10	U	59.116	56.636	16.3	1.62	0.106
	M	59.194	58.324	5.7	0.6	0.552
SIZE	U	21.672	21.861	-15.5	-1.52	0.13
	M	21.718	21.74	-1.8	-0.18	0.856
GROWTH	U	-1.021	-1.1362	1	0.1	0.924
	M	-0.8752	-1.2363	3.1	0.32	0.752

Source: the author.

**Table 5.** The impact of 'VAT reform' on the financial performance of cultural enterprises.

	PSM + DID			DID
	(1)	(2)	(3)	(4)
Time	-0.0306 (-1.50)	-0.0405** (-2.27)	-0.0577*** (-2.81)	-0.0612*** (-2.92)
Treat	0.0134 (1.13)	0.0060 (0.56)	0.0122 (0.65)	0.0140 (0.74)
Time*Treat	0.0485* (1.77)	0.0475** (1.99)	0.0437* (1.95)	0.0398* (1.78)
CASH		0.1012*** (3.22)	0.1130*** (3.46)	0.1183*** (3.73)
PB		0.0013 (0.61)	-0.0051** (-2.13)	-0.0018 (-0.82)
TOP10		0.0016*** (4.47)	0.0013*** (3.28)	0.0013*** (3.09)
SIZE		0.0197*** (4.00)	0.0303*** (5.24)	0.0284*** (4.89)
GROWTH		0.0065*** (8.20)	0.0056*** (7.41)	0.0071*** (9.95)
SOE		-0.0463*** (-4.31)	-0.0816*** (-5.84)	-0.0737*** (-5.31)
YEAR			Y	Y
IND			Y	Y
Constant term	0.0671*** (7.80)	-0.4400*** (-3.76)	-0.6122*** (-4.22)	-0.5674*** (-3.89)
N	381	381	381	393
adj. R <sup>2</sup>	0.0121	0.2590	0.3635	0.4207
F	2.5459	15.7617	7.3826	9.1329

Note: \*\*\*, \*\*, \* are significant at the level of 1%, 5%, and 10% respectively. The following table is the same.

Source: the author.

Table 4 shows the balance test using the PSM, only including the test results of continuous variables. The results indicate that after matching, the deviation of each variable between the experimental group and the control group is significantly reduced, and the matching effect is better.

### 4.3. The impact of the 'VAT reform' on the financial performance of cultural enterprises: PSM-DID method

Table 5 reports the estimation results using the DID model between the 'VAT reform' policy and the financial performance of cultural enterprises. Columns (1) to (3) use PSM samples to pair and then perform regression. Column (1) does not control other variables,

**Table 6.** The impact of the 'VAT reform' on the financial performance of manufacturing enterprises and non-manufacturing enterprises.

	Manufacturing companies		Non-manufacturing companies	
	(1)	(2)	(3)	(4)
Time	-0.028 (-0.96)	-0.0459 (-1.28)	-0.0352** (-2.55)	-0.0383** (-2.40)
Treat	0.0145 -0.81	0.0509 -1.48	-0.0107 (-1.29)	-0.0152 (-1.00)
Time*Treat	0.0636 -1.6	0.0687* -1.72	0.0077 -0.43	0.0055 -0.32
CASH	0.2345*** -3.65	0.2165*** -3.14	0.0004 -0.02	0.036 -1.57
PB	-0.0173*** (-3.73)	-0.0201*** (-4.06)	0.0071*** -4.32	0.0065*** -3.73
TOP10	0.0022*** -3.77	0.0023*** -3.3	0.0004 -1.25	0 -0.07
SIZE	0.0141* -1.74	0.0220** -2.29	0.0261*** -6.11	0.0217*** -3.92
GROWTH	0.0065*** -6.12	0.0066*** -5.94	0.0033*** -3.86	0.0038*** -4.53
SOE	-0.0586*** (-2.67)	-0.0748*** (-2.86)	-0.0473*** (-5.32)	-0.0233** (-1.98)
YEAR		Y		Y
IND		Y		Y
Constant term	-0.3428* (-1.82)	-0.5097** (-2.27)	-0.4751*** (-4.75)	-0.3283** (-2.34)
N	185	185	196	196
adj. R <sup>2</sup>	0.3576	0.3723	0.3741	0.4493
F	12.381	5.7442	13.9485	7.9175

Source: the author.

and column (2) controls variables such as net cash flow from operating income and price-to-book ratio. Column (3) further controls the year and industry variables. When the control variables are gradually added, the adjusted R<sup>2</sup> in columns (1) to (3) gradually increases, indicating that the model has been further optimized. The regression coefficient of the interaction term Treated × Time in column (3) is 0.0437, and it is significant at the 10% level, which shows that when other factors remain unchanged, the 'VAT reform' has a significant positive impact on the financial performance of cultural enterprises. This result supports Hypothesis 1. In addition, this paper directly performs regression based on the sample. The regression coefficient of the interaction term Treated × Time in column (4) is 0.0398, which is also significant at the 10% level. The conclusion is consistent with the regression after pairing the PSM sample. This result further supports H1.

Table 6 lists the OLS regression results of the manufacturing enterprise group and the non-manufacturing group. Columns (1) and (2) show the policy effects of the 'VAT reform' when the samples are manufacturing enterprises. The year and industry are not controlled in column (1), but in column (2). The regression coefficient of Treated × Time is 0.0687, which is significantly positive at the 10% level. Columns (3) and (4) indicate the policy effect of the 'VAT reform' when the sample enterprises are in non-manufacturing industry, indicating that in the group of non-manufacturing enterprises, the regression coefficients of Treated × Time are not significant. The results above show that the 'VAT reform' policy has a significant impact on the financial performance of manufacturing cultural enterprises, but not significantly on the non-manufacturing ones, which supports H1a and H1b.

**Table 7.** The impact of the ‘VAT reform’ on the financial performance of state-owned and private enterprises.

	State-owned enterprises		Non-state-owned enterprises	
	(1)	(2)	(3)	(4)
Time	−0.0320** (−2.11)	−0.0476*** (−2.65)	−0.0125 (−0.41)	−0.0352 (−1.05)
Treat	0.0081 (0.82)	0.0177 (1.14)	0.0099 (0.54)	−0.0288 (−0.84)
Time*Treat	0.0441** (2.32)	0.0338* (1.96)	0.0197 (0.44)	0.0121 (0.28)
CASH	0.0212 (0.77)	0.0464 (1.63)	0.1814*** (3.42)	0.1498*** (2.76)
PB	0.0093*** (5.81)	0.0056*** (3.15)	−0.0269*** (−4.88)	−0.0336*** (−5.75)
TOP10	0.0015*** (4.91)	0.0017*** (4.81)	0.0008 (1.27)	−0.0002 (−0.34)
SIZE	0.0287*** (6.89)	0.0276*** (4.96)	−0.0150 (−1.48)	0.0045 (0.35)
GROWTH	0.0020 (1.34)	−0.0002 (−0.15)	0.0070*** (6.98)	0.0061*** (6.26)
YEAR		Y		Y
IND		Y		Y
Constant term	−0.6528*** (−6.72)	−0.6386*** (−4.88)	0.3970 (1.59)	−0.0424 (−0.13)
N	202	202	179	179
adj. R <sup>2</sup>	0.3897	0.5311	0.3263	0.4272
F	17.0461	8.8515	11.7784	6.7726

Source: the author.

Furthermore, this paper analyzes the impact of the ‘VAT reform’ on state-owned enterprises and private enterprises. Table 7 shows the OLS regression results of the state-owned enterprise group and the private enterprise group. Columns (1) and (2) show the policy effect of ‘VAT reform’ on the group of private enterprises. The year and industry are not controlled in Column (1), but in Column (2). The regression coefficient of Treated  $\times$  Time is 0.0338, which is significantly positive at the 10% level. Columns (3) and (4) indicate the policy effect of the ‘VAT reform’ on state-owned enterprises. It can be seen that the regression coefficients of Treated  $\times$  Time are not significant. The results above suggest that the policy of ‘VAT reform’ has a significant impact on the financial performance of private enterprises, which supports H2.

#### 4.4. Robustness test

To ensure the reliability of the research conclusions, robustness tests were conducted from three aspects: (1) Choose other PSM measurement methods. The PSM method uses kernel matching and nearest neighbor matching (1:5) to check whether the results are consistent with the ones after radius matching, while their basis variables are the same; (2) Increase the control variable. Considering that an enterprise’s debt level has a certain impact on its financial performance, we added the asset-liability ratio as another control variable on the basis of model (1); (3) Expand the sample size of the experimental group. The e enterprises reformed by industry and region from 2012 to 2014 were also taken as experimental subjects, and other cultural industry enterprises that did not undergo reforms were the control group. The results are shown in Tables 8 and 9, which are in accord with the previous conclusions.

**Table 8.** Robustness test: Choose other PSM measurement methods and increase control variables.

	Different PSM measurement methods were used		Add control variables
	(1)	(2)	
Time	-0.0578*** (-2.81)	-0.0564*** (-2.75)	-0.0586*** (-2.85)
Treat	0.0122 (0.65)	0.0115 (0.62)	0.0082 (0.43)
Time*Treat	0.0438* (1.95)	0.0442** (1.99)	0.0437* (1.95)
CASH	0.1132*** (3.46)	0.1095*** (3.39)	0.1113*** (3.40)
PB	-0.0051** (-2.12)	-0.0031 (-1.36)	-0.0046* (-1.85)
TOP10	0.0013*** (3.28)	0.0012*** (3.04)	0.0013*** (3.16)
SIZE	0.0303*** (5.23)	0.0290*** (5.04)	0.0332*** (4.97)
GROWTH	0.0056*** (7.40)	0.0057*** (7.42)	0.0056*** (7.38)
SOE	-0.0814*** (-5.82)	-0.0762*** (-5.56)	-0.0789*** (-5.52)
LEV			-0.0325 (-0.87)
YEAR	Y	Y	Y
IND	Y	Y	Y
Constant term	-0.6136*** (-4.22)	-0.5833*** (-4.03)	-0.6483*** (-4.30)
N	380	386	381
adj. R <sup>2</sup>	0.3626	0.3521	0.3630
F	7.3420	7.1543	7.1883

Source: the author.

**Table 9.** Robustness test: expanding the sample size of the experimental group.

	Full sample	Manufacturing companies	Non-manufacturing companies	Non-state-owned enterprises	State-owned enterprises
		(1)	(2)	(1)	(2)
Time*Treat	0.0293* (1.68)	0.0840** (2.29)	-0.0085 (-0.70)	0.0306** (2.41)	0.0081 (0.23)
CASH	0.1194*** (3.76)	0.2159*** (3.13)	0.0451** (2.11)	0.0513* (1.91)	0.1523*** (2.78)
PB	-0.0017 (-0.79)	-0.0058 (-1.51)	0.0064*** (3.69)	0.0068*** (4.43)	-0.0250*** (-4.31)
TOP10	0.0012*** (3.02)	0.0018*** (2.64)	0.0001 (0.39)	0.0017*** (5.14)	-0.0002 (-0.30)
SIZE	0.0278*** (4.82)	0.0240** (2.51)	0.0238*** (4.61)	0.0260*** (4.74)	-0.0032 (-0.24)
GROWTH	0.0070*** (9.88)	0.0079*** (7.65)	0.0038*** (4.60)	0.0008 (0.59)	0.0076*** (8.09)
SOE	-0.0737*** (-5.33)	-0.0762*** (-2.98)	-0.0254** (-2.31)		
YEAR	Y	Y	Y	Y	Y
IND	Y	Y	Y	Y	Y
Constant term	-0.5392*** (-3.79)	-0.4996** (-2.20)	-0.3903*** (-3.07)	-0.5906*** (-4.72)	0.1268 (0.38)
N	393	193	200	208	185
adj. R <sup>2</sup>	0.4194	0.4005	0.5411	0.5860	0.4435
F	9.3284	6.8305	11.2014	11.1039	7.6652

Source: the author.



Table 8 shows the robustness test by using other PSM measurement methods and increasing the control variables such as the asset-liability ratio. The results indicate that regardless of the use of different PSM measurement methods or the newly added asset-liability ratio, Treated  $\times$  Time is still significant at the 10% level, being consistent with the above regression results. H1 is verified again.

Table 9 shows the robustness test results by expanding the sample size of the experimental group. It's found that when the full sample regression test is performed, the Treated  $\times$  Time regression coefficient is 0.0293, which is significant at the 10% level, and it supports H1 again; in the regression test between manufacturing enterprises and non-manufacturing enterprises, the interaction term Treated  $\times$  Time of the manufacturing enterprise is significant at the 5% level, but not for the non-manufacturing ones, supporting H1a and H1b again; in the regression test between state-owned enterprises and private enterprises, the interaction term Treated  $\times$  Time of the private enterprise is significant at the 5% level, while the state-owned enterprise group is not, again supporting H2.

## 5. Conclusion

The sustainable development of cultural industry is of great significance to the improvement of people's living standards. At the current stage of China it can better meet the growing spiritual and cultural needs of the people and improving their living quality. Tax policies play an important role in the green development of cultural enterprises. Under such background, this paper studies the impact of the 'replacing business tax with value-added tax' policy on the financial performance of Listed Companies in the cultural industry using the PSM-DID method and empirical test. The research finds that: (1) 'VAT reform' contributes to improving the financial performance of enterprises in the cultural industry. (2) 'VAT reform' has more positive impact on manufacturing cultural enterprises but less impact on non-manufacturing ones. (3) Compared with state-owned enterprises, the impact of the 'VAT reform' on financial performance of private enterprises is greater. This study enriches the literature on the impact of the VAT reform on the performance of micro enterprises and provides empirical evidence for evaluating the impact of this reform policy on the operation of cultural industry enterprises. In addition, the tax system reform has brought great changes to the structure of local tax sources and improved the performance of cultural industry enterprises. With the continuous warming of environmental protection and sustainable development, it is expected to further improve the environmental protection standards of cultural enterprises and then increase the environmental protection tax when reconstructing the tax system in the future.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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