Study on the Interactive Effect of Development of Science and Technology Finance and Cultivation of Financial Talents in Vocational Colleges in Anhui Province

Aiqun Peng(✉), Fang Fang, and Yanan Gao

Anhui Business and Technology College, Hefei 230000, China
309926379@qq.com

Abstract. It is impossible to separate the development of science and technology finance from the promotion of talent at all levels. This article analyses the interaction effect between the development of science and technology finance and the cultivation of talents in finance and commerce in higher vocational institutions in the province of Anhui from the perspective of the cultivation of talents in finance and commerce in higher vocational institutions in Anhui. This article selects as sample intervals the annual growth rates of students majoring in finance and commerce, science and technology finance practitioners, and the financial support of science and technology finance in vocational colleges in Anhui Province between 2004 and 2021. The paper then establishes a VAR model between the variables, and the empirical findings demonstrate the existence of a virtuous circle effect between the intensity of financial support for science and technology finance and the cultivation of students in finance and commerce disciplines at higher vocational colleges. The article concludes with policy recommendations for bolstering the financial support of science and technology, advancing the reform of higher vocational education in Anhui Province, and advancing the reform of student internships in higher vocational institutions.

Keywords: technology finance · higher education institutions · talent training · VAR

1 Introduction

The "14th Five-Year Plan" period is the first five-year period for China to establish a moderately prosperous society, embark on a new journey of constructing a modern socialist country, and advance towards the second century-long objective. The provincial government of Anhui issued the "development of multi-level capital markets to serve the "three locations and one area" construction action plan. This program calls for accelerating the development of a capital market that is standardized, transparent, open, dynamic, and resilient. In addition, it is necessary to open direct financing channels, encourage the development of investment and financing synergy, and effectively improve

D. Kumar et al. (Eds.): IEIT 2023, AHSSEH 10, pp. 1334–1341, 2023.
https://doi.org/10.2991/978-94-6463-230-9_161

the service level and vitality of the capital market in order to provide strong financial capital support for accelerating the construction of "three places and one area" and constructing a new phase of modern and beautiful Anhui. Science and technology finance is based primarily on talent. In addition, it is the driving force behind science and technology innovation activities and is crucial to the efficient operation of science and technology finance. With the ongoing promotion of science and technology finance in recent years, the demand for compound financial talents among science and technology financial institutions has progressively increased. It causes the development of science and technology finance in Anhui Province to be hampered by a paucity of high-quality science and technology financial talent. In order to aid in the development of science and technology finance, this paper examines the relationship between the development of science and technology finance and the cultivation of financial capabilities in higher education institutions at the higher education level.

Literature review reveals that science and technology finance research in Anhui Province focuses primarily on measuring the level and efficacy of science and technology finance development. The relationship between the development of technology finance and the cultivation of financial and commercial talents in higher education institutions has been the subject of relatively few studies. Therefore, this paper investigates the interaction effect between the cultivation of finance and commerce talent and the development of technology finance in Anhui Province's higher vocational institutions. The objective is to promote the coordinated development of science and technology finance and finance and commerce main talent cultivation in higher vocational schools.

2 Indicator Selection and Data Sources

2.1 Indicator Selection

2.1.1 Annual Growth Rate of Students Majoring in Finance and Commerce in Vocational Colleges in Anhui Province

The cultivation of financial and economic talents in vocational colleges in Anhui Province is measured by the annual growth rate of students in the finance and commerce major of vocational colleges in Anhui Province, denoted as CJST. The calculation formula is as follows:

$$CJST_t = \frac{CJS_t - CJS_{t-1}}{CJS_{t-1}} \tag{1}$$

In the above equation, $CJST_t$ represents the annual growth rate of students in the finance and commerce major of vocational colleges in Anhui Province in year t, CJS_t represents the number of students in the finance and commerce major of vocational colleges in Anhui Province in year t.

2.1.2 Annual Growth Rate of Technology and Finance Practitioners in Anhui Province [2]

The annual growth rate of technology and finance practitioners in Anhui Province is recorded as KJWR, calculated by subtracting the total number of financial and scientific

Table 1. Descriptive Statistical Results of Data

	CJST	KJWR	FSST
Mean	0.079269	0.056991	0.028408
Median	0.087819	0.049863	0.024725
Maximum	0.413727	0.258736	0.054813
Minimum	−0.215105	−0.0535	0.008654
Std.Dev	0.133796	0.069017	0.015833
Observations	18	18	18

Data source: Anhui Province Statistical Yearbook 2005–2022
Source of forms: Calculated by Eviews 8.0

research and technology service practitioners in Anhui Province from the total number of financial and scientific research and technology service practitioners in Anhui Province in the previous year, and excluding the total number of financial and scientific research and technology service practitioners in Anhui Province in the previous year.

2.1.3 Financial Support for Technology and Finance in Anhui Province [3]

The financial support for science and technology finance in Anhui Province is recorded as FSST, which is calculated based on the ratio of Anhui Province's science and technology expenditure to the total regional financial expenditure that year.

2.2 Data Sources

After the establishment of the third party payment company Alipay in 2004 [4], the development of technology finance in China has gradually entered the right track. This article selects the annual data of the above indicators in Anhui Province from 2004 to 2021 as the research interval, and the data is sourced from the Anhui Provincial Statistical Yearbook and Anhui Provincial National Economic Statistics Bulletin. Table 1 is the descriptive statistical results of the relevant data:

3 Empirical Analysis

3.1 Testing the Stationarity of Data

To ensure the accuracy of subsequent empirical analysis, this article first conducts ADF stationarity testing on the research data [5], Table 2 is the stability test results of research variables:

According to the stationarity test results in the table above, at a significance level of 5%, the original sequence of financial support for science and technology in Anhui Province did not pass the test and is a non-stationary sequence. At a significance level of 5%, the first-order difference sequence of all variables is a stationary sequence.

Table 2. Stability Test Results of Research Variables

variable	t-values	P- value	Conclusion
CJST	-3.656168	0.0157	stable
KJWR	-3.873567	0.103	stable
FSST	0.214685	0.9645	unstable
D(CJST)	-5.820885	0.0003	stable
D(KJWR)	-5.934233	0.0003	stable
D(FSST)	-6.265386	0.0001	stable

Source of forms: Calculated by Eviews 8.0

Table 3. Cointegration test between variables

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.637747	15.23118	21.13162	0.273
At most 1	0.5986	13.69195	14.2646	0.0614
At most 2	0.046239	0.71013	3.841466	0.3994

Source of forms: Calculated by Eviews 8.0

3.2 Johnson Cointegration Test Between Variables

In order to further test whether there is a long-term equilibrium relationship between the above time series data, this article uses the Johnson test method for cointegration testing between variables [6]. Table 3 is the result of cointegration test between variables:

According to the Johansson cointegration test results in Table 3, at a significance level of 10%, there is at least one cointegration relationship between the three variables.

3.3 Determination of the Optimal Lag Order

Generally speaking, the development of technology and finance has a lag effect on the cultivation of finance and commerce students in vocational colleges in Anhui Province. This article determines the optimal lag order of the VAR model between variables based on the LLC rule [7]. Table 4 is the result of determining the optimal lag order based on LLC rule:

According to Table 4, according to the LLC rule, the optimal lag order between variables is determined to be order 2. Therefore, this article establishes a VAR (2) regression model between variables. In order to further determine whether the model is stable, this article conducts a unit root test on the model, and the test results are shown in the following Fig. 1 [8]:

From Fig. 1, it can be seen that the modulus of the reciprocal unit root of the VAR model between second-order variables with hysteresis is located within the unit circle,

Table 4. Table of Determining the Optimal Lag Order Based on LLC Rule

Lag	LogL	LR	FPE	AIC	SC	HQ
0	76.35969	NA	1.13E-08	-9.781292	-9.639682	-9.782801
1	96.58045	29.65710*	2.64E-09	-11.27739	-10.71095*	-11.28343
2	107.4065	11.54784	2.52e-09*	-11.52087*	-10.5296	-11.53143*
3	114.9275	5.013975	5.55E-09	-11.32367	-9.907567	-11.33875

Source of forms: Calculated by Eviews 8.0

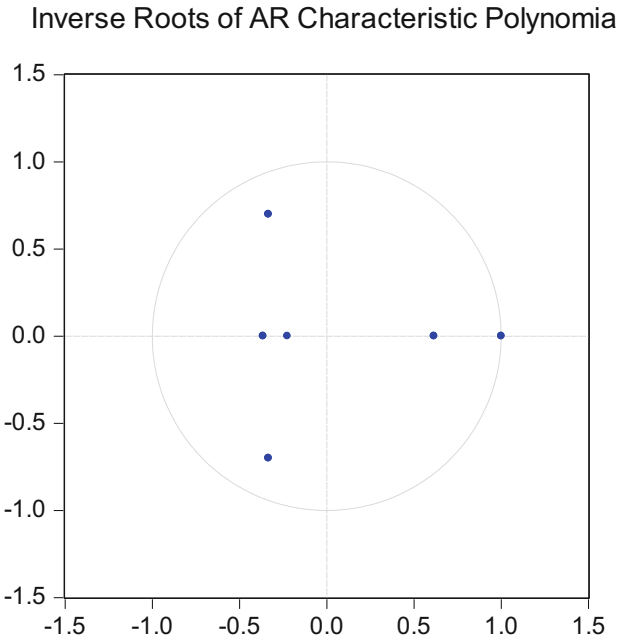

Fig. 1. Unit Root Graph of VAR (2). Figure source: Calculated by Eviews 8.0

indicating that the established VAR (2) model is stable. Table 5 is the regression results of VAR (2):

Table 5. VAR (2) regression results between variables

	CJST	KJWR	FSST
CJST(-1)	0.157024	-0.517105	0.002981
	-0.31226	-0.13363	-0.01568
	[0.50287]	[-3.86973]	[0.19006]
CJST(-2)	0.009617	-0.026662	-0.004182
	-0.33241	-0.14225	-0.01669
	[0.02893]	[-0.18743]	[-0.25052]
KJWR(-1)	-0.25056	-0.296576	0.002142
	-0.59102	-0.25292	-0.02968
	[-0.42395]	[-1.17260]	[0.07216]
KJWR(-2)	-0.549209	-0.418955	-0.000603
	-0.46417	-0.19864	-0.02331
	[-1.18320]	[-2.10913]	[-0.02588]
FSST(-1)	-4.079139	3.614524	0.498259
	-6.06646	-2.59609	-0.30467
	[-0.67241]	[1.39230]	[1.63538]
FSST(-2)	3.74812	-6.308387	0.508455
	-6.2774	-2.68636	-0.31527
	[0.59708]	[-2.34830]	[1.61277]
C	0.110868	0.201281	0.004034
	-0.11966	-0.05121	-0.00601
	[0.92649]	[3.93057]	[0.67129]

Source of forms: Calculated by Eviews 8.0

4 Conclusions

From the regression results in Table 5, it can be seen that when the annual growth rate of students in the finance and commerce major of Anhui vocational colleges with a lag of 2 periods changes by 1 unit, it will have a positive impact on the growth of students in the finance and commerce major of Anhui vocational colleges in the current period [9], with a change rate of 0.009617; When the annual growth rate of technology and finance practitioners in Anhui Province, which lags behind two periods, changes by one unit, it will have a negative impact on the growth of students in the finance and trade major categories of vocational colleges in Anhui Province in the current period [10], with a change rate of -0.549209; When the financial support for technology and finance, which lags behind the second phase, changes by one unit, it will have a positive impact on the growth of students in the finance and commerce major of vocational colleges in Anhui Province in the current period, with a change rate of 3.74812. This indicates

that the increase in science and technology expenditure in Anhui Province will promote the cultivation of students in the finance and commerce major of vocational colleges in Anhui Province [11].

Acknowledgment. Anhui Vocational and Adult Education Association's 2022 Education and Teaching Research Plan Project: "Innovative Research on Anhui Province's Science and Technology Finance Talent Training under the Background of" Three Places and One District "(Azcj2022007).

Four Chain Integration: Research on the New Business Talent Training Model under the Perspective of Multiple Value Co creation (Azcj2022072).

Anhui Province University Humanities and Social Sciences Research Key Project "Research on the Implementation Effectiveness and Optimization Path of Rural Revitalization Strategy under the Background of Yangtze River Delta Integration" (SK2021A1079).

References

1. Del Giovane, P., Eramo, G., & Nobili, A. (2011). Disentangling demand and supply in credit developments: a survey-based analysis for Italy. Journal of Banking & finance, 35(10), 2719-2732.https://doi.org/10.1016/j.jbankfin.2011.03.001
2. Guo, B., Fang, Z., & Song, D. (2010). Studies of Science and Technology Talent' Management of New Regional Industrial Development: Research with Anhui Province as an Example. Advances in Grey Systems Research, 229-244. https://doi.org/10.1007/978-3-642-13938-3_20
3. Wen, Y., Zhao, M., Zheng, L., Yang, Y., & Yang, X. (2023). Impacts of financial agglomeration on technological innovation: a spatial and nonlinear perspective. Technology Analysis & Strategic Management, 35(1), 17-29. https://doi.org/10.1080/09537325.2021.1963702
4. Song, R. M., & Dong, L. (2020). Review of the development of digital inclusive finance in China. DEStech Transactions on Social Science Education and Human Science (ecemi). https://doi.org/10.12783/dtssehs/ecemi2020/34714.
5. Velasco, C. (1999). Non-stationary log-periodogram regression. Journal of econometrics, 91(2), 325-371. https://doi.org/10.1016/S0304-4076(98)00080-3
6. Feng, Z., Chen, W., Liu, Y., Chen, H., & Skibniewski, M. J. (2023). Long-term equilibrium relationship analysis and energy-saving measures of metro energy consumption and its influencing factors based on cointegration theory and an ARDL model. Energy, 263, 125965. https://doi.org/10.1016/j.energy.2022.125965
7. Zhang, Z., & Chen, H. (2022). Dynamic interaction of renewable energy technological innovation, environmental regulation intensity and carbon pressure: Evidence from China. Renewable Energy, 192, 420-430. https://doi.org/10.1016/j.renene.2022.04.136
8. Umar, M., Ji, X., Kirikkaleli, D., Shahbaz, M., & Zhou, X. (2020). Environmental cost of natural resources utilization and economic growth: can China shift some burden through globalization for sustainable development?. Sustainable Development, 28(6), 1678-1688. https://doi.org/10.1002/sd.2116
9. Wen, Y., Zhao, M., Tang, G., Zhou, X., Hu, X., & Sui, L. (2023). How does financial agglomeration affect green development? Evidence from the Yangtze River Delta of China. Growth and Change, 54(1), 135-156. https://doi.org/10.1111/grow.12639

10. Jun, Q., Dinçer, H., & Yüksel, S. (2021). Stochastic hybrid decision-making based on interval type 2 fuzzy sets for measuring the innovation capacities of financial institutions. International Journal of Finance & Economics, 26(1), 573-593. https://doi.org/10.1002/ijfe.1805
11. Fang, F., Leong, Y. C., Huang, J., & Wang, F. (2023). Rural Financial of Rural Revitalization Support on Farmers' Income: An Empirical Study from Anhui Province, China. Advances in Economics and Management Research, 5(1), 42–42. https://doi.org/10.56028/aemr.5.1.42.2023