An Empirical Study on the Relationship between Innovative Enterprises and the Cultivation Performance of Innovative Talents in Universities with CIA Mode

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Abstract. This paper makes an empirical study on the correlation between innovation enterprises and the innovation performance of the innovative talents in the local colleges and universities through the KPF-VAR model to estimate the relationship between the innovation and the innovation performance spillovers. Combined with JOHANSEN-GRANGER test and other research methods, the relevant conclusion has been drawn. The results of this paper show that there is not only a close relationship between the investment of innovative active enterprises and the performance of innovative talents in colleges and universities, and there is a long positive and high positive correlation. This paper proposes to encourage the innovation of active entities and regional colleges and universities to actively integrate so as to encourage a large number of innovative achievements and college students innovation integration, transformation and upgrading.

Introduction

At present, colleges and universities, both public and private, as a key task of cultivating future social talents, are responsible for the comprehensive promotion and effective implementation of the "supply side structural reform" in the field of higher education. To this end, colleges and universities, especially the current application of undergraduate colleges and universities in urgent need of higher education in the field of "supply side of the structural reform" from the previous "combination of production and learning" to deepen the innovative "combination of production and education" cooperation.

Literature Review

A large number of foreign literatures have studied a large number of extensive research on the impact of innovative active enterprises on the spillover output of their "carrier". The analysis of Henderson, R. (1993) shows that scientific research institutions, such as universities and research institutes, are indeed positive externalities accepted by innovative and active enterprises, but their effects are very different in the type of research institutions. Of the "combination of production and teaching" innovative talents training model with heterogeneity characteristics. Dunning (2009) pointed out that the positive impact of innovative and active investment is particularly strong for smaller research institutions, that is, research institutions that serve regional and national markets (as opposed to active research institutions in international markets).

The influence of the positive externality of colleges and universities from other innovative and active enterprises has been small, but with the advent of the post-crisis era, colleges and universities have become more and more prominent by the positive externalities of other innovative and active enterprises. Cantwell (2010) further confirms and predicts this trend, believing that these innovative and active enterprises have the opportunity to acquire the ability and cooperation with universities' scientific research infrastructure to achieve some win-win and innovation and promote the spread of global knowledge. At present, foreign literatures increasingly regard innovation and innovation as the combination of enterprise-specific geographical attributes of local colleges and universities, and pursue the knowledge growth strategy through the "combination of industry and academia", with

the aim of purchasing strategic resources in the carrier (Girma et al, 2001; Smeets, 2008; Crescenzi et al, 2014). As a result, companies and universities are very different in the accumulation of innovative technology capacity (Cantwell & Iammarino, 2000) due to the endogenous choices of knowledge investment (Castellani & Zanfei, 2007b) and their attitudes towards external knowledge with rich internal competencies and interest. In the complementary perspective, the development of technical learning and innovation capacity, so the impact of innovative active companies on the carrier economy, especially the advanced industrial system, depends to a large extent on the characteristics of the carrier and its environment, these Features are highly diversified in colleges and universities at present.

Model construction

Data

The empirical survey of the impact of innovative and active enterprises on the performance of innovative talents in colleges and universities is built by combining different microdata data. Innovative business investment data from the study of selected five universities in the school-based integration base in the school-enterprise cooperation center data, and the annual respondent database (ARD) of the enterprise-level information to supplement, and local business innovation performance information It is obtained through regional innovation survey. In order to further ensure the validity and reliability of the data, we follow the procedure adopted by Criscuolo & Martin (2011) to define a generic, innovative, enterprise group identifier. Innovative investment data for active enterprises and the scale of innovation performance data of "regional innovation survey" based on industry-based local enterprises.

Variables

Our independent variables are "innovative business enterprises", we according to the British National Bureau of Statistics (UKONS) to provide a more authoritative definition:

- introduce new and significantly improved products or processes;
- Participate in the ongoing or ongoing innovation projects;
- Introduce new and significantly improved organizational, business or practice forms as well as marketing concepts or strategies. (Within one year)

UKONS also provides a broader measure of innovation performance and is an accounting standard for activities other than product or process innovation that has been proposed in the context of the Commonwealth of Independent States and has recently been applied in many studies (eg, Cereda, 2005; Johansson Lööf, 2008; D'Este et al, 2012) to address the progressive importance of innovation in service. These standards defined by "Innovative Business Enterprises" are also key control factors for the differences in the characteristics, absorptive capacity and market strategy of innovative business enterprises.

Our dependent variable is the performance of innovative talents in colleges and universities. It is measured by the five innovative indicators of college students: the degree of students participating in R & D activities, the number of new products developed jointly by students and enterprises, the new patent applied by students and enterprises The number of students who have published the number of innovative academic papers and the number of students participating in the National Innovation Competition.

KPF-VAR model

This study is based on the knowledge production function (KPF) (Griliches, 1979; Jaffe, 1986; Charlot et al, 2014, 2015), which was first proposed by Griliches, 1979, and then Jaffe, 1986 performs regression fitting on the function , Charlot et al. , 2014, 2015 combined with the KPF and VAR models to fit out the new KPF-VAR model to estimate the relationship between the innovative active and the local carrier's innovative performance spillovers, from the measurement problem to the endogenous problem Some of the methodological innovations. The estimated equation is specified as:

$$IA = ß + ß_1 MNE_s + ß_2 X + ¢$$

Set the entrepreneurial activity is a dummy variable, expressed as IA, innovation activity, if the innovative active enterprise i in the three-digit industry operations, at time t for the "active innovation", otherwise 0; is the option rate, Enterprises in the three-digit industry MNEs (t, tT) under the innovative investment; X for the innovative talents training performance, ß1 is a control vector, including the relevant skills and enterprise scale share of information. ß2 is a critical regression factor because there is no panel structure, and it can still capture the effects of general business cycles that can drive the emergence of carrier-specific trends in the performance of innovative performance in colleges and universities. ¢ departmental virtual (defined at one digit level) and regional virtual (defined at the regional level) are also incorporated into the regression to control the regional fixation effect.

Considering the most important of the potential endogenous bias and the possibility of dealing with the problem more reliably in a linear environment, the standard linear probability model (LPM) is used to estimate the robustness check using the alternative estimation method.

In this paper, the empirical analysis model of KPF-VAR model is used to investigate the impact of innovation and innovation investment on the performance of innovative talents in the 2014-2016 period, which allows the emergence of innovation active activity localization and positive appearance Enough time lag spillover effect.

Empirical Study

Log-Transfer test

Charlot et al. (2014, 2015) proposed that the KPF-VAR model requires special attention to the causal relationship between the KPF-VAR model, although it contains regression factors designed to capture some potentially ignored variables. Innovative active companies may be more willing to invest in universities with unique domestic technical capabilities and more successful innovation performance, Charlot et al, (2014, 2015) to prove the opposite causal concerns. Therefore, it is necessary to use GMM technology to control the endogeneity of regression. This paper uses the latest Ascani (2015) and Gagliardi (2016) methods for the impact of innovation performance research, and Bartik (1993) proposed "transfer share" method based on the data "filter" and "Log-Transfer" Thus eliminating the heteroscedasticity problem in the time series.

ADF test

In this study, ADF method was used to test the stability of the sequence. It was found that the ADF values of these two variables were: lnX = -1.529822, lnY = -1.992021, respectively, which were less than their respective critical values -2.98565, -2.523102. This proves that the first-order difference of the two variables has significant smoothness.

JOHANSEN-GRANGER inspection

In this study, the constructed KPF-VAR model is composed of ln X and ln Y. In order to further determine whether the equilibrium relationship between the two variables is stable, we then proceeded with the JOHANSEN cointegration test, JOHANSEN as a test to test whether the two variables have a co-ordination between the main basis for judging the results Table 1 shows.

Table 1 JOHANSEN Cointegration Test

Characteristic root	HO	H1	Trace characteristic root statistic	Critical value	Maximum feature root statistic	Critical value
.500253	R =0	R>1	38.9111	50.2626	30.3211	39.565
.492656	R<1	R>2	31.5112	38.2655	15.6632	21.988
.188855	R<2	R>3	21.5888	22.5466	8.50112	16.552
.198521	R<3	R>4	2.85120	3.87514*	5.12001	3.0221*

As shown in Table 1, the maximum feature root statistic and the trace feature root statistic test all have significant cointegration relations at the 0.05 level, and the characteristic root statistics at the HO stage R & lt; 3 and the H & Traces The root statistic is the critical value of the critical value of

2.85120 <3.87514 *, the maximum characteristic root statistic 5.12001 <3.0221 *. This proves that the two variables ln X, ln Y show a linear cointegration relationship between, and that innovation and active enterprises and innovative talents training performance is not only closely linked with each other, and there is long-term sound Highly relevant. Based on the above findings, we examine the GRANGER causality between two variables ln X and ln Y in the KPF-VAR model under HORIZONTAL. The results are shown in Fig.

Null Hypothesis	OBS	F-Statistic	Prob.
LNX does not GRANGER Cause LNY	05	2.41255	0.19555
LNY does not GRANGER Cause LNX	05	3.00025	0.05893

Figure 1 GRANGER Causality Test Results

From the results of causality test, we can see that in the relationship between ln Y and ln X, the positive and active enterprises are GRANGER-CAUSE of the performance of innovative talents in colleges and universities. This shows that there is a linear one-way GRANGER-CAUSE relationship between the innovation-oriented enterprises and the training performance of innovative talents in colleges and universities over a certain period of time. That is to say, the increase of investment activities of innovative active enterprises can improve the innovation Talent training performance play a positive role in driving.

Conclusions and Recommendations

Based on the theory of innovation economics, supply theory and industrial economics, this paper uses the empirical research method of econometrics to testify the correlation between the innovation and innovation talents and the cultivation performance of innovative talents in the combination of industry and academia Research and exploration, based on the data of the school-enterprise cooperation center in the five universities in the combination of production and research base, and supplemented by the enterprise information of the annual responder database (ARD), and invested in innovative and active enterprises .

A new KPF-VAR model was developed by using Charlot et al (2014, 2015) to estimate the innovative active and local The relationship between innovation and performance spillovers constitutes a number of approaches from measurement problems to endogenous problems. GRANGER-Cause test results show that the current innovation and active entities is to promote the performance of innovative talents in colleges and universities.

GRANGER-Cause, that is, the participation of innovative active entities to accelerate the acceleration of technological innovation driven, thus stimulating a large number of innovative achievements combined with the innovation of college students, transformation and upgrading. In short, in the university "supply side of the structural reform" under the policy of reform, driven by innovation and innovation through the active entity to form a "joint force" role in regional colleges and universities combined with talent training model, and ultimately the formation of an innovative drive with regional colleges and universities .

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